State of Vermont

State Medicaid Health Information Technology Plan (SMHP)

Last Updated: December 2019

Department of Vermont Health Access,
Vermont Agency of Human Services

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Contents

Preface

As detailed in the pages that follow and in the Vermont Health Information Exchange Strategic Plan found in Appendix B, Vermont is providing The Centers for Medicare and Medicaid Services (CMS) with an update to the State Medicaid Health Information Technology Plan (SMHP) to establish a common understanding of the organization, governance, vision and goals of the Promoting Interoperability Program and the State's Health Information Exchange (HIE) program. Per CMS' guidance, this update illustrates the current Health Information Technology (HIT) and HIE landscape, outlines plans for the future state, and details plans for continued operations of the Promoting Interoperability Program.

To provide context for this submission, it is important to note the organizational construct of the related programs within Vermont's State government, beginning with Vermont's Agency of Human Service, which has a profound statewide role. Through its six departments, twelve district offices, and a network of community partners and providers, the Agency is responsible for the implementation and delivery of all human service programs within Vermont. Each department has a distinct area of focus and responsibility and contributes to the creation and sustenance of an entire system of human service supports.

The HIE Program resides within the Agency of Human Services, under the Department of Vermont Health Access (DVHA) – the State's Medicaid Agency. The Promoting Interoperability Program (PIP) resides within the HIE Program. These organizational relationships are essential because they are intended to support the many health care payment, delivery and infrastructure developments coordinated across government and in collaboration the private sector.

Per Vermont Title 18 § 9351, the HIE Program operates a Health Information Exchange Steering Committee, a group of public and private sector stakeholders responsible for the development, operation, and evaluation of a statewide Health Information Exchange strategic plan. This legislatively assigned responsibility also calls for the Green Mountain Care Board, a state health care regulatory board, to review and approve this strategic plan annually. Most recently the Board approved an update to the strategic plan, which was submitted in November 2019 (available in Appendix B). While this SMHP document contains many pieces of that far-reaching strategic plan, the Plan itself contains a full picture of Vermont's dedication to and plans for system-wide health information exchange.

In brief terms, Vermont has a longstanding commitment to health system reform and quality improvement as exemplified by efforts like the statewide All-Payer Model, a result of work done under the State Innovation Model grant, and the establishment of the Blueprint for Health Program, a state-led, nationally-recognized initiative that helps health care providers meet the medical and social needs of people in their communities. There is consensus that the availability of health information infrastructure is essential to the success of these programs, and therefore, for over a decade, the executive and legislative branches of Vermont government have made strides to ensure that data and technologies support these evolving innovation efforts. One significant example of this is the State's devotion to supporting providers in obtaining and meaningfully using Electronic Health Record technology through the administration of the Promoting Interoperability Program (PIP).

The Vermont PIP is an integral part of the HIE program, establishing electronic health records as a source of clinical data for transmission to the Vermont-Health Information Exchange (VHIE). It began in 2011 and to date, has awarded over $59 million dollars in incentive payments to approximately one thousand eligible providers and hospitals enrolled in the program. Vermont's PIP is designed to support providers' adoption of certified electronic health record technology to improve the quality, safety and efficiency of patient health care. The specifics of program operations and more information on program statistics are contained in sections C and D of this SMHP. Current goals and objectives of the program as outlined in the latest IAPD-U submission, now approved (Version 4.0 November 2019), can be found in section E1.

The Vermont Information Technology Leaders (VITL) organization is legislatively appointment as the operator of the only Health Information Exchange in the State. Through health data accessibility, the VHIE aims to enhance care coordination, health care data analytics, and population health management. Facilitate by Vermont's Agency of Human Services, VITL has received HITECH dollars to continually expand and improve the operation of the VHIE. The role of the VHIE within the State's health network are expounded upon in the Vermont Health Information Exchange Strategic Plan Update found in Appendix B as well as the current IAPD-U submission as described in Section E1.

Not only is the VHIE an essential piece of the statewide health system, it is a key pillar in the Agency of Human Services' Medicaid Enterprise – an approach to transform legacy systems into an environment of coordinated and integrated service delivery. The Medicaid Enterprise encompasses the Vermont Health Connect (VHC) insurance exchange, Integrated Eligibility and Enrollment (IE&E), Medicaid Management Information System (MMIS), and efforts conducted under the HIE Program. These interdependent relationships provide Vermont with a powerful engine for delivery system change, as well as create a focused perspective to manage the technical and system changes within the Medicaid Enterprise.

The State of Vermont looks forward to an ongoing partnership with CMS that continues to focus on developing systems and technologies that enable a more efficient, effective system of care. Thank you for your review of the State Medicaid Health Plan and corresponding documents, namely the statewide Health Information Exchange Strategic Plan.

SECTION A: THE STATE’S “AS-IS” HIT LANDSCAPE

I. The State’s “As-Is” HIT Landscape:

A1 Vermont Health Information Technology (HIT) Environmental Scan

Introduction

The 2019 Health IT Landscape: Provider/Practice Survey was developed as part of Vermont’s annual planning activities related to the advancement of Health Information Technology (HIT) as well as for inclusion in the SMHP. The state’s Promoting Interoperability Program, in partnership with Lantana, developed and administered the survey in order to conduct a full review of the HIT Landscape across the state. This survey will be referred to as the 2019 Survey from this point forward in this text.

The 2019 Survey was developed from previous versions of the survey. Primarily, the team would like to give credit and cite Maryland for their iteration of the survey deployed in 2016 titled ‘2016 Health IT Environmental Scan’. We utilized a similar format for our survey, while attempting to carry over as many questions as possible from the Vermont 2016 Landscape Assessment Survey. The next section discusses these research methods as they were applied to the 2019 Survey.

Research Methodology

The following Definitions were provided as appendices attached to an email that was sent out to our target population notifying them of the 2019 Survey in order to provide basic information about some of the subjects of the survey. Further information on sampling will be discussed in the ‘Sampling Strategy’ section found after these definitions.

Provided to respondents as Appendix A:

Definitions

The following terms are used throughout the survey:

CMS Medicare and Medicaid Promoting Interoperability Program (PIP, formerly the EHR Incentive Program): The federal incentive program intended to encourage the adoption of EHRs.

Electronic Health Record (EHR): An electronic information technology system that captures clinical patient information.

Health Information Exchange (HIE): The process of sending or receiving patient information electronically.

ONC-ATCB Certification: In order to qualify for the CMS Medicare and Medicaid Promoting Interoperability Program, providers must utilize an EHR system that has been certified by the Office of the National Coordinator -Authorized Testing and Certification Body (ONC-ATCB)."

ONC Certified Health IT: Health IT is listed on the Certified Health IT Product List (CHPL) after they have been successfully tested by an Accredited Testing Laboratory (ATL) and certified by an ONC Authorized Certification Body (ONC-ACB).

Patient Consent (to share electronic health information) Policy: Vermont has maintained an opt-in policy for sharing of electronic health information in a networked exchange. With the passing of S31 into law as Act 53, the state is now working towards implementing an opt-out policy. Now, instead of visiting a provider and needing to opt-in to share information, individuals can make the choice to opt-out if they do not want their information shared in the Health Information Exchange.

Vermont Health Information Exchange (VHIE): The VHIE is a secure, statewide data network which gives health care providers in Vermont the ability to electronically exchange and access patient data.

Vermont Information Technology Leaders (VITL): Vermont Information Technology Leaders, Inc. 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).

Provided to respondents as Appendix B:

Vermont Information Technology Leaders (VITL) Service Details

The following is a list of services provided by VITL:

Point of Care - VITL offers a secure, patient-centered view of clinical data available in the Vermont Health Information Exchange (VHIE) for point of care use including laboratory, radiology and transcribed results, patient demographics, medication histories and clinical summaries. There are 3 unique ways that this data can be accessed:

VITLAccess – a web-based provider portal

Single Sign on – an EHR integrated view of the web-based provider portal

Cross – Community Access – an EHR integrated retrieval of clinical documents for the patient

Results Delivery – This is an integrated interface VITL can build that allows laboratory, radiology or transcribed reports that the provider has ordered for their patient at a Hospital Laboratory connected to the VHIE to be delivered directly and seamlessly into the provider’s EHR.

Direct Messaging – The VITLDirect service offered by the VHIE enables users to electronically and securely send or receive patient data between disparate locations and EHR systems in a HIPAA compliant manner using the nationwide DIRECT protocol communication standards. It can be embedded into the EHR, or there is also a secure web mail browser application. This capability is important for transitions of care and transmitting sensitive data securely.

Event Notification – A service that providers can subscribe to and receive alerts on their patients. Based on the Admissions, Discharge and Transfer events transmitted to the VHIE, healthcare providers are notified. This allows for seamless care transitions and better patient care.

Meaningful Use Assistance – Assistance to help health care organizations meet government standards for 'effective' use of their electronic health record. Guidance includes assessing current-state readiness and making appropriate recommendations for office and clinical workflow changes as well as help with targeted data collection and reporting for Meaningful Use. Documents and spreadsheet tools help the clients track and analyze Meaningful Use progress.

Security Risk Assessments - Services designed to identify the healthcare organization's existing vulnerabilities in data, electronic media and devices, physical plant, policies and procedures and other sources that could affect patient information confidentially and safety.

Provided to respondents as Appendix C:

State Initiatives impacted by VITL

Vermont Clinical Registry – This is a service where the VHIE transforms and provides selected clinical data to the Vermont Clinical Registry for use by the Blueprint for Health initiatives throughout the state to improve health care with their community health teams. Their focus is on Primary Care Providers, Women's Health, and Substance Use Disorder initiatives.

Vermont Chronic Care Initiative - This is a service where the VHIE transforms and provides selected clinical data to the Vermont Chronic Care Initiative for use by their care management teams based on their current patient rosters sent to the VHIE.

Vermont Immunization Registry - This is a service where the VHIE validates all incoming immunization messages and provides these to the Vermont Department of Health for ingestion into the Vermont Immunization Registry. This work enables the Organizations to electronically meet their state mandated reporting of vaccinations easily and from within their EHR.

OneCare Vermont Accountable Care Organization - This is a service where the VHIE transforms and provides selected clinical data to OneCare Vermont for use by their analytic and data quality reporting teams based on their current patient rosters sent to the VHIE.

Sampling Strategy

Population/sample: Provider list

A list of providers including contact information was originally derived from information already obtained by Vermont Information Technology Leaders (VITL). This list was then expanded by running a query of active providers in Vermont's MMIS. This query was filtered by provider type. Several directories from the Vermont Secretary of State's website were also queried to capture contact information for nursing homes in the state, residential care homes, etc. This greatly expands our list for a variety of provider types, including long term care providers, psychologists, social workers, physical therapists, and naturopaths.

The initial goal was to reach as many providers as possible within the state of Vermont, however, it became clear that we had to define what a 'provider' was in relation to our research methods. The team decided to implement an expanded definition of 'healthcare provider' to include those listed above, before eventually deciding to rename the survey from 2019 Provider Survey to 2019 HIT Landscape: Provider/Practice Survey. By expanding our scope in the name of the survey, we were able to include many more roles than just the expanded list of providers described above. We eventually decided that in order to fully understand the HIT landscape, we had to get an understanding of the perspectives of Practice IT Staff as well as Health Care Nursing and Support Staff, which was further defined as a Nurse, Practice Manager, Medical Assistant, etc.

The team identified 3,673 valid, non-duplicative Provider/Practice email addresses from DXC/MMIS Database, a list of provider emails from the Vermont Department of Health, the immunization registry and the Blueprint Registry. From the list of Vermont providers that had email addresses in the datasets identified above, there were a total of 767 that were undeliverable. With 293 total respondents, the survey had a response rate of 10%, which may be considered a limitation, however, we believe that the data from this volunteer sample is representative of providers across the state, as the mapping data indicates in the 'Data Analysis' section below. The 'Data Analysis' section also contains an analysis of the provider types, which further details where the data were obtained.

Target Population/Sample: 3673

Undeliverable: 767

Total Successfully Delivered: 2906

Total Respondents: 293

Response Rate: 10%

The next section discusses the survey tool used, and the format and content of the 2019 Survey to include the Sections, Subsections, Questions, and Choices available to the respondents.

Data Collection

The survey is semi-structured, allowing for unstructured demographic data to be collected along with structured answers to provide for in depth analysis and Geographic Information Systems

(GIS) mapping of the data. Questions were designed based on data that was collected in previous years to provide opportunity for as much of a comparative analysis as possible, as discussed in the section titled ‘Methods from previous research’ above.

The survey was administered by the SMHP team in the Health Information Exchange Unit, within the Agency of Human Services, Department of Vermont Health Access via Survey123.

Per the public website, www.Esri.com:

“Survey123 for ArcGIS is a simple and intuitive form-centric data gathering solution that makes creating, sharing, and analyzing surveys possible by allowing users to:

- Design and create surveys and publish them to ArcGIS Online organization accounts.
- Enable workforce collection of survey information in the field with the Survey123 mobile app.
- Analyze answers from the field and display results to support decision making.

Survey123 for ArcGIS is used to create electronic data collection forms that can replace paper forms currently being used for field data collection. Collecting data electronically has advantages over collecting data with paper forms:

- Improved consistency in data from using standardized answer choices for multiple-choice questions.
- Reduced human error because, with electronic data collection, information is loaded directly into a database exactly as it was collected in the field.
- Increased overall efficiency.”

The survey was sent out via email after being developed in Survey123 for its high compatibility with ArcGIS software. The next section discusses the contents of the 2019 Survey.

Research Question (Descriptive):

What is the current HIT/HIE landscape within Vermont?

The team utilized the following spreadsheet to help us understand what research questions might help in answering the overarching research question described above:

Table 1: HIT Landscape Research Questions

Sub-question:	Measure:	Unit of Analysis	Comments/Question in Survey
What is the extent of HIT adoption in the state by location?	% of respondents answering yes/ total sample; sorting by location.	EHR Adoption rate	Section II: Question 1 and Demographic: County Data
What provider types are adopting HIT? What provider types are not?	% of respondents answering yes/ total sample; sorting by provider type.	EHR Adoption rate	Section I: Question 3 and Section II: Question 1
What are the adoption rates among varying practice sizes?	% of respondents answering yes/ total sample; sorting by practice size.	EHR adoption rate	Section I Question 5 and Section II Question 1
What is the extent of knowledge related to HIT/HIE among providers?	% of respondents answering yes/ total sample.	Perception of providers	Section IV: Question 1
What are the barriers of Adoption/Implementation of HIT?	All barriers Identified.	Perception of providers	Section II: Barriers to Adopting EHR Technology Subsection
Extent of knowledge of incentive program?	% of providers that identify for each category.	Perception of providers	Section II: Question 1
Interest in participating in incentive program.	Interest in potential state funded program post HITECH	Perceptions of providers	Section III: Question 2
Challenges to data sharing	All challenges listed.	Perceptions of providers	Section IV: Question 2
How are providers sharing information?	% of providers sharing for each method identified.	Information sharing method	Section IV: Question 4
Familiarity with Patient Consent policies	% of providers for each Likert scale category.	Perception of providers	Section V: Question 1
Solicitation and management of Patient Consent	% of providers preferred methods of collection	Consent management method rate	Section V: Questions 2, 3, and 4

Table 2: Tentative schedule set before the deployment of the 2019 Survey

2019 Provider Survey Timeline	
July 29/August 1:	Distribute survey to all identified providers
August 13:	Send 1st reminder
September 2:	Send 2nd reminder
September 3-12:	Outreach
September 13:	Close survey
September 16:	Begin analysis
October 18:	Complete analysis, incorporate into SMHP

The 2019 Survey consisted of several sections, some of which did not require response. In order to ensure appropriate direction, respondents were provided with a Purpose statement, Instructions, and a Special Note.

Purpose

"This survey is being administered by the state of Vermont to determine the extent of Health Information Technology (HIT) adoption and use throughout the state. The survey will help us monitor the usage of health information technology, including electronic health records and health information exchange, in the State of Vermont and what that technology is being used for.

Results of this survey will help us determine the impact of the Promoting Interoperability Program (formerly, the EHR Incentive Program). Survey responses will also help us complete a Health Information Technology Roadmap that will guide future HIT investment and development within the state."

Instructions

"We welcome feedback from any member of a health care organization that is familiar with the organization's Health Information Technology adoption. This includes, but is not limited to, providers, practice managers, practice IT staff, or any health care support staff.

- Independent providers – You or a representative, please complete this survey on your behalf.

•Medical Care Groups - Please complete the survey for the group and forward the survey link to any providers within the medical group who might also be interested in submitting responses.

•Multiple Locations – If your practice has multiple locations, please fill out this survey based on your primary location.”

Special Note

"We would like to note that your opinions matter to our team and are important to our understanding of the HIT landscape in Vermont.

The Department of Vermont Health Access welcomes your frank and honest feedback when answering these questions.

Any individually identifiable information will be kept confidential. Thank you for your participation.

Following the Special Note, the survey questions began with Section I. General Practice Information, followed by Section II. Health Information Technology Adoption, Section III. Promoting Interoperability Program, Section IV. Health Information Exchange, Section V. Patient Consent, and finally Section VI. Demographic Information, before concluding with an opportunity for providers to leave feedback:”

Feedback Note:

“Please provide any additional feedback, questions, comments, or concerns related to Health Information Technology within Vermont.

This response was open ended and afforded a response with 1000 characters. There was also a **Submission Note:**

We would like to remind you that any individually identifiable information will be kept confidential. Thanks again for your participation.

Please give your browser a few moments to process the submission upon clicking the submit button below.”

This time allowed for different browsers to process the submission of the survey. This note was important because our Beta Test showed that different browsers responded differently to the application, and more than one browser required extra time. The next section will discuss the six sections of questions in more detail.

SURVEY QUESTIONS

Section I. General Practice Information consisted of the following six questions:

1. Please indicate the job title or relationship of the respondent to the organization for which the survey is being completed:
2. Are you completing this survey on behalf of single provider practice or a group practice?
3. Please select the practitioner's provider type.
4. Please indicate your organization type:
5. Please indicate the number of individual providers employed at the practice:
6. Please select the types of providers that are part of your group/practice (select all that apply)

Section II. Health Information Technology Adoption consisted of the following six questions:

1. Does your practice currently use any Electronic Health Record Technology?
   a. If respondents answered 'Yes', they received questions 2 through 6 in the list below; if they answered 'No', they skipped these questions.
2. What EHR vendor do you use?
3. Does your practice currently use an EHR that is certified by ONC?
4. Please specify your EHR product and Version Number/ID:
5. How long has your practice been using any type of EHR?
6. How long has your practice been using your current EHR?

Barriers to Adopting EHR Technology Subsection

Also, if respondents answer 'No' to question 1, they were asked to identify if they experienced any of the following Barriers to Adopting EHR Technology:

1. For each item, please indicate the level of impact: i.e. Not a barrier; Somewhat of a barrier; Significant barrier
   - Cost to acquire
   - Unsure which EHR to purchase
   - Lack of staff expertise using health IT
   - Not confident EHR will lower costs or improve quality and/or safety
   - Concerns regarding patient privacy and/or security

- Disruption to office business processes
- Will not see return on investment (i.e. planned retirement or other reason)
- Lack of EHRs that support my specialty area
- Limited broadband internet access and/or bandwidth
- Other Barriers not listed

Barriers to Maximizing EHR Usage Subsection

Alternatively, if the response to Questions 1 in Section II was ‘Yes’, respondents were asked to identify the level to which they experienced the following Barriers to Maximizing EHR Usage:

1. For each item, please indicate the level of impact: i.e. Not a barrier; Somewhat of a barrier; Significant barrier

- EHR is not interoperable with other systems (i.e. billing, practice management, etc.)
- EHR is not easy to use
- Limited staff resources
- Lack of staff expertise using health IT
- EHR is not customized to my practice specialty
- Concerns regarding patient privacy and/or security
- Disruption to office business processes
- EHR does not have sufficient functionalities
- EHR does not have sufficient technical assistance
- Current vendor does not provide adequate customer support
- Please identify any other barriers not listed above that you have experienced:

Quality Reporting Subsection

The final subsection for Section II was the Quality Reporting Subsection which consisted of the following questions that were included upon the request of Lantana Consulting Group, Inc. (Lantana).

1. Are you supporting quality programs from your EHR today?
2. Would you like to increase the use of EHR data to support quality programs?
3. Is the information you are capturing for quality programs useful internally?

4. How many quality programs do you participate in and report to?
5. Do you find your practice reporting the same or similar information in different ways to different programs?

Section III. Promoting Interoperability Program consisted of the following questions:

1. What is your familiarity with the Promoting Interoperability/Electronic Health Records Incentive Program (PIP/EHRIP)?
2. Would you participate in a potential state funded program that would provide annual incentive payments for meaningful use of Health Information Technology?

Section IV. Health Information Exchange consisted of the following five questions:

1. What is your familiarity with Vermont's Health Information Exchange?
2. Please identify the following challenges that you experienced while sharing or attempting to share electronic health information with other organizations or the VHIE. (Select all that apply)
3. Are you sending or receiving Transitions of Care and/or Referral Care Summaries electronically to other providers or healthcare organizations?
4. Please indicate the methods by which you are electronically sending/receiving patient health information to other providers or healthcare organizations. [check all that apply]
5. Please indicate which current or planned VITL service offerings you or your group/practice would be interested in utilizing. [check all that apply]

Current Information Exchange Subsection

Lantana also provided 9 questions related to current information being exchanged by practices.

1. Is your organization currently receiving imaging information from outside of your organization?
2. Is your organization currently receiving Lab results from outside of your organization?
3. Is your organization currently receiving clinical notes from outside of your organization?
4. Is your organization currently receiving reconciled up to date medication list from outside of your organization?
5. Is your organization currently receiving pharmacy fill data from outside of your organization?

6. Is your organization currently receiving claims information from Medicare from outside of your organization?
7. Is your organization currently receiving claims information from Medicaid from outside of your organization?
8. Is your organization currently receiving claims information from Commercial Payers from outside of your organization?
9. Is your organization currently receiving claims information from Self-insured/employer plans from outside of your organization?

Follow-up Questions:

For each of the questions, a ‘Yes’ response would be followed-up with a questions about ‘how useful the information is’, and for every ‘No’ response, a follow-up question of ‘how useful it would be’ was presented.

1. If ‘Yes’: How useful is it to receive this information?
2. If ‘No’: How useful would it be to receive this information?

Section V. Patient Consent consisted of the following four questions:

1. What is your familiarity with Vermont's current law regarding Patient Consent to share electronic health information?
2. How does your organization CURRENTLY obtain Patient Consent to share electronic health information?
3. How does your organization PLAN TO obtain Patient Consent to share electronic health information in the future?
4. How often is consent to share electronic health information discussed with patients?

And finally,

Section VI. Demographic Information consisted of the following 10 important data:

1. First name
2. Last name
3. Organization Name
4. Provider OR Group NPI
5. County
6. City/Town/Village
7. Zip

8. Organization Location
9. Email Address
10. Outreach preferences for the email address you have provided above

Response Choices

The following table is the list of choices available for different questions:

Table 3: List of Survey Choices

List Name	Name (As coded)	Label (As displayed)
yes_no	yes	Yes
yes_no	no	No
no_yes	yes	Yes
no_yes	no	No
no_yes	unsure	Unsure
rating	very	Very useful
rating	unsure	Unsure
rating	not	Not useful at all
county	Addison	Addison County
county	Bennington	Bennington County
county	Caledonia	Caledonia County
county	Chittenden	Chittenden County
county	Essex	Essex County
county	Franklin	Franklin County
county	Grand Isle	Grand Isle County
county	Lamoille	Lamoille County
county	Orange	Orange County
county	Orleans	Orleans County
county	Rutland	Rutland County

List Name	Name (As coded)	Label (As displayed)
county	Washington	Washington County
county	Windham	Windham County
county	Windsor	Windsor County
county	OOS	Practice outside of Vermont
group_q	solo	Solo Practitioner
group_q	group	Group Practice
solo	certified_midwife	Certified Nurse Midwife
solo	crnp	Certified Registered Nurse Practitioner (CRNP)
solo	chiropractor	Chiropractor
solo	dentist	Dentist
solo	staff	Health Care Nursing and Support Staff (Nurse; Practice Manager; Medical Assistant; etc.)
solo	staff_it	Practice IT Staff
solo	men_beh	Mental or Behavioral Health Care Provider (Psychologist; Psychiatrist; Therapist)
solo	naturopath	Naturopath
solo	optometrist	Optometrist
solo	pharm	Pharmacist
solo	physical_occupational_therapist	Physical or Occupational Therapist
solo	pa	Physician Assistant
solo	family_practice	Physician, Family practice
group_own	priv_own	Privately-owned group practice or partnership
group_own	hosp_own	Hospital-owned group practice

List Name	Name (As coded)	Label (As displayed)
group_own	fqhc	Federally Qualified Health Center (FQHC)
group_own	hosp_fqhc	Federally Qualified Health Center (FQHC) owned Hospital
group_own	men_health	Outpatient Mental Health Clinic (OMHC)
group_own	ltpac	Long Term and Post-Acute Care (LTPAC) – Including Nursing Homes
group_own	hospital	Hospital
group_own	lab_img	Labs and Imaging Center
group_own	urgent_care	Urgent Care Center
prac_size	< 3	Less than Three
prac_size	four to ten	Four to Ten
prac_size	11 to 25	11 to 25
prac_size	26 to 50	26 to 50
prac_size	> 50	More than 50
ehr_products	Allscripts	Allscripts
ehr_products	AmazingCharts	Amazing Charts
ehr_products	athenahealth	athenahealth
ehr_products	Care360(Quest)	Care 360 (Quest)
ehr_products	Cerner	Cerner
ehr_products	eClinicalWorks	eClinicalWorks
ehr_products	eMDs	e-MDs
ehr_products	Epic	Epic
ehr_products	GECentricity	GE Centricity
ehr_products	Greenway_PrimeSUITE	Greenway PrimeSUITE
ehr_products	McKesson	McKesson

List Name	Name (As coded)	Label (As displayed)
ehr_products	Medent	Medent
ehr_products	NextGen	NextGen
ehr_products	PracticeFusion	Practice Fusion
ehr_products	RelayHealth	RelayHealth
ehr_products	Sage	Sage
ehr_use_time	> 1yr	> 1yr
ehr_use_time	between 1 and 2 years	between 1 and 2 years
ehr_use_time	between 2 and 3 years	between 2 and 3 years
ehr_use_time	> 3 yrs	More than 3 years
barriers_level	not	Not a Barrier
barriers_level	somewhat	Somewhat of a Barrier
barriers_level	significant	Significant Barrier
familiarity	participate_success	Participated: RECEIVED **incentive payments**.
familiarity	participate_unsuccess	Participated: R**eceived NO incentive payments**;
familiarity	knowledgeable	Know a little about it;
familiarity	familiar	Heard of it but do not know the details;
familiarity	unfamiliar	Never heard of it;
hie_familiarity	unfamiliar	Never heard of it
hie_familiarity	familiar	Heard of it but do not know details or do not know associated benefits
hie_familiarity	knowledgeable	Understand the services and benefits of the VHIE

List Name	Name (As coded)	Label (As displayed)
hie_barriers	hie_barriers_insufficient_info	Insufficient information to establish the information exchange;
hie_barriers	hie_barriers_unaware	Do not know exchange partner’s abilities;
hie_barriers	hie_barriers_costs	Exchange service's subscription rates are too high;
hie_barriers	hie_barriers_partner_ability	Exchange partners do not have electronic data exchange ability;
hie_barriers	hie_barriers_mesage_generation	Inability of EHRs to generate/receive standardized messages;
hie_barriers	hie_barriers_trust	Lack of trust with data sharing systems
hie_barriers	hie_barriers_privacy_security	Lack of confidence in privacy and security of network
hie_barriers	hie_no_challenges	No Challenges
transmission	tran_ehr	Direct secure messaging from HER
transmission	tran_web	Direct secure messaging from a web portal
transmission	tran_secure	Other secure messaging (fax, etc.)
transmission	tran_vhie	Vermont HIE (includes HL7 Message delivery, VITLAccess, Event Notification)
transmission	tran_hie_oth	HIE other than VHIE (Vendor/ACO managed)
vitl_services	cca	Cross - Community Access
vitl_services	ens	Event Notification Service (ENS)

List Name	Name (As coded)	Label (As displayed)
vitl_services	mua	Meaningful Use Assistance
vitl_services	resdel	Results Delivery
vitl_services	sra	Security Risk Assessments
vitl_services	sso	Single Sign on
vitl_services	vdsm	VITL Direct secure messaging
vitl_services	v_access	VITLAccess
vitl_services	not_int	Not interested in any of these services
vitl_services	undecided	Undecided
consent_familiarity	advanced	Comfortable explaining it to staff and patients
consent_familiarity	knowledgeable	Know a little about it;
consent_familiarity	familiar	Heard of it but do not understand it;
consent_familiarity	none	Never heard of it;
consent_collection	Paper	Paper consents - Signed consents are gathered and filed in paper form;
consent_collection	Hybrid	Hybrid capture - Signed papers are scanned into the EHR;
consent_collection	Electronic	Electronic - Consents are obtained electronically after a verbal explanation
consent_freq	once	Once, only upon first visit
consent_freq	per_visit	Every visit
consent_freq	prn	As necessary per clinical event (i.e. before every surgical procedure)
consent_freq	qtrly	Quarterly

List Name	Name (As coded)	Label (As displayed)
consent_freq	annually	Annually
consent_freq	none	Not participating in consent activities
future_outreach	none	No future outreach
future_outreach	limited	Limited, general outreach
future_outreach	hie	Outreach related to the Health Information Exchange
future_outreach	vitl_services	Outreach related to VITL Services
future_outreach	incentives	Outreach related to incentive programs (PIP; etc.)
future_outreach	consent_education_materials	Patient education materials related to Consent to share EHI/PHI
future_outreach	technical_assistance_choosing	Technical assistance related to choosing an EHR Product
future_outreach	technical_assistance_using	Technical assistance related to using an EHR Product (staff training, etc.)
vhie_data	img	Imaging information
vhie_data	lab	Lab results
vhie_data	clinical	Clinical notes
vhie_data	med_list	Reconciled, up to date medication list
vhie_data	pharm	Pharmacy fill data
vhie_data	claims_medicare	Claims information from Medicare
vhie_data	claims_medicaid	Claims information from Medicaid

List Name	Name (As coded)	Label (As displayed)
vhie_data	claims_payer	Claims information from Commercial Payers
vhie_data	claims_employer	Claims information from Self-insured/employer plans
transitions	sending	Sending
transitions	receiving	Receiving
transitions	neither	Neither sending nor receiving

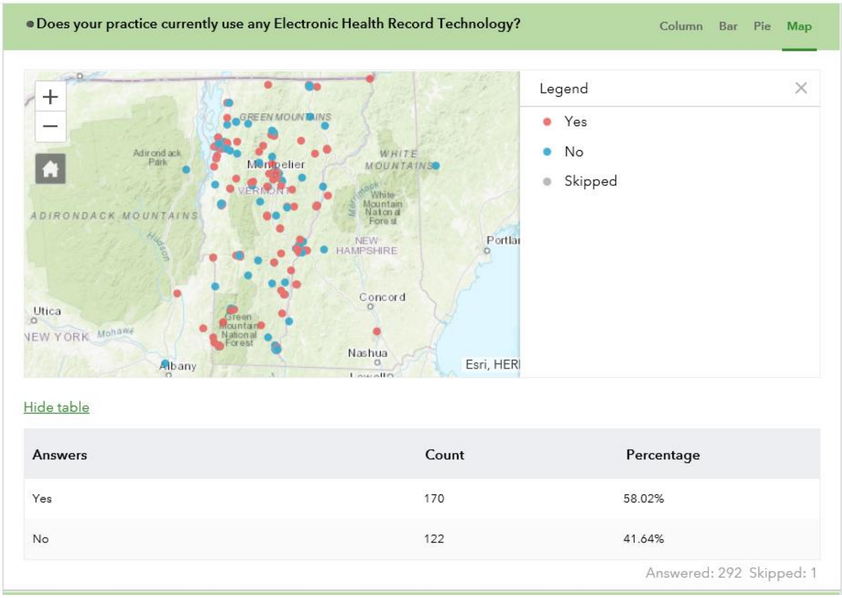
Data Analysis

Statistical analysis of the data was conducted within the Survey123 tool, which has a module for analysis of the dataset and provides statistical analysis as well as GIS mapping which will be utilized for this report. The team utilized the GIS lead for the Agency of Human Services to assist with data integrity. We utilized descriptive statistics, as we worked with what is considered a volunteer sample at 10%.

The next section provides analysis and graphs used to answer our research questions:

Extent of HIT adoption in the state by location:

Figure 1: Current Use of EHR System



● Does your practice currently use any Electronic Health Record Technology?

Answers	Count	Percentage
Yes	170	58.02%
No	122	41.64%

Answered: 292 Skipped: 1

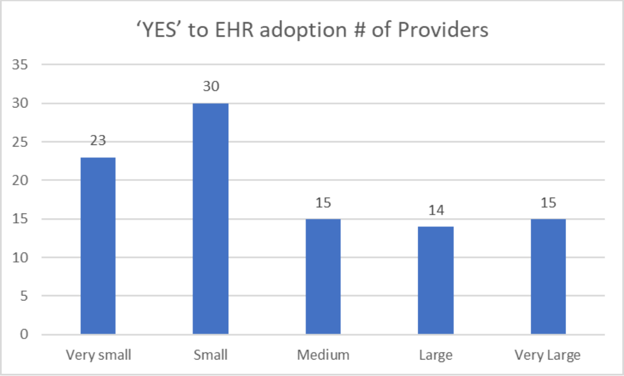
58% of respondents stated they currently have an EHR system in use. The largest share of providers, 26%, that answered ‘Yes’ were from Chittenden County, which is not surprising since it is the most populated county in the state. Grand Isle County, Essex County, Franklin County, Addison County, Caledonia County, Lamoille County, and Orleans County were among the lowest respondents with 0-2.9% answering 'Yes', while Orange County, Windham County, Washington County, Windsor County, Bennington County, and Rutland County provided between 6 and 9 % of the 'Yes' responses. The 'No' responses followed the same trend. This trend shows that counties with smaller population density had fewer respondents, while those with larger population density had more respondents. Further statistical analysis might show a relationship between population density and adoption rate of HIT.

Provider types that are/not adopting HIT:

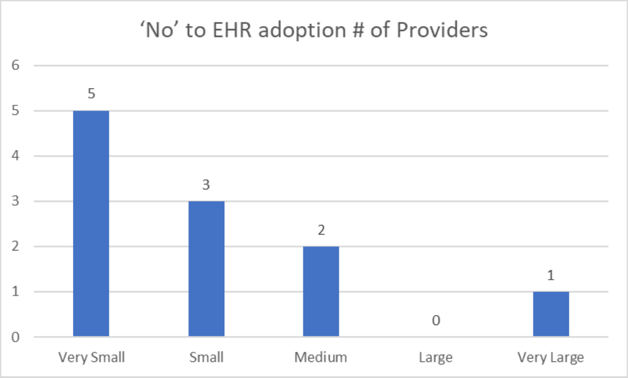
Of the 170 respondents (58%) that stated they have adopted HIT, 67, or 39%, of them provided information related to their specific provider type. Significantly, 20% of respondents who answered this question identified as Mental or Behavioral Health Care Providers. Upon further analysis, it was evident that this number may skew the results because so many of them identified as social workers, though the team thought inclusion of this data were important. Chiropractor, Dentist, Optometrist, Physician, Family practice, Naturopath, Physical or Occupational Therapist, and Pediatrician provider types made up the provider types that tended to answer that they had EHR systems in use.

Adoption rates among varying practice sizes:

Histogram 1: Yes to EHR Use



Histogram 2: No to EHR Use



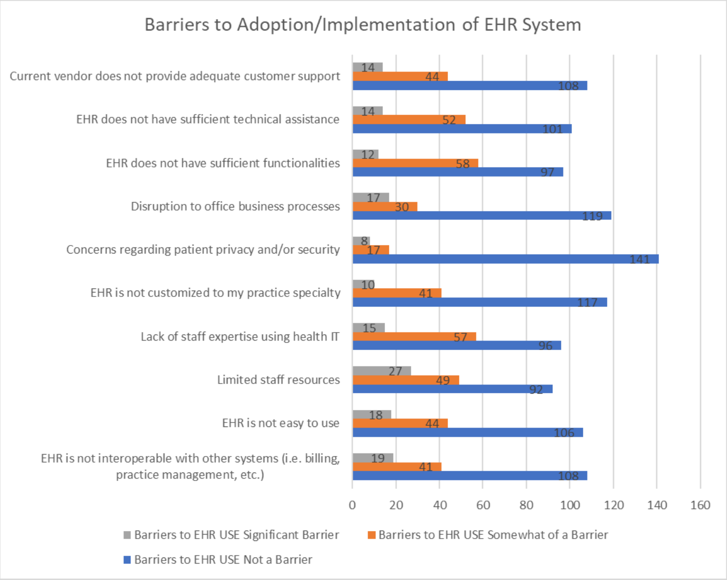
Vermont is a unique population that has very low density statewide. We expect to see the number of larger practices to be lower as well as a larger percentage of very small practices choosing not to adopt an EHR system.

Extent of knowledge related to HIT/HIE among providers:

20% of respondents showed advanced knowledge of the HIE, indicating they understood the services and benefits, while 26% indicated never hearing about it. With just over 50% indicating they have heard about it but do not know the details, there seems to be potential to engage many willing participants.

Barriers of Adoption or Implementation of HIT

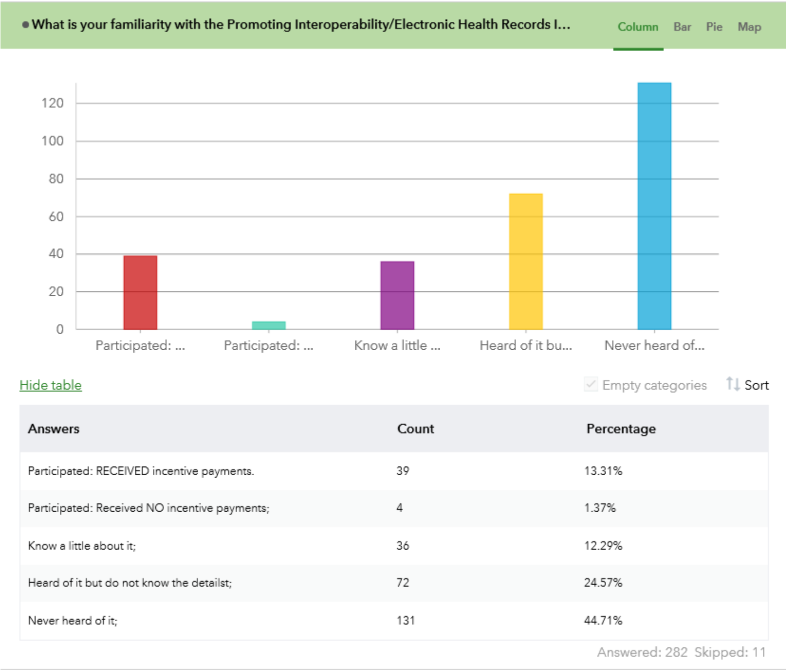
Histogram 3: Barriers to Adoption or Implementation of EHR System



Of the 42% of providers that indicated they did not adopt or implement HIT, the majority indicated the following as Significant Barriers to adoption or implementation of HIT: Costs to acquire; Lack of staff expertise using HIT; Lack of confidence in HIT to improve quality, safety, or lower costs; Concerns over patient privacy and security; Disruption to the business process; and Likelihood they will not see a return on investment due to retirement or other reasons..

Extent of knowledge of incentive program:

Figure 2: Familiarity with PIP



● What is your familiarity with the Promoting Interoperability/Electronic Health Records I...

Answers	Count	Percentage
Participated: RECEIVED incentive payments.	39	13.31%
Participated: Received NO incentive payments;	4	1.37%
Know a little about it;	36	12.29%
Heard of it but do not know the detailst;	72	24.57%
Never heard of it;	131	44.71%

Answered: 282 Skipped: 11

44.71% indicated they had never heard of the Promoting Interoperability, or Electronic Health Record Incentive Program, while 13% indicated having successfully received payment for participation. Just under 25% indicated they had heard of the program but were not aware of the details.

Interest in participating in incentive program:

Figure 3: Interest in Incentive Program

● Would you participate in a potential state funded program that would provide annual i...

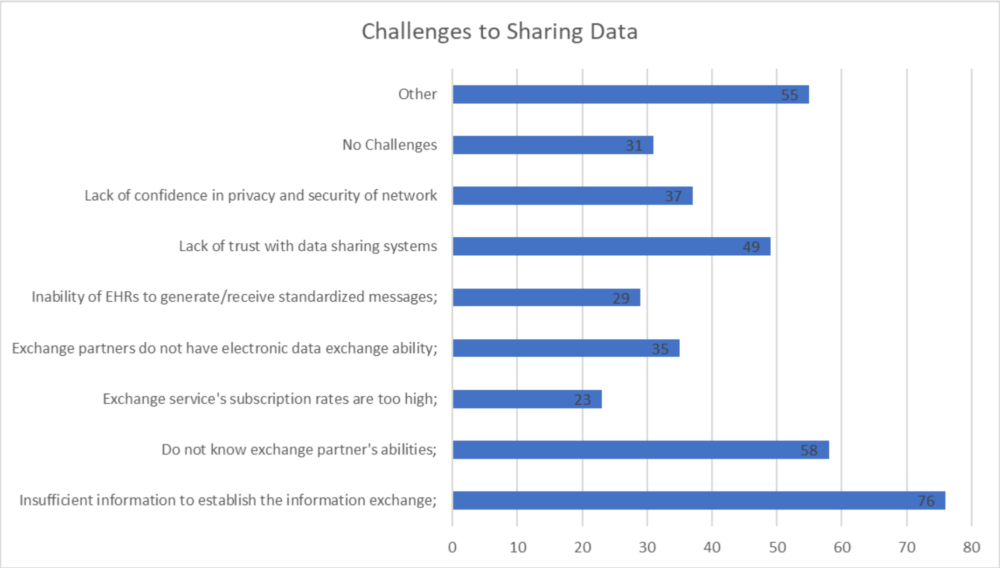
Answers	Count	Percentage
Yes	98	33.45%
No	50	17.06%
Unsure	141	48.12%

Answered: 289 Skipped: 4

Just over 33% of respondents indicated interest in participating in a state funded incentive program, while only 17% indicated they would not. The other 48% of respondents were unsure.

Challenges to data sharing:

Histogram 4: Challenges to Data Sharing



75% of respondents answered this question. Of those, more than 25% indicated Insufficient information to establish the information exchange as a barrier to connecting to the HIE. Just under 20% indicated they did not know exchange partners abilities as barriers. One concern is that just about 30% of respondents stated having a lack of confidence in Privacy and security of the network or lack of trust with data sharing systems as barriers to connecting to the HIE. This shows a significant potential to engage and educate potential participants.

How providers are sharing information:

Only 25% of respondents answered this question. Of that percentage, the largest group, 17%, indicated using some other form of secure messaging, which included fax. 10% indicated sharing information directly and securely from the EHR, while only 4% indicated using a web portal.

Familiarity with Patient Consent policies:

97% of respondents answered this question. More than 46 % indicated advanced knowledge and being comfortable explaining the current law to staff. 36% indicated having some knowledge, while 6 to 9 % indicated never hearing or not understanding the law respectively.

Solicitation and management of Patient Consent:

92% of respondents answered this question. Of those responses, more than 66% indicated using paper consent, while 22% indicated a hybrid system using paper and digital copies, and only 13% indicated capturing consent electronically. 43% of respondents plan to continue to only utilize paper consent forms when obtaining consent to share information. More than 29% of respondents indicated collecting consent as necessary preclinical event, while 26% of respondents indicated only collecting consent upon first visit, followed by 11% who indicated seeking consent annually.

Limitations

Sample size/Volunteer Sample

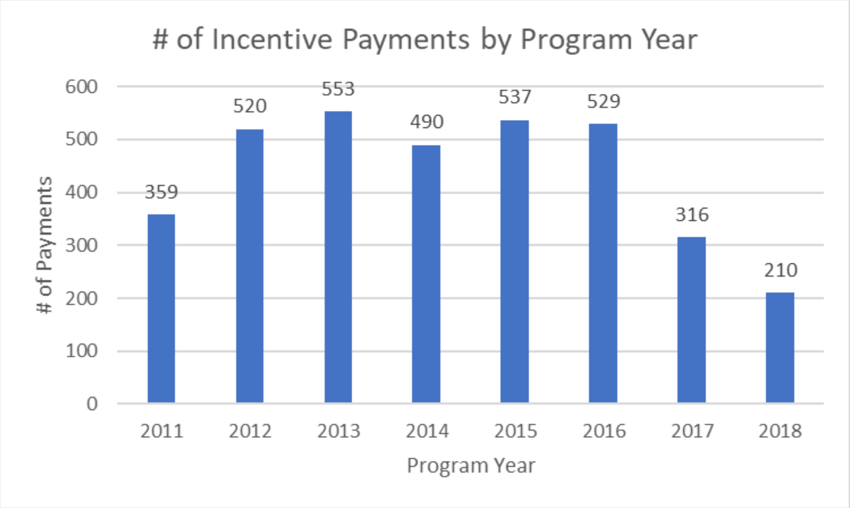
The response rate was considered the primary limitation for this research. The dataset we collected can be considered a volunteer sample at 10% response rate, therefore, we have primarily focused on providing descriptive statistics. A voluntary or volunteer sample is not based on probability or random sampling and can introduce biased results. In the case of the Vermont provider survey, the potential bias is somewhat controlled because most questions sought factual or objective responses. We hope future research can use this data as secondary source information to design a probability-based sample survey or for research that might include inferential statistical analysis.

Instrumentation

The secondary limitation was instrumentation. Although our survey tool was unique in that it could provide quality mapping capabilities, it was the first time this technology was deployed in the state of Vermont Agency of Human Services. The State has a GIS Lead who supported our use of this tool and helped mitigate this limitation. We hope that future research in Vermont will build on our research, to include further use of the methods and tools described in this document.

The PIP has also provided the State Medicaid Agency (SMA) with unique data. This information includes information such as National Provider Identifier (NPI), Certified Electronic Health Record (EHR) Technology in use (CEHRT ID), and other information including Federally Qualified Health Center (FQHC) practice status, individual or group based, and other attributes that are evaluated as a determination is made on whether a provider is eligible for an incentive payment. The PIP team also ~~has~~ meets Annual and Quarterly reporting requirements to CMS, which helps guide analysis and understanding of the data which comes from program activities. This includes information on total unique participants, total sum of payments dollars disbursed ~~or~~ and recouped, data on the number of providers that have achieve Adoption/Implementation/Upgrade as well as the number of providers that have achieved Meaningful Use, and meta-analysis of CQM data. As stated previously, CMS has this data as submitted by Vermont to the CMS Promoting Interoperability portal and will not be displayed within this document. Program statistics since inception of the program follow.

Histogram 5: Number of Payments by Program Year



There was an increase in participant from PY 2011 to 2012 with a diminishing number of payments in the last two years of participation. This change is expected and can be attributed to an increasing number of EPs achieving their maximum incentive potential of six yearly payments, or the three payments for Eligible Hospitals. As providers exit the program upon this achievement, the remaining pool of qualified participants will shrink.

Table 4: Vermont Incentive Payment Amounts by Program Year

Payment Totals by Program Year	SUM
2011	$11,854,163.57
2012	$13,658,330.82
2013	$10,415,191.93
2014	$6,798,030.92
2015	$6,182,782.11
2016	$5,526,590.35
2017	$2,784,022.97
2018	$1,805,965.74
Payment Total Since Inception	$59,025,078.41

A total of 2,452 payments have been made to Eligible Professionals and Eligible Hospitals since program Inception totaling $59,025,078.

17 Eligible Hospitals had Year 1 Payments with 7 electing to attest to MU requirements in Year 1. All 17, or 100% of, Eligible Hospitals successfully received 3rd Year Payments for Meaningful Use. 1,011 Individual Eligible Professionals received Year 1 Incentive Payments for AIU requirements, while 35 received Year 1 Payments for MU, for a total of 1,046 Year 1 Payments made to EPs. 20%, or 213 EPs, of the Vermont Promoting Interoperability Program participants have successfully leveraged Year 6 incentive payment and concluded their eligibility for the program. 799 Individual Eligible Professionals and 17 Individual Eligible Hospitals have successfully leveraged at least on Meaningful Use Incentive Payment.

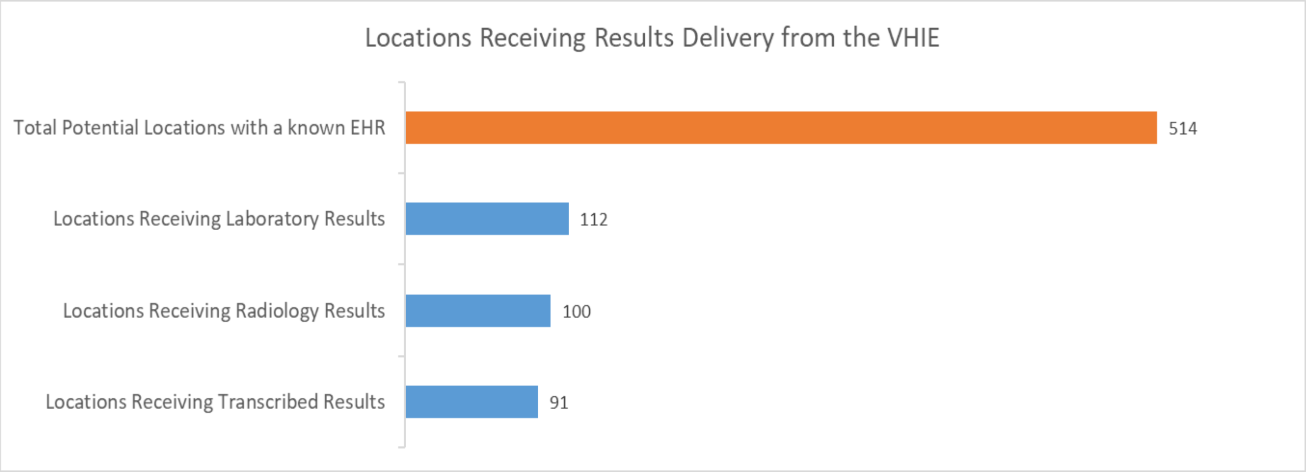
The Vermont HIE Unit also has unique access to Vermont Health Information Exchange (VHIE) data because of the governance and reporting structure for the exchange. The VHIE currently has requests for the following interfaces:

Table 5: VHIE Services Currently Requested (as of November 2019)

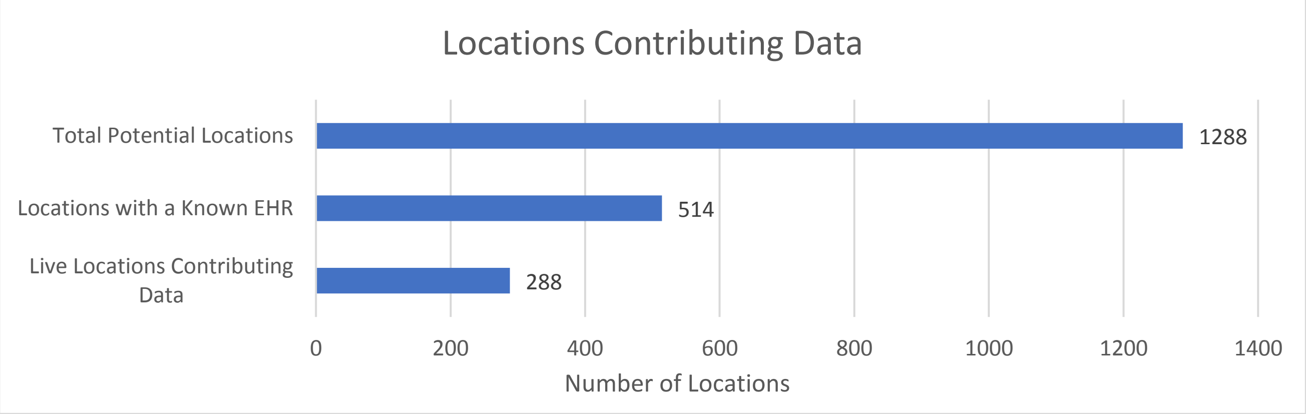
Interface Request	Number of Requests
Continuity of Care Document (CCD) Interface Count	9
Immunization (VXU) Interface Count	62
Laboratory Results (ORU) Interface Count	3
Patient Demographics (ADT) Interface Count	11
Radiology Results Interface Count	2
Transcribed Reports Interface Count	1
Grand Count	88

Below is a series of graphs depicting the most up to date information from the VHIE. This information reviews total inbound and outbound transmissions, and access to the VHIE by practice type.

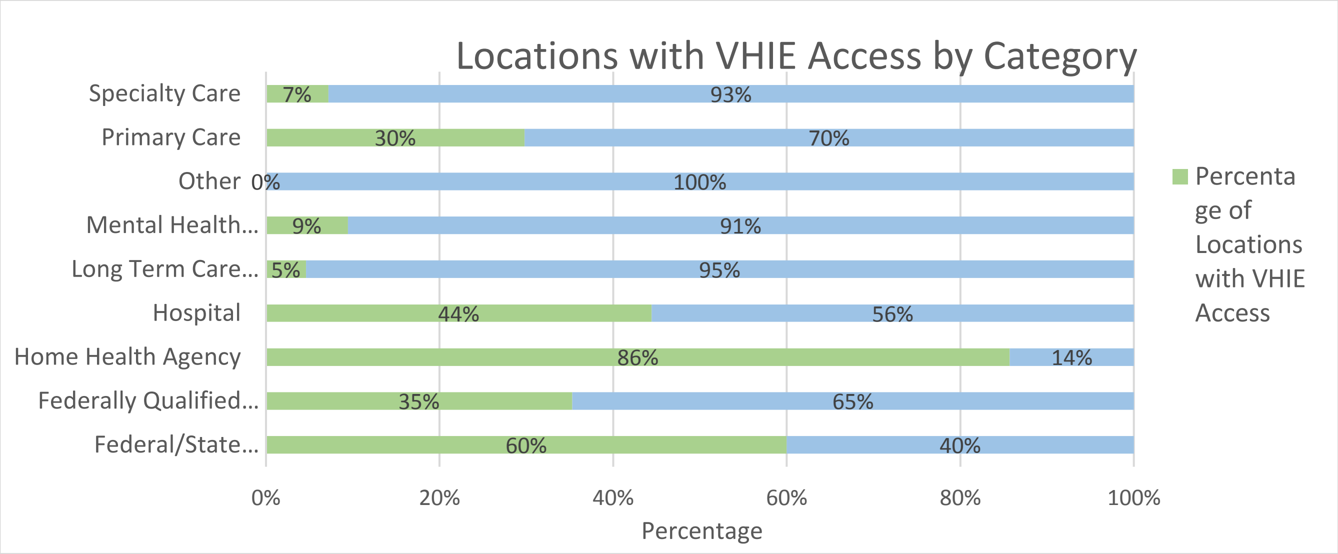
Histogram 6: Numbers of Locations RECEIVING data from VHIE



Histogram 7: Numbers of Locations CONTRIBUTING data to the VHIE



Histogram 8: VHIE Access by Facility Type



A2 The role of Broadband in Vermont's HIT and HIE efforts

Broadband efforts in Vermont are led by the Department of Public Service. 30 V.S.A. § 202e(e) directs the Department to prepare a map and narrative description of each of the following:

1. The areas served and the areas not served by broadband that has a download speed of at least 4 Mbps and an upload speed of at least 1 Mbps, and cost estimates for providing such service to unserved areas;
2. The areas served and the areas not served by broadband that has a download speed of at least 25 Mbps and an upload speed of at least 3 Mbps, or as defined by the FCC in its annual report to Congress required by section 706 of the Telecommunications Act of 1996, whichever is higher, and the cost estimates for providing such service to unserved areas;
3. The areas served and the areas not served by broadband that has a download speed of at least 100 Mbps and is symmetrical, and the cost estimates for providing such service to unserved areas; and
4. If monetarily feasible, the areas served and the areas not served by wireless communications service, and cost estimates for providing such service to unserved areas. (Added 2015, No. 41, § 4.)

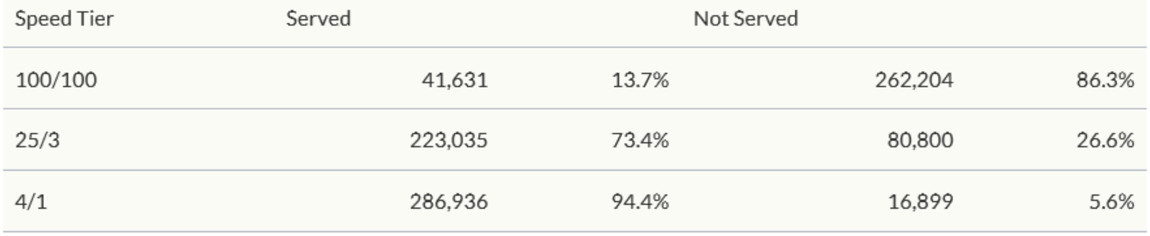
On August 14, 2015 the Department requested that broadband internet providers operating in Vermont submit information about the locations that had access to service at these speeds as of June 30, 2015, pursuant to this statute. For cable television providers, the Department employed the cable route maps submitted with cable provider annual reports, and the analysis includes data from all cable companies including Comcast and Charter. The incumbent telephone companies provided either road or address data, and the analysis includes data from all telephone companies except FairPoint. FairPoint provided address data, but only for locations that have access at 768/200 so this data was not incorporated into the analysis. The analysis does include FairPoint locations with service funded by the Connect America Fund Phase I, and locations supported by VTA-funded grants. It also includes information from competitive providers ECFiber and Burlington Telecom. The only wireless company included in the analysis is Cloud Alliance.

The Department retained Stone Environmental, a firm with expertise in data mapping and analysis, to compile and analyze the information. Based on the information submitted by the service providers, Stone calculated availability for each service provider at each of the 303,835 building locations in the state. The 100/100 map depicts roads that are served by retail fiber to the home networks. Locations within 500’ of these roads are considered served in the accompanying statistics. The 25/3 map (depicted below) includes this information and also depicts roads that are served by cable providers. Locations within 500’ of these roads are considered served in the accompanying statistics. Unlike the other two maps that depict roads served, the 4/1 map depicts locations served, and includes the information from the 25/3 map and also depicts locations served by DSL and fixed wireless providers.

Based on the information identified and summarized in these statistics, the PSD released a set of locations conditionally eligible for the 2016 Connectivity Initiative RFP. Several Broadband Service Providers contested the service status of many locations. The PSD processed these claims and updated the locations eligible for service and the broadband availability statistics.

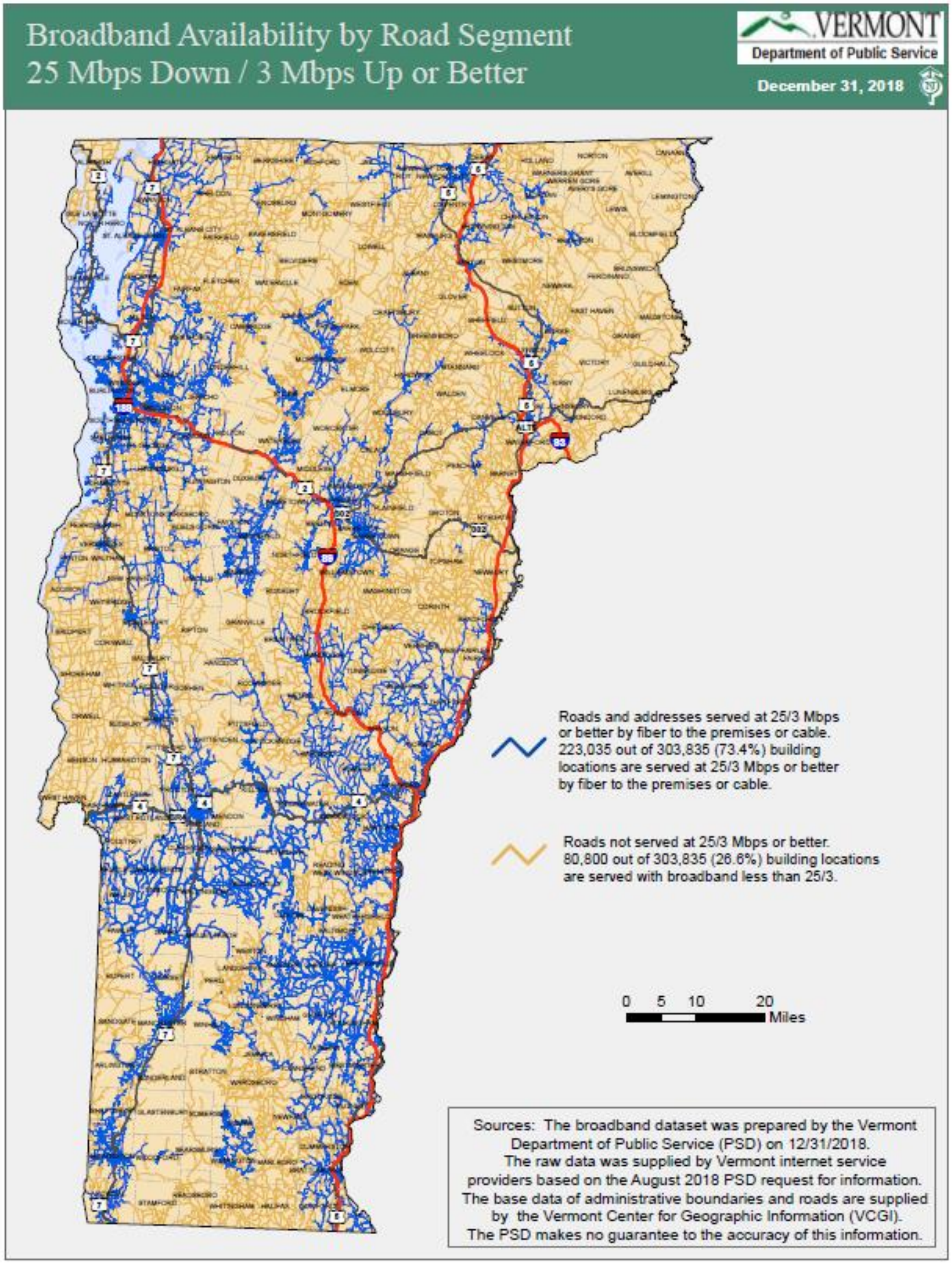
The information in the reports, as of 12/31/2018 is summarized in the table below and is followed by a broadband availability map.

Table 6: Percent of Population served by level of Broadband



Speed Tier	Served		Not Served	
100/100	41,631	13.7%	262,204	86.3%
25/3	223,035	73.4%	80,800	26.6%
4/1	286,936	94.4%	16,899	5.6%

Image 1: Broadband Availability Map



Broadband Availability by Road Segment
25 Mbps Down / 3 Mbps Up or Better

VERMONT
Department of Public Service
December 31, 2018

Roads and addresses served at 25/3 Mbps or better by fiber to the premises or cable. 223,035 out of 303,835 (73.4%) building locations are served at 25/3 Mbps or better by fiber to the premises or cable.

Roads not served at 25/3 Mbps or better. 80,800 out of 303,835 (26.6%) building locations are served with broadband less than 25/3.

Sources: The broadband dataset was prepared by the Vermont Department of Public Service (PSD) on 12/31/2018. The raw data was supplied by Vermont internet service providers based on the August 2018 PSD request for information. The base data of administrative boundaries and roads are supplied by the Vermont Center for Geographic Information (VCGI). The PSD makes no guarantee to the accuracy of this information.

A3 Federally-Qualified Health Center (FQHC) networks

Bi-State Primary Care Association operates a Health Center Controlled Network (HCCN) Program called Vermont Rural Health Alliance (VRHA). In partnership with two other HCCNs, Community Health Access Network (CHAN, lead applicant) and Breakwater Health Network (subrecipient), VRHA (subrecipient) applied for and received funding under FON HRSA-19-011 for a three-year period beginning August 1, 2019.

VRHA is receiving funds from HRSA through a sub-recipient arrangement from Community Health Access Network under FON HRSA-19-011 for a three-year period beginning August 1, 2019.

There are several common areas of health center focus where the Network Partners (CHAN, Breakwater, and VRHA) can collaborate, leading to increased patient access and engagement regarding their own health with less provider burden, plans and processes supporting more secure standards based information sharing with other key providers to optimize care coordination, and enhanced utilization of data to support value-based care activities through quality improvement efforts, operational efficiencies, and reduced cost.

The project activities will include, but are not limited to

1) Support of improved patient engagement: enhanced patient portal tools, trainings, and/or workflows-research, education and leveraging of group purchasing power for implementation of digital tools,
2) Support for exchange of secure information: Security Risk Assessments, Breach Mitigation and Response Plans, documentation, prioritization and/or implementation of national standard-based interfaces, support for integration of health IT data essential for caring for safety-net populations, and
3) Data utilization activities: development, enhancements and/or trainings on standardized data collection to include social risk factors, with targeted interventions, further optimization and/or training on data analytics platforms, development of trainings, peer learnings, and health IT tools that support identification and care for health center identified priority populations such as transient, geriatrics, and patients diagnosed with Substance Use Disorder.

A4 Status of Veterans Administration (VA) clinical facilities

Vermont’s legislatively designated Health Information Exchange (VHIE) is operated, maintained and developed by a 501 (c)3 nonprofit, Vermont Information Technology Leaders (VITL). VITL is connected to the Veterans Administration via Sequoia. Participating Health care organizations in Vermont can query the Veterans Administration via their electronic health record (EHR) for patient health information needed at the point of care. This level of connectivity also allows Veterans Administration locations to query the VHIE for health information at the point of care.

Vermont Information Technology Leaders is not currently connected to state-run psychiatric facilities. However, if they have implemented electronic health records (EHR), there is a good chance that they are capable of connecting to the VHIE. VPCH implemented the Evident Electronic Health Record in 2015. The electronic health record continues to evolve here across the facility in order to best serve our patients and hospital needs. Billing activity is completed via the Truebridge application, a program within the Evident family.

The state has Veterans Administration and other psychiatric clinical facilities that are operating EHRs. VA VHIE is currently exchanging data with the following partners nationwide:

https://www.va.gov/VLER/vler-health-your-area.asp

Furthermore, Bi-directional connections exist between VT VA system and the following organizations:

- University of Vermont Medical Center
- Vermont Information Technology Leaders
- Dartmouth-Hitchcock Medical Center

Table 7: Recent VHIE Statistics

Data exchanged between VA and other facilities in VT									
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
U Vermont Medical Center, VT	43	49	35	79	160	121	139	110	119
Vermont Information Technology Leaders, VT	123	184	301	325	206	111	385	343	304
Dartmouth-Hitchcock, NH, VT	1816	1912	1944	2755	3296	2979	3352	2912	2775
Docs Sent by the VA	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
U Vermont Medical Center, VT	146	123	137	160	176	98	82	131	17
Vermont Information Technology Leaders, VT			7	5	1		2	24	17
Dartmouth-Hitchcock, NH, VT	2059	1630	2076	2168	2428	2456	2638	2586	2377

The VA VHIE Exchange and Direct Messaging teams are continuing to Outreach, Onboard and Sustain new partners in the Vermont region and across the nation, as well as promote the program and system functionality within the VA and with VA partners.

The Vermont Veterans' Home currently uses PointClickCare and is working on a connection to VITL for its EHR data. This has been an ongoing process that has had some challenges from the vendor side. VITL has been very supportive throughout this process, but the organization does not have a direct HIE connection to the VA, although the physicians are VA providers and thus have access to the needed medical record information.

A5 Identification of stakeholders engaged in existing HIT and HIE activities

Vermont has strong stakeholder engagement in our existing HIT/HIE activities. Stakeholders participate in numerous meetings convened by the State where consensus decision-making occurs. The meetings are convened in three major areas: through the Vermont Blueprint for

Health; through the VHCIP, and through ad hoc meetings hosted by DVHA and the HIE/HIT Team. Additionally, the development of the 2019 HIT Roadmap (Lantana) which is incorporated into the HIE Strategic Plan contains extensive stakeholder engagement.

In seeking to engage a broad range of stakeholders in strategic planning and oversight activities, DVHA created the HIE Steering Committee. As part of its scope to continue to grow and evolve the HIE Steering Committee to best meet the State's needs, the Committee acts as the central point of review for new or adjusted priorities with HIE stakeholders as well as supporting the Department of Vermont Health Access (DVHA) and other stakeholders in focusing HIE investments to align with statewide HIE goals.

Further information on stakeholder engagement including documentation of recent activities can be found in the 2019 HIE Strategic Plan Update in Appendix B.

A6 HIT and HIE Relationships with other Entities

VITL is designated in statute and the Health Information Technology Plan to operate the exclusive statewide health information exchange network for this State. As defined in statute, the Green Mountain Care Board (GMCB) has oversight and approval of VITL's core activities and budget. The Secretary of Administration has delegated responsibility to the Department of Vermont Health Access (DVHA, the state Medicaid agency) to enter into contractual agreements with VITL in support of HIE expansion, MU support, and HIT activities.

A7 Governance Structure of Vermont's Existing HIE

Developing a Sustainable Governance Model

Governance establishes the structure for effective leadership including the rules of engagement, decision making rights, and accountability, creating a trusted environment for sharing information. The Office of the National Coordinator defines HIE governance as, “The establishment and oversight of a common set of behaviors, policies, and standards that enable trusted electronic health information exchange among a set of participants.” The 2017 Evaluation of Health Information Technology in Vermont, noted that the State lacked such a governance structure, and in response in 2018 DVHA established a permanent governing body, the HIE Steering Committee, to act as a single point of contact responsible for formally convening key HIE stakeholders to develop and oversee execution of an annual statewide HIE strategic plan.

In addition to the Steering Committee, which establishes the strategic direction and monitors progress, Vermont's HIE Governance Ecosystem involves multiple checks and balances and oversight entities including DVHA (contract manager), the VITL Board (oversight of VHIE operations), and the GMCB approval of VITL budget and the statewide HIE Strategic Plan.

In brief, in 2019 the HIE Steering Committee developed a Steering Committee Charter which has been approved, oversaw the opt-out consent policy implementation planning, oversaw the development of an HIE Technical Roadmap, oversaw an update to connectivity criteria for the VHIE, and made significant progress with data governance. Several other topics were considered by the Committee as well and a full accounting is covered in the 2018-2019 Tactical Plan update section of this Plan.

In 2020, the HIE Steering Committee will continue to assess the roles of stakeholders in HIE governance. The HIE Strategic Plan, updated annually on November 1, will be a mechanism for recommending refinements to the governance model to best support statewide HIE goals.

HIE Steering Committee Model and Structure

The steering committee model is designed to identify where decision makers go for support, who is responsible for oversight, who provides HIE services, and how service providers are held accountable. It also calls for the steering committee to:

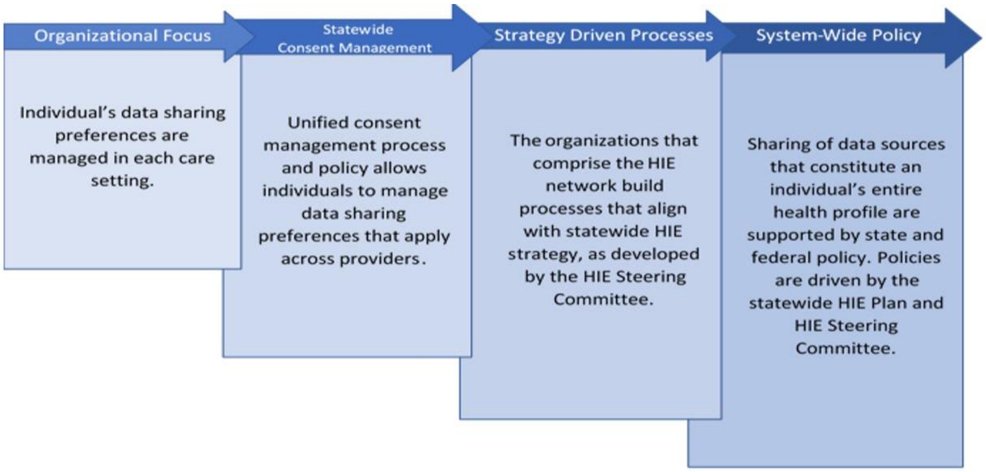
- Define an HIE investment portfolio and monitor statewide investments in service of the Vermont's HIE goals;
- Assess the viability of investments, to identify the needed level of investments, and to consider the appropriate balance of public and private funds; and,
- Advance HIE use cases, ensure accountability of all parties involved in furthering the State's HIE goals, and engage a broad range of stakeholders in the strategic planning and oversight activities.

To that end, in the past year the Committee developed and approved a Steering Committee Charter to clarify its vision, guiding principles, membership, responsibilities, and decision-making processes; assessed current and future governance needs to ensure success in implementing the HIE Strategic Plan; and, based on those needs, determined that convening subcommittees or workgroups will accomplish broader, more tangible workstreams.

HIE Ecosystem: Policy and Process

The 2018-2019 Plan stated that Vermont needs data exchange policies and processes that recognize individualized needs while supporting holistic care and system measurement and improvement. Figure 4 below sets forth an evolutionary path for Vermont's HIE Policy.

Figure 4: HIE Policy and Process Maturity Model



Vermont's Legislature has consistently acted to ensure that HIE policies bolster the health care system. Most recently, the Legislature passed Act 53 of 2019 which changes the policy regulating consent to share information in the VHIE.

HIE Ecosystem: Financing

Predicated on the idea that HIE infrastructure is necessary to support health care delivery and operations, Vermont has made significant financial investments in the HIE ecosystem over the past decade, with substantial support from the federal government. Management and continual renewal of the HIE infrastructure requires long-term, dedicated financing for services that support system users and a clear value proposition for those users to generate continued investment.

Since 2009, the State has expended over $20.6 million from the HIT Fund contributing to a total of $115,036,560 toward financing HIT/HIE activities. As demonstrated by leading HIE systems around the nation, some level of public investment is needed. However, government does not have the ability to bear the entire financial burden of HIE in the long-term, necessitating an equitable public-private funding model that allows public funds to target broad-reaching foundational components of HIE and consumer demand to drive development of fee-based services and tools.

A sustainable financial model for HIE must draw support from the stakeholders who benefit from it as well as from the State, which recognizes the critical role it plays. The HIE model on which this plan is based initiates an evolution from the current state of close to full reliance on public funds, to a sustainable public/private model.

More information on the governance of the VHIE can be found in the Vermont 2019 HIE Strategic Plan Update in Appendix B.

A8 Role of MMIS in Our Current HIT and HIE Environment

Vermont's Medicaid Management Information System (MMIS) Program is focused on enhancing business processes and leveraging new and innovative technologies and processes on an on-going basis to help the Agency of Human Services (AHS) achieve its goal of administering the Medicaid Program and serving Vermonters in the most time efficient, secure and integrated manner. The MMIS Program is one of several Programs in the AHS Portfolio focused on upgrading the State's technological infrastructure for Medicaid and other benefit programs. The MMIS program consists of projects that address federal and state mandates, Agency goals and priorities, and will modernize Vermont's Medicaid Systems which deliver healthcare provider solutions and payment capabilities along with the associated quality and monitoring services.

AHS has been engaged in a modular approach to transform our legacy systems into an environment of coordinated and integrated service delivery. By connecting information and promoting collaboration in a service-oriented-architectural (SOA) environment, Vermont will yield better and more cost-effective outcomes for its citizens, the state, and federal Partners. One area of focus over the past year has been examination of utilization of the VHIE for transmitting claims data in addition to clinical data. A Payer Initiated Eligibility (PIE) project has been initiated to get data from other payers in the state. PIE allows for the sharing of eligibility and coverage data resulting in the ability for the State of Vermont to identify and collect payments from liable third parties. Objectives of this project are to implement the recommended transmission formats for sharing eligibility and benefit information between the state, or its agent, and health plans. Use of these formats will ensure standardization among plans and minimize administrative cost and burden on both States and other health care insurers.

DVHA anticipates having specifications for its new Claims Module that will include the capacity to adjudicate claims electronically in close to real time for many encounters and procedures. In addition, the State is continuing to work toward achieving a new Integrated Eligibility and Enrollment system for Medicaid and other public benefits programs across the Agency of Human Services.

Because the EHR incentive payment program began under the MMIS legacy system, we must transition to the new modular environment when implemented. We also anticipate a more significant MMIS/HIE connection with implementation of the new MMIS. Integration efforts here could make Medicaid claims and encounters available to the HIE as well as making non-Medicaid providers available to the Medicaid program. This would support payment reform as well and introduces the possibility of utilizing the HIE as a transport mechanism for financial, as well as clinical, transactions, for both Medicaid and commercial claims processing, with Medicaid leading the development. The New England Health Information Network (NEHIN) and the Utah Health Information Network (UHIN) operate under such a model.

Refer to the HIE Strategic Plan Update for expanded discussion of the Medicaid enterprise regarding health information exchange and interoperability.

Vermont HIE/HIT activities align with MITA maturity and the conditions and standards. Table 8, below, references the conditions and standards and describes the Vermont approach to alignment.

Table 8: Conditions and Standards with Vermont Approach
(starts next page)

#	Conditions and Standards	Vermont Approach
1	Modularity Condition. Use a modular, flexible approach to systems development, including the use of open interfaces and exposed application programming interfaces; the separation of business rules from core programming; and the availability of business rules in both human and machine-readable formats.	Modularity is the key design principle that drives Vermont's architecture. • Business processes, using Federal standards, including Federal Enterprise Architecture (FEA), MITA, and National Human Services Interoperability Architecture (NHSIA), are designed with common steps and interfaces and then specialized for individual programs so that as business conditions evolve the processes can be prioritized for replacement and improvement modularly. • Technical systems and applications are designed with a Service Oriented Architecture (SOA) approach. • Applications are designed to expose documented Application Programming Interfaces (APIs) that can be consumed by other parts of the system. • Model, View, and Controller are discrete elements of design, keeping data systems (database), display (web or desktop applications), and control logic (rules engine) separated. • The principles of modularity are explicitly required by non-functional requirements (NFRs) as part of all contracted development and integration work. • Modular principles are enforced in design work on both State and vendor teams as part of acceptance process. • Vermont employs an iterative System Development Life Cycle (SDLC) process, leveraging Agile and Waterfall project management methodologies under the Enterprise Project Management Office processes, that modularly deploys functionality, continuously incorporates feedback and appreciates opportunities for improvement, and thereby, reduces risk, by being adaptive to best solutions to meet business problems at any particular moment in time. • All system interfaces will be open and documented.

2	MITA Condition. Align to and advance increasingly in MITA maturity for business, architecture, and data.	MITA is a central design standard that drives state work and is a written requirement incorporated into contracts with implementation partners. • Business Process modeling follows the MITA functional taxonomy. • Requirements are organized and related by MITA processes. • The State Self-Assessment (SSA) is an ongoing tool for the state to understand current state and prioritize improvement.

#	Conditions and Standards	Vermont Approach
3	Industry Standards Condition. Ensure alignment with, and incorporation of, industry standards: the Health Insurance Portability and Accountability Act of 1996 security, privacy and transaction standards; accessibility standards established under section 508 of the Rehabilitation Act, or standards that provide greater accessibility for individuals with disabilities, and compliance with Federal civil rights laws; standards adopted by the Secretary under section 1104 of the Affordable Care Act; and standards and protocols adopted by the Secretary under section 15691 of the Affordable Care Act.	All contracted work, as documented by a contract's statement of work (SOW) and specified data privacy and security requirements of all agreements, explicitly requires compliance to a set of federal and industry open standards including: • ADA and Section 508 Compliance • Health Insurance Portability and Accountability Act (HIPAA) • Health Information Technology for Economic and Clinical Health Act of 1996 • Privacy Act of 1974 • Patient Protection and Affordable Care Act (ACA) of 2010, Section 1561 • Safeguarding and Protecting Tax Returns and Return Information (26 U.S, C. 6130 and related provisions) • National Institution of Standards and Technology (NIST) Special Publications. NIST's Special Publications are available at: http://csrc.nist.gov/publications/PubsSPs.html • National Security Agency (NSA) Security Recommendation Guide • Health Level 7 (HL7)

#	Conditions and Standards	Vermont Approach
4	Leverage Condition. Promote sharing, leverage, and reuse of Medicaid technologies and systems within and among States.	Enabled by the Modularity Standard, reuse is a key priority of the Medicaid Enterprise, whereby the same processes and technologies can be leveraged across health and human services domains when possible. By maintaining a broad design perspective, each implementation is conceived to be extensible and scalable, to bring on additional service programs as funding and development opportunities become available. Where possible the modules that are being developed for the project will leverage existing State and Agency infrastructure and systems. For instance, the Business Rules Management project begins with health-care focused programs, but the design and implementation of the rules modeling and automation tools are being made in context of the complete catalog of agency policy and programs. An Enterprise Master Client Index is being developed to ensure that client management services are deployed throughout the Medicaid and human services enterprise. Every attempt will be made to adhere to using these already existing systems with each new module developed. Where practical, it is intended that all new modules will be developed in a way that their software will be released under an open source license and could be reused by any other state or human services organization.

#	Conditions and Standards	Vermont Approach
5	Business Results Condition. Support accurate and timely processing of claims (including claims of eligibility), adjudications, and effective communications with providers, beneficiaries, and the public.	By thoroughly understanding policy and other program constraints, desired outcomes, and business functions documented as business processes, Vermont has positioned itself to understand if its business is achieving its desired results. A good example of this dynamic is the integration of the eligibility services with real time determination, verification, and enrollment with robust reporting capability. Every effort on the roadmap has specific associated business metrics. These metrics focus on employee efficiency, reduction of error rate, enhanced client experience, and additional system automation where possible. There are multiple milestones dedicated to increasing the amount of system automation. In addition, the roadmap has improvements for applicants using self-service methods for application and renewal.
6	Reporting Condition. Produce transaction data, reports, and performance information that would contribute to program evaluation, continuous improvement in business operations, and transparency and accountability.	In order for the agency to understand if it is making progress towards its goals, compliant to the constraints governing its operations, or performing adequately to other expectations and able to recognize opportunities for improvement, robust data and reporting systems must be available to facilitate analytics. Reporting requirements, both prebuilt and ad hoc, are foundational to our project requirements, and Vermont's architecture is driven by principles of transparency and accountability that can only be realized through mature reporting capabilities.
7	Interoperability Condition. Ensure seamless coordination and integration with the Exchange (whether run by the state or federal government), and allow interoperability with health information exchanges, public health agencies, human services programs, and community organizations providing outreach and enrollment assistance services.	The culmination of all the design standards and principles that drive the State's architecture is towards a capability of interoperability. Business and technical systems must operate seamlessly together, with high efficiency and accuracy, to enable a client-centric approach that yields a good understanding of client need and circumstances and high-capability to understand how to best meet that need. Given the mixed array of legacy and modern systems across public and private domains, it is challenging to link and exchange information. This dynamic has led to prioritization of master-data tools and indexes, identity and access, and consent management.

Vermont continues to be nationally recognized for its expansive vision for the delivery and management for Health and Human Services. The Medicaid Enterprise approach utilizes an iterative project management structure to prioritize component implementation, consistent with federal mandates, state guidelines, funding deadlines, financial impacts and State resources. Using this iterative approach supports the State in succeeding with incremental, smaller scoped efforts that will lead to ultimate achievement of a MITA compliant Medicaid Eligibility and Enrollment system and the implementation of Modular MMIS Solutions.

At the heart of the current initiatives is a more cloud-based Enterprise Platform Integration Services (EPIS) orientation involving a shared suite of Modern Components and cloud-based technology tools positioned to satisfy a significant portion of AHS' software needs including transactions, analysis, and infrastructure. Today these needs are supported by over 200 different, detached, disconnected software packages. Leveraging one system, over many, represents material savings for the State, and allows for rapid response to ever-changing regulatory, policy, and programmatic demands.

The Integrated Eligibility and Enrollment Program will leverage the current work and integration platform being developed to automate and standardize the health and human services case management and program administration systems (screening, application, eligibility determination and enrollment). This will integrate the Agency's remaining health programs and economic services into a more interoperable system.

The Medicaid Management Information System (MMIS) currently is a claims-oriented processing and provider payment system that allows Vermont Medicaid to maintain compliance with Federal and State regulations for administering the program. Vermont is also actively working to modernize its MMIS Modular structure and associated systems and applications.

There are two key projects under the MMIS umbrella that are newly Certified Modules in operation.

1. The Pharmacy Benefit Management (PBM) program represents clinical, operational, and business services that allow Vermont to meet the challenge of increasing pharmaceutical costs for consumers with a real solution. Vermont's PBM program is aimed at both reducing and controlling costs of drugs and providing the State with high quality, local pharmaceutical expertise, as well as capturing numerous rebates that are available. For example, in its first year of operation the PBM generated $15.3 million in savings thanks to improved operational efficiency.

2. Care Management is a set of activities intended to improve clinical patient care and reduce the need for services by helping patients and caregivers to more effectively manage health conditions and issues impacting health and well-being. The Enterprise Care Management System is a vision of elaborating on this certified Care Module for not only AHS care management staff but is also in alignment with payment reform initiatives

engaging ACO's, other payers, and hundreds of Vermont provider organizations engaged in care services. The Enterprise Care Management system offers some of the highest levels of sophistication in forecasting and analytics, and vastly improves Vermont's ability to utilize data to improve population-wide outcomes. The system will unite and integrate the Agency's related care management programs in a way that was never possible before.

In addition, we have several more of these modular system projects in process nearing implementation and certification, as discussed in more detail in Section B2.

A9 Current Activities Underway to Plan and Facilitate HIE and EHR Adoption

Vermont's legislatively designated Health Information Exchange (VHIE) is operated, maintained and developed by a 501 (c)3 nonprofit, Vermont Information Technology Leaders (VITL). VITL assists the PIP program with outreach to health care provider organizations, as practices seek assistance with interpreting the criteria, conducting security risk assessments, and implementing changes.

VITL's team has extensive backgrounds in clinical care as well as information technology. They are prepared to assess readiness for Meaningful Use attestation and assist in making appropriate recommendations for office/clinical workflow changes, targeted data collection and reporting. Tools are available to help track and analyze Meaningful Use progress.

VITL is familiar with the registration requirements of both Medicaid and Medicare and offers assistance to help navigate the attestation websites when an organization is ready to have their Eligible Professionals attest to Meaningful Use, i.e., submitting collected data and applying for an incentive payment.

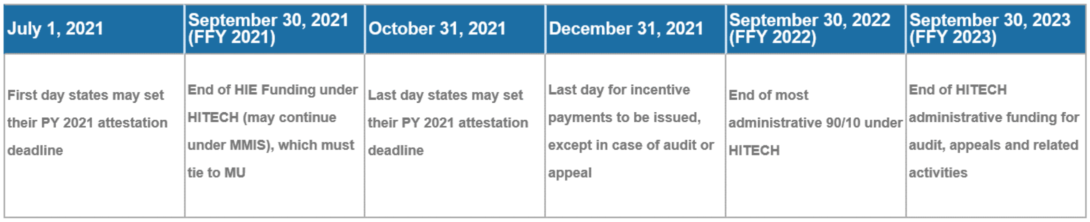
A10 Relationship of the State of Vermont's Medicaid Agency to the State HIT Coordinator

The State of Vermont's HIT Coordinator is a member of the HIT/HIE team in the Department of Vermont Health Access, (DVHA) the State of Vermont's Medicaid Agency. The State HIT Coordinator also has primary responsibility for developing the SMHP, HITECH IAPD's, the Vermont HIT plan, manages the PIP program, and manages the HITECH contract and grant agreements for year-to-year DDI and MandO activities of the VHIE and other partner organizations and departments. The State HIT Coordinator's reporting structure insures full awareness and attention to expansion and integration needs across the SMA's span of HIT/HIE related interests. The State HIT Coordinator also serves as the operational support to the HIE Steering Committee as a non-voting member.

A11 SMA Activities Underway that will Influence the Direction of the Promoting Interoperability Program over the next Five Years.

The PIP Team has developed a timeline of the program milestones for the final three years of incentive payment activities that is aligned with CMS guidance on incentive funding deadlines.

Table 9: PIP Closeout Schedule



July 1, 2021	September 30, 2021 (FFY 2021)	October 31, 2021	December 31, 2021	September 30, 2022 (FFY 2022)	September 30, 2023 (FFY 2023)
First day states may set their PY 2021 attestation deadline	End of HIE Funding under HITECH (may continue under MMIS), which must tie to MU	Last day states may set their PY 2021 attestation deadline	Last day for incentive payments to be issued, except in case of audit or appeal	End of most administrative 90/10 under HITECH	End of HITECH administrative funding for audit, appeals and related activities

Table 10: Activity Schedule

VT Medicaid PIP Activity	Date
PY2019 Applications Accepted	01/02/2020 - 02/29/2020
PY2017 Audits Concluded	4/30/2020
PY2019 Payments Concluded	5/31/2020
PY2018 Audits Concluded	12/31/2020
PY2020 Applications Accepted	08/16/2020 - 01/31/2021
PY2020 Payments Concluded	2/28/2021
PY2021 Applications Accepted	05/01/2021 - 07/31/2021
PY2019 Audits Concluded	9/30/2021
PY2021 Payments Concluded	12/31/2021
PY2020 Audits Concluded	5/31/2022
PY2022 Audits Concluded	4/30/2023

A12 Potential Impact of State Laws or Regulations on the Implementation of the Promoting Interoperability Program

Act 53 of 2019, An act relating to informed health care financial decision making and the consent policy for the Vermont Health Information Exchange, adopts an opt-out consent policy for the sharing of patient health information through the Vermont Health Information Exchange (VHIE) and specifies that the implementation strategy shall include substantial opportunities for public input. Act 53 further specifies several requirements for associated patient education mechanisms and processes. Information related to Act 53 is taken from a current (second) progress update as submitted in accordance with the requirements of Act 53 to provide updates on the stakeholder engagement process and the consent policy implementation strategy to the House Committee on Health Care, the Senate Committee on Health and Welfare, the Health Reform Oversight Committee, and the Green Mountain Care Board (GMCB).

Act 53 was signed by Governor Scott on June 10, 2019. The Act includes two major areas of implementation that are the responsibility of the Department of Vermont Health Access (DVHA) – an updated statewide Health Information Technology Plan that provides for the new consent policy and development of an implementation strategy for the new consent policy (the change to consent policy is effective March 1, 2020).

DVHA, in consultation with stakeholders, has developed an implementation plan for the new opt-out consent policy based on meaningful consent. DVHA has been facilitating a consensus-based, multi-party process to engage diverse audiences in plan development for implementing and managing consent. The implementation team considers the workstreams to be on schedule to ensure the activation of the new consent policy on March 1, 2020.

Consent Implementation Project Work Streams

The consent implementation project breaks down into three major work streams: stakeholder engagement for implementation strategy development, mechanisms to implement and manage consent for the VHIE, and evaluation of the success of stakeholder engagement objectives. In recent months DVHA has made significant progress with the implementation planning and activities for the new consent policy. Workstream highlights include:

- Stakeholder Engagement: Additional interviews and focus groups have been conducted and a good understanding of the messaging requirements has emerged. Messages and delivery mechanisms are now being developed to ensure that common message elements can be delivered to a variety of groups and Vermonters, using an appropriate mix of communications channels. DVHA is also asking the advocacy organizations to help deliver messages about consent once the information campaign is ready. The Stakeholder Engagement workstream section of the progress report expands on this work and how it is being structured.
- Mechanisms to Implement and Manage Consent for the VHIE: In addition to the policy and procedure updates that are being planned, Vermont Information Technology Leaders is significantly expanding the mechanisms through which Vermonters can act on a decision to opt-out if that is their choice, including the use of fax, telephone, web form and US Mail. An important consideration that is being addressed will ensure that people who have opted out under the existing policy will remain opted out when the new policy goes into effect on March 1, 2020. The Mechanisms to Implement and Manage Consent workstream section of this report provides an update on the progress attained in this area.
- Evaluation: An evaluation plan has been drafted and reviewed with the HIE Steering Committee. The draft question anchoring this evaluation is: “Can Vermonters meaningfully consent to whether or not their health care providers and organizations are able to view their health information available through the Vermont Health Information Exchange?” Additional questions to evaluate the anchor question have been drafted and

data sources, including the Patient Experience Survey, are identified. Members for the evaluation committee are currently being recruited.

Act 53 (opt-out) takes effect March 1, 2020. The consent policy currently in place is the Green Mountain Care Board (GMCB) policy that describes the outdated Opt-In procedure. VITL and DVHA leadership worked with GMCB to determine how the state would implement the new law. The GMCB approved the HIE plan on 11/20/2019 pending an addendum explaining standard operating procedures for consent collection. The initial plan is to use the current consent policy (Appendix C) as a baseline.

More information can be found at the following link: https://healthdata.vermont.gov/Vermont-Patient-Consent

A13 HIT activities that cross state borders

Section A6 above (HIT and HIE Relationships with Other Entities) included a discussion of interstate exchange of health information as it impacts Vermont, as well as a discussion of Vermont's involvement with NESCSO. Vermont's legislatively designated Health Information Exchange (VHIE) is operated, maintained and developed by a 501 (c)3 nonprofit, Vermont Information Technology Leaders (VITL). VITL's infrastructure vendor is connected to the eHealth Exchange network. VITL is one of the few Health Information Exchanges in the country that has the ability to exchange health information with federal agencies such as the Veterans Administration.

Dartmouth Hitchcock Medical Center and affiliates located in New Hampshire contributes health information to the VHIE in the form of patient demographics, laboratory results and pathology reports.

VITL is investigating opportunities to work with HIXNY a New York HIE, to establish the ability to exchange information while maintaining compliance with disparate patient consent policies.

Patient Centered Data Home is an initiative to improve regional and nationwide collaboration within health information exchanges. Participation allows for the independent community HIEs in the Strategic Health Information Exchange Collaborative (SHIEC) to maintain their autonomy and governance while gaining economies of scale. The key issues of disparate data use agreements, policies and patient privacy and consent models are overcome in this framework of patient data exchange. Patients are assigned a "home HIE" based on zip codes associated with an HIE. This exchange depends on triggering episode alerts that notify the home HIE of an event that occurs outside the patient's residing region. This trigger alert enables the non-home HIE and the home HIE to share relevant patient information to coordinate better patient care. VITL is planning to explore this opportunity in 2020.

A14 Current Interoperability Status of the State Immunization (IZ) Registry and Public Health Surveillance Reporting Database

Vermont's Department of Health (VDH) manages the State Immunization Registry, Public Health Surveillance reporting databases, and Cancer Registry. Additionally, Vermont's Blueprint for Health has a specialized registry that supports the patient-centered medical home program, although, it will be discontinued starting January 2020. VITL intends on standing up a similar registry until the implementation of a bi-directional state registry expected to be implemented in January 2021.

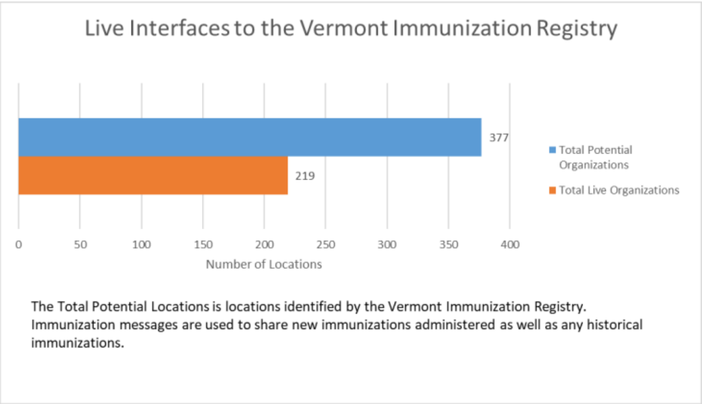
Disease registries, like the Vermont Cancer Registry, provide insights about the incidence and prevalence of a specific disease and help examine trends over time. Health Event Registries, like the Vermont Immunization Registry, combine health event information from different sources into a single record to provide a consolidated record–even when individuals have received services from different providers.

Vermont uses information from registries to improve health services, inform health outreach programs, allocate health resources and engage partners in the public health community toward the larger goal of improving the health of all Vermonters.

Strict privacy requirements including the Health Information Portability and Accountability Act (HIPAA) and Vermont state law govern access to health registries and use of registry data. Health Department Registries are operated or hosted on secure hardware and software in accordance with industry standards for protected health information, including standards for security/encryption, uptime and disaster recovery.

The **Vermont Immunization Registry (IMR)** is a secure health information system that contains immunization records for persons living in Vermont. Medical providers use the IMR to find patient histories for new patients, and print IMR reports for parents who need these records for school and childcare entry. **Histogram 9**, to the right, shows **current and potential connections to the VIMR**. School nurses use the IMR to help find immunization records for immunization coverage reporting.

Histogram 9: Current and potential connections to the VIMR



The Total Potential Locations is locations identified by the Vermont Immunization Registry. Immunization messages are used to share new immunizations administered as well as any historical immunizations.

Because the IMR contains records for all persons born in (or seeking medical care in) Vermont, medical providers are able to use it to explore immunization coverage in their own practice and identify persons who are not up to date for immunizations. It is a valuable tool for assessing, for instance, pockets of need in the case of a disease outbreak, and it is a valuable public health tool for improving vaccination rates and reducing vaccine-preventable disease.

Birth defects are common, costly and critical conditions that affect 1 in every 33 babies born in the United States each year. The Birth Information Network (BIN) program monitors trends, promotes prevention, and links families to resources.

Cancer is a chronic disease affecting thousands of Vermonters. **Cancer Registry** data are used to monitor efforts to reduce the burden of cancers among all Vermonters. We collect information about all cancers, except certain skin and non-invasive cervical cancers, and all benign brain-related tumors that are diagnosed in Vermont. It is part of a statewide effort to reduce the impact of cancer on individuals, families and communities.

State law requires physicians and hospitals to report information about cancers and benign brain-related tumors to the Vermont Department of Health. Through interstate agreements, information about Vermonters diagnosed or treated in other states is also included in Vermont's registry. The registry does not collect information directly from patients.

In 2006, the Vermont Legislature authorized the Vermont Department of Health to establish and operate a Prescription Drug Monitoring Program (PDMP). Vermont's PDMP, known as the **Vermont Prescription Monitoring System (VPMS),** became operational in January of 2009. The VPMS is a statewide electronic database of controlled substance prescriptions dispensed from Vermont-licensed pharmacies.

Vermont-licensed pharmacies are legally obligated to upload data on all dispensed Schedule II, III, and IV controlled substances to VPMS on a weekly basis. Controlled substance data collected from Vermont-licensed pharmacies includes information on the following for each prescription: the prescribed drug, the recipient of the prescribed drug, the health care provider who wrote the prescription, and pharmacy that dispensed the prescription.

VPMS data is used as a clinical tool that exists to promote the appropriate use of controlled substances for legitimate medical purposes, while deterring their misuse, abuse, and diversion.

VPMS data also serves as a health surveillance tool that is used to monitor statewide trends in the prescribing, dispensing, and use of controlled substances.

Current methods for reporting information include file submission and manual, often redundant, data entry into online portals. As part of the requirements for meeting Meaningful Use (MU) in the Medicare and Medicaid Promoting Interoperability (PI) programs, Eligible Professionals (EPs), Eligible Hospitals (EHs), and Critical Access Hospitals (CAHs) must electronically submit certain forms of public health data to various registries within Vermont's VDH. An expansion of reporting capabilities to support electronic submission, meaning, submission directly from electronic clinical/administrative systems, using national standards implemented by EHR and Public Health Registry vendors can increase the prevalence of reporting while integrating it into existing workflow.

A15 Other HIT-related grants

Vermont passes money to organizations whose missions support health information technology improvements through a portion of its Medical Assistance Program grant.

Bi-State Primary Care Association

Grant money is used to promote effective and affordable primary care and preventive services, with a special emphasis on the underserved population. Assistance is provided to 11 Vermont federally qualified health centers in areas of data collection and analysis, clinical quality improvements, and subject matter expertise. In calendar year 2018, approximately 150,000 patients were served, 30% of whom were Medicaid beneficiaries. In calendar year 2019, approximately 176,000 patients were served, 32.75% of whom were Medicaid beneficiaries.

CY2019: Funded 17.31% from federal money and $82.69% from the HIT fund.

CY2018: Funded 32.69% from Global Commitment, 17.31 % from federal money, and 50% from the HIT fund.

Cathedral Square Corporation

Grant money is also used to administer Support and Services at Home (SASH), connecting local health and long-term care systems for Medicare beneficiaries in subsidized housing and other community residences. This promotes ongoing use of HIT connections among all statewide SASH sites to ensure consistent and accurate data integrity, and that information gathered at each site is properly integrated into participant health records through the clinical care-management record systems.

SFY 2019: (7/1/18-12/31/18) Funded 32.69% from Global Commitment, 17.31% from federal money, and 50% from the HIT fund; (1/1/19-present) Funded 17.31% from federal money and $82.69% from the HIT fund.

SFY 2018: Funded 32.69% from Global Commitment, 17.31% from federal money, and 50% from the HIT fund.

SECTION B: THE STATE'S "TO-BE" HIT LANDSCAPE

II. The State's "To-Be" HIT Landscape:

In this section of the SMHP we describe Vermont's To-Be Landscape as it relates to Health Care Reform (HCR), particularly Health Information Technology (HIT) and the statewide Health Information Exchange (HIE). While much of the information summarizes the HIE strategic planning efforts in Vermont since the last SMHP, a more comprehensive review of the HITECH Advanced Planning Document.

Topics included in this section are:

1. Specific HIT/HIE Goals for the next five years, including Health Information Exchange and Medicaid;
2. IT architecture, including MMIS, for the next five years;
3. Providers interface with SMA IT systems related to the Promoting Interoperability Program;
4. Governance structure for the next 5 years for HIT and HIE goals and objectives;
5. Steps during the next 12 months to encourage the adoption of EHRs;
6. Leveraging FQHCs with HRSA HIT/EHR funding to leverage adoption;
7. Help to providers to adopt and MU EHR technology;
8. Address special populations with the Promoting Interoperability Program;
9. Leverage other grants to implement the Promoting Interoperability Program; and
10. Anticipated new legislation to implement the Promoting Interoperability Program.

B1 Specific HIT and HIE Goals and Objectives Next Five Years

Please refer to the 2016 SMHP for a discussion of HIT and HIE goals and objectives under consideration at that time. That discussion describes a 2015 update to the HIT plan which resulted in a number of identified initiatives. However, Vermont determined that additional planning work was required including an evaluation of the Vermont Health Information Exchange (VHIE) operated by the Vermont Information Technology Leaders, Inc. (VITL), the state's designated entity for operating the VHIE. That evaluation, the Evaluation of Health Information Technology Activities (2017 Evaluation) included recommended action steps to remediate issues ranging from governance to technology. Those recommendations led to the formation of an HIE Steering Committee which identified a body of use cases related to HIT/HIE. Ultimately an HIE Strategic Plan was published in November of 2018 and approved by the Green Mountain Care Board. Just recently, in November of 2019, an update to the Strategic Plan has been published and includes an extensive HIT Roadmap for Vermont as a link in the Appendix F.

The updated plan is built upon a vision for HIE that puts people, not technology, at the center of the work. The 2017-2018 HIE Steering Committee was newly formed and produced the first approved plan in over a decade, for 2019. Now the 2018-2019 Committee has executed on the Plan and has evaluated and updated it resulting in what is presented in the update. The Plan establishes a framework to achieve that vision and draws upon key work from 2018-2019: to build on the foundational goals and establish clear objectives that guide technical investment in HIE to create better health outcomes for Vermonters.

The HIE needs can be summarized in three goals:

1. Create One Health Record for Every Person - Support optimal care delivery and coordination by ensuring access to complete and accurate health records.
2. Improve Health Care Operations - Enrich health care operations through data collection and analysis to support quality improvement and reporting.
3. Use Data to Enable Investment and Policy Decisions - Bolster the health system’s ability to learn and improve by using accurate, comprehensive data to guide investment of time, labor and capital, and inform policy making and program development.

To support the three goals above, the HIE Steering Committee identified key objectives for 2019 based on the 2018-2019 Tactical Plan and made significant progress over the course of the year to advance these objectives. Key areas of focus included:

- HIE Collaborative Services
- HIE Governance Structure, including Data Governance
- Opt-out Consent Policy Implementation
- Health Information Exchange Technical Roadmap

These workstreams are tangible efforts that together, seek to advance the ecosystem of HIE in Vermont. While these activities are done in parallel, they cannot occur in silos. Unifying these efforts under the guidance of the HIE Steering Committee and in the context of the updated Strategic Plan brings together the components of the HIE Ecosystem – Governance, Technology, Policy/Process and Financing – to actualize the strategy behind the goals. The HIE Strategic Plan update includes a two-page progress summary in Appendix F of the Strategic Plan, along with a complete update on the Consent Policy Implementation (Appendix C), the Technical Road Map, and a status update to the 2018-2019 Tactical Plan (Appendix E). The 2018-2019 Tactical Plan represents the work of, and the progress made by, the 2019 Steering Committee. The HIE Strategic Plan Update in Appendix B includes tables showing that all of the tactical plan activities have been initiated and most have been completed, while some of the items are ongoing and not intended to end. The 2019 Steering Committee was fully engaged in this work, attentive in their discussions and deliberations, and productive in the level of progress made.

With these Goals as a starting point, the 2019 Technical Roadmap developed out of two rounds of stakeholder engagement which informed and then refined the focus on six Key Objectives:

1. Delivering Information at the Point of Care
2. Augmenting Use of Public Health Registries
3. Managing Sensitive Health Information
4. Leveraging Social Determinants of Health Information
5. Automating Quality Reporting
6. Providing Consumer Access

Each of these is supported by planned activities spread across the Vermont Health Information Exchange (VHIE) architecture, as depicted in Figure 5 on page 61.

Different Key Objectives require different combinations of elements or services in the architecture stack and in the Roadmap document each Key Objective is cross referenced to the applicable architecture stack elements.

B2 IT Architecture, Including MMIS, for the Next Five Years

Health Services Enterprise Platform and the Health Services Enterprise

Vermont's multi-year, multi-phased portfolio of programs' goals are, in furtherance of the mission of the Agency of Human Services (AHS), to reshape and enhance internal business processes, improve public/private sector partnerships, optimize utilization of information, and modernize the IT environment within which AHS delivers benefits, care and services to beneficiaries in the State of Vermont. Vermont continues to realize an "Agency of One" vision through a focus on integrating services, improving systems and the sharing of applicable data in a timely and effective manner (while comporting with relevant privacy requirements) to ensure:

- Vermonters receive the services critical to their success and can identify additional supports that will help them prosper;
- Vermonters will benefit from cross-departmental referrals and awareness – that there exists
- "no wrong door" for Vermonters seeking access to care and benefits;
- Policy and Public Health efforts have necessary data for program analysis and program service coordination.
- See section A8 of this SMHP for a discussion of current progress. In addition, current system projects or initiatives in various phases of implementation include:

1. Medicaid Provider Management

The Provider Management Module (PMM) is a project under the Medicaid Management Information System (MMIS) Program and is part of the overall MMIS Road Map as presented to the Centers for Medicare and Medicaid Services (CMS). The PMM project is also a high priority legislative initiative aimed to reduce the timeframe to enroll Medicaid Providers. The new bill that has been introduced is S.282,

https://legislature.vermont.gov/bill/status/2018/S.282.

PMM went live in May 2019. CMS On-Site R-3 certification review occurred on November 21, 2019.

2. Electronic Visit Verification

Section 12006 of the 21st Century CURES Act requires states to implement an Electronic Visit Verification (EVV) system for

- Personal Care Services (PCS): by January 1, 2021
- Home Health Care Services (HHCS): by January 1, 2023 the EVVS enables home care workers to digitally record information about the visit—specific care or services rendered—and to report changes in patient condition for follow-up.

3. Vermont All-Payer ACO Model Initiative

CMS and Vermont aim for broad ACO participation throughout the state, across all the significant payers and the majority of the care delivery system, to make redesigning the entire care delivery system a rational business strategy for Vermont providers and payers. CMS and Vermont additionally aim for this model to deliver meaningful improvements in the health of a state's entire population by transforming the relationships between and amongst care delivery and public health systems across Vermont.

The Vermont All-Payer ACO Model continues Vermont's efforts towards health care reform. In 2011, the state established the Green Mountain Care Board, an independent entity responsible for overseeing the development and implementation, and evaluating the effectiveness, of health care payment and delivery system reforms designed to control the rate of growth in health care costs and maintain health care quality in Vermont. The Board's regulatory authority includes payment and delivery system reform oversight, provider rate-setting, health information technology plan approval, workforce plan approval, hospital and ACO budget approval, insurer rate approval, certificate of need issuance, and oversight of the state's all-payer claims database. The Green Mountain Care Board is a key partner in administering the Vermont All-Payer ACO Model and provides additional information on the Model at its website: http://gmcboard.vermont.gov/payment-reform/APM.

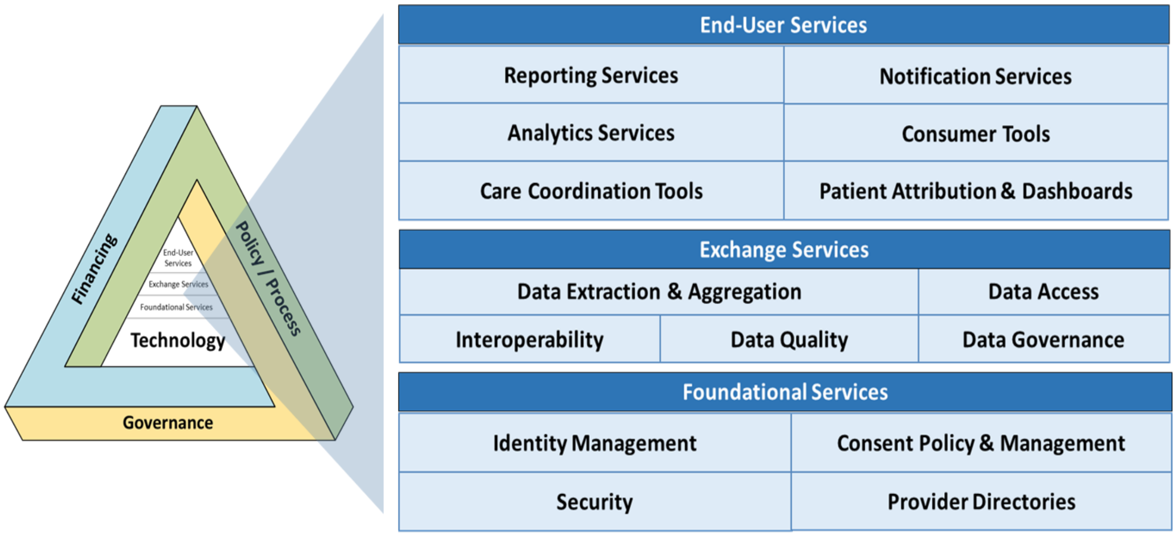
The Vermont All-Payer ACO Model offers ACOs in Vermont the opportunity to participate in a Medicare ACO initiative tailored to the state, and provided Vermont a funding opportunity announcement for $9.5M in start-up investment to assist Vermont providers with care coordination and bolster their collaboration with community-based providers. Vermont is expected to direct at least a portion of this funding towards the existing Blueprint for Health program and the Supports and Services at Home (SASH) program to perform such activities. Additionally, CMS also approved a five-year extension of Vermont's section 1115(a) Medicaid demonstration, which enables Medicaid to be a full partner in the Vermont All-Payer ACO Model. Under the Vermont All-Payer ACO Model, the state commits to achieving statewide health outcomes, financial, and ACO scale targets across all significant health care payers. CMS and Vermont expect to work closely together to achieve success.

> Participation by providers and other payers in the Vermont All-payer ACO Model is voluntary, and CMS and Vermont are working closely together to achieve success. In particular, this Model and the section 1115(a) Medicaid demonstration extension will make a Vermont Medicare ACO Initiative and Medicaid ACO initiatives tailored to the state available to physicians and other clinicians in Vermont. The Vermont Medicare ACO Initiative is considered an Advanced Alternative Payment Model for the providers in the two-sided risk Medicare ACO portion of the model within CMS' Quality Payment Program, and physicians and other clinicians participating in the Vermont Medicare ACO Initiative may potentially qualify for the Advanced Alternative Payment Model bonus payments starting in performance year 2018. More information is available on the Quality Payment Program website at https://qpp.cms.gov/.

To effectively and efficiently manage the Portfolio of Programs and Projects Vermont has created an Enterprise Project Management Organization (EPMO) to bring together key stakeholders. The Agency of Digital Services (ADS) Portfolio Management Office sits at the nexus of people, process, and technology driving best practice development of enterprise systems that allow AHS to take a cost-conscious approach to helping residents establish themselves as productive, contributory members of the Vermont community. The PMO supports the AHS portfolio Governance through the scalability of its structure and ability to enable an enterprise approach with integrated management and decision-making.

As described in the 2018 HIE Strategic Plan, relying on national guidance from the Office of the National Coordinator and an assessment of Vermont's HIE use cases, the HIE Steering Committee identified the components that must be in place for Vermont to achieve its HIE goals and to provide the value that end-users of the system require and rely on.

Each of the components of HIE is multi-faceted, and most are dependent on a strong modular technical architecture (system of standardized, connected parts). Overall, these components constitute a three-level service model which is supported by stable Governance, Financing and Policy/Process, as shown in Figure 5. The ultimate value to users is evident in tiers two and three: Exchange and End-User Services. Tier one (Foundational) is required to enable tiers two and three.



End-User Services	
Reporting Services	Notification Services
Analytics Services	Consumer Tools
Care Coordination Tools	Patient Attribution & Dashboards

Exchange Services		
Data Extraction & Aggregation		Data Access
Interoperability	Data Quality	Data Governance

Foundational Services	
Identity Management	Consent Policy & Management
Security	Provider Directories

Figure 5: HIE Conceptual IT Services Model

The long-term vision for sustainable HIE considers the Foundational and Exchange layers as the primary areas for public investment supporting and enabling the creation of end-user services, under the control of stakeholders, which provide the ultimate value: complete health information structured in a longitudinal record and data to support multiple, expanding data analytics needs.

As the 2018 HIE Strategic Plan was being updated a set of guiding technical principles was developed with stakeholder input. The technical principles further support the services in the architecture stack (figure 5, above), but primarily represent the needs that support the foundational and exchange services of HIE.

- Vermont's HIE Technical Architecture consists of Foundational Services, Exchange Services, and End-user Services.
- The Foundational and Exchange Services are the primary areas of public investment; they support end-user services that provide lasting value to consumers.
- Employ an agile, test-driven approach to all implementations.
- Start with the simple systems. Complex systems that work evolved from simple systems that work (Gall's Law).
- Start and mature pilot projects to production deployment.

- Information will outlive the application upon which it is created. Base interoperability and acquisition decisions on that understanding
- Evaluate technology from the aspect of lock-in and ease of migration.
- Base data reuse decisions on increasing predictability and reliability of information.
- Data are the most valuable HIE resource and must be portable.
- Reuse across systems is a bedrock principle

HIE Collaborative Services

With the Technical Roadmap's guiding principles in mind, the HIE Collaborative Services project was developed as an effort to continue to improve the foundational and exchange services required for a robust system of health information exchange. With a more modular design the project focuses on implementing a Master Patient Index (MPI), a Terminology Services Engine, an Integration Engine, and a new data repository to enable aggregation of clinical and other health related data in support of Point of Care data delivery, Analysis, and Reporting. Together, these combined technologies serve the three overarching HIE Goals, above. Moving MPI, Terminology Services, and the Integration Engine to the front end, coupled with the new data repository, enhances the availability of non-standard data, increases overall data quality, and supports segregation of sensitive data from non-sensitive data, which have previously been roadblocks to full utilization of the VHIE.

As the state moves toward a more integrated approach to data sharing, the availability of sensitive data will enable organizations such as OneCare Vermont, the Blueprint for Health and Designated Agencies to conduct broader analysis of agency or population level reporting and analysis. These tools will provide quality data to a broader range of end-users, enabling data driven decision making by key stakeholders.

DVHA has set an aggressive target for the Collaborative Services project. Completed in two phases, Phase One will implement the main components of MPI, Terminology Services and a Data Integration Engine to build the necessary foundation for collecting and managing the target data types. This phase has an expected completion of April 1, 2020.

Phase Two of the project builds on the foundational technologies by providing a data repository platform, which will enable Analysis and Reporting operations on sensitive and non-sensitive clinical data as well as other health related data that can be linked. This phase is expected to be completed by January 2021. The overall project is depicted in the following diagram which provides a sense of the timing of the two phases and how the functionality of Phase 1 supports the services provided in Phase 2.

Figure 6: Collaborative Services

The Collaborative Services project aligns with federal initiatives that encourage harmonious management and sharing of sensitive data. The SUPPORT Act is one such initiative that Vermont can leverage as a potential funding stream for broader integration of substance use disorder data from other sources (VPMS) to help combat the opioid epidemic. In 2020, DVHA will continue to investigate these federal opportunities to broaden our efforts towards aggregating sensitive data in the VHIE. Additionally, the Collaborative Services project aligns with the ONC/CMS proposed rule in promoting interoperability and consumer empowerment through the adoption of the FIHR data schema and use of restful Application Programming Interfaces (APIs).

B3 Providers Interface with State Medicaid IT Systems Related to the Promoting Interoperability Program

Providers who are receiving Promoting Interoperability Program (PIP) incentive payments from the State of Vermont have registered at the federal level and use MAPIR for attestation at the state level.

Core software releases from the MAPIR Collaborative are interfaced to Vermont's MMIS with additional customization and technical support services by Vermont's DXC staff. The Vermont Medicaid PIP Team has a ticketing system to track issues related to MAPIR updates and Vermont customizations.

The Vermont PIP Team uses a group email box for outreach and dialog with participating providers and preparers. All providers participating in the program receive regular email communications highlighting rules, policy changes, deadlines and other important information related to the program and specifically to the attestation process.

B4 Governance Considerations - Five Year View:

The 2016 revision of the Vermont Health Information Technology Plan (VHITP) identified the need to establish an entity that has the appropriate authority, accountability, and expertise to promote and ensure the success of public and private HIT/HIE efforts in support of Vermont All-Payer Accountable Care Organization (ACO) Model reforms across the State of Vermont.

The 2017 HIE evaluation identified governance as an area for action and improvement, and governance is a topic addressed in the 2018 HIE Strategic Plan and in the 2019 HIE Strategic Plan update, including the 2019 HIT Roadmap.

The 2018 HIE Strategic Plan proposed a permanent governance structure to address sustainability, a need identified in the 2017 Evaluation's core critique. The Evaluation report concluded, "no group or organization is solely responsible for execution of HIE activities in the state, and there is no statewide strategic plan guiding time constrained HIE investments."

The 2018 proposed governance model called for a single steering committee to be responsible for formally convening key HIE stakeholders to develop and oversee execution of an annual statewide HIE strategic plan. This governance model will advance HIE use cases, ensure accountability of all parties involved in furthering the State's HIE goals, and engage a broad range of stakeholders in strategic planning and oversight activities. The model identifies where decision makers go for support, who is responsible for oversight, who provides HIE services, and how service provides are held accountable.

The 2018 plan called for the steering committee to define an HIE investment portfolio and monitor statewide investments in service of the Vermont's HIE goals. It called for the committee to assess the viability of investments, to identify the needed level of investments, and to consider the appropriate balance of public and private funds.

In its first full year of collaboration, using the HIE Plan as the basis of its work, DVHA and the HIE Steering Committee made advancements in areas of governance, 2018-2019 tactical activities, the development of an HIE Technical Roadmap, and the implementation of a new consent policy for information stored in the VHIE.

Governance establishes the structure for effective leadership including the rules of engagement, decision making rights, and accountability, creating a trusted environment for sharing information. The Office of the National Coordinator defines HIE governance as, "The establishment and oversight of a common set of behaviors, policies, and standards that enable trusted electronic health information exchange among a set of participants." The 2017 Evaluation of Health Information Technology in Vermont, noted that the State lacked such a governance structure, and in response in 2018 DVHA established a permanent governing body, the HIE Steering Committee, to act as a single point of contact responsible for formally convening key HIE stakeholders to develop and oversee execution of an annual statewide HIE strategic plan.

In addition to the Steering Committee, which establishes the strategic direction and monitor's progress, Vermont's HIE Governance Ecosystem involves multiple checks and balances and oversight entities including DVHA (contract manager), the VITL Board (oversight of VHIE operations), and the GMCB approval of VITL budget and the statewide HIE Strategic Plan).

In brief, in 2019 the HIE Steering Committee developed a Steering Committee Charter which has been approved, oversaw the opt-out consent policy implementation planning, oversaw the development of an HIE Technical Roadmap, oversaw an update to connectivity criteria for the VHIE, and made significant progress with data governance. Several other topics were considered by the Committee as well and a full accounting is covered in the 2018-2019 Tactical Plan update section of the 2019 HIE Strategic Plan update.

In 2020, the HIE Steering Committee will continue to assess the roles of stakeholders in HIE governance. The HIE Strategic Plan, updated annually on November 1, will be a mechanism for recommending refinements to the governance model to best support statewide HIE goals.

Potential for leveraging effectiveness through subcommittees

While the Steering Committee will continue to hold the strategic vision for HIE in Vermont and be responsible for updating and monitoring progress on the HIE Strategic Plan, subcommittees or workgroups will provide subject matter expertise, operational support, and projected work efforts to bring specific recommendations to the larger body. The group plans to convene subcommittees early in 2020 to further the objectives identified above.

The HIE Steering Committee understands that this work is iterative in nature and through its work executing and evaluating the 2018-2019 Plan the Committee determined that the ideal nature of subcommittees will be on an as-needed, or ad-hoc basis. Consideration is forthcoming for the subcommittees structure in 2020. Examples of subcommittee topics that can be considered by the Committee include data governance, quality management, HIE-related considerations for mental health and social determinants of health, interoperability, and use case development. The HIE Steering Committee Charter may need to be revised to recognize the role of subcommittees and to provide guidance on how subcommittees are formed and how they will function. Three ad-hoc working groups that emerged in 2019 demonstrate, as you can see below, the need for subcommittees - Connectivity Criteria, Consent, and Data Governance. These three topical areas are candidates to continue in 2020.

Connectivity Criteria Workgroup: The development of connectivity criteria is critical to the functionality of the VHIE. As the landscape continues to shift, the connectivity criteria should align with stakeholder needs. Ensuring that connectivity criteria are defined for end-users such as designated agencies, OneCare Vermont, data access at the point of care, and the management of sensitive data is an ongoing process that is best accomplished through a specialized subcommittee. The US Core Data for Interoperability (USCDI) is the foundation for the that process. In 2019 the Connectivity Criteria were updated through the work of a working group or ad hoc subcommittee. This group was informally organized, the work was effective in achieving approval for the Connectivity Criteria update recommendations, and the Steering Committee will consider formal adoption of the subcommittee candidate for 2020.

One priority of the connectivity criteria work is establishing criteria to support broader data types including potentially social determinants of health, claims, and mental health data. Substance use data may be considered, with the understanding that the management of substance use data falls under 42 CFR Part 2. Understanding these unique connectivity needs will allow VITL to manage 42 CFR Part 2 data in Phase 2 of Collaborative Services.

Interoperability is a key concept and is the subject of activity at both federal and state levels. Data sharing is at the heart of interoperability and a common concern expressed across Vermont are the legal and perceived barriers to appropriate data sharing. An overarching clear framework expressed through the connectivity criteria will empower data sources and data receivers to confidently share data throughout Vermont and nationwide. Communicating a shared framework that includes representations from all stakeholder groups, applicable federal, state, and jurisdictional laws as well as organizational policy will likely reduce the risk of inappropriate data exposure or consumption and will encourage appropriate data sharing. If this topic becomes a priority for 2020, potentially through a subcommittee, the Steering Committee could work with stakeholders to define a process for identifying new data sharing requirements including industry-standards for new use cases and evolving standards for existing use cases and develop and agree upon a trusted legal framework to ensure consistent rules for data sharing across states. By establishing clear requirements, the HIE Steering Committee will be able to realize the needs of end users of health data throughout the State and work to develop projects that are in support of both key stakeholders and the three goals outlined above.

Consent Workgroup: Act 53 of 2019, An act relating to informed health care financial decision making and the consent policy for the Vermont Health Information Exchange, adopts an opt-out consent policy for the sharing of patient health information through the Vermont Health Information Exchange (VHIE) and specifies that the implementation strategy shall include substantial opportunities for public input. Act 53 further specifies several requirements for associated patient education mechanisms and processes and made and required DVHA to and development of an implementation strategy for the new consent policy (the change to consent policy is effective March 1, 2020). To accomplish this work, a workgroup or subcommittee was formed

In the short amount of time since Act 53 was signed into law on June 10, 2019, initial activities completed included establishment of a project team and planning for the successful implementation of the requirements of the Act. Three main workstreams have been identified to ensure a successful implementation: stakeholder engagement, supporting mechanisms, and evaluation of the success of the stakeholder engagement. An initial update report of the Act 53 consent policy implementation work and the three workstreams was submitted on August 1, 2019. A second update, required for submission on or before November 1, 2019 was submitted with this HIE Plan update. A final report is due January 15, 2020. Existing reports can be found at

https://healthdata.vermont.gov/Vermont-Patient-Consent.

Data Governance Workgroup: Many efforts are underway in Vermont and beyond to assess Data Governance in health IT. The complex nature of HIE presents unique challenges to data governance. Convening a data governance subcommittee ensures that these challenges and concerns are investigated through the lens of nationwide best practice, industry trends, and existing statewide governance bodies. In order to best position HIE Data Governance capability, the 2019 HIE Steering Committee investigated the current data governance efforts across state government and within organizations managing HIE systems, as directed by the 2018-2019 Plan. To support Data Governance, the HIE Steering Committee is considering an HIE Data Governance subcommittee. The subcommittee will draft policy on data sharing requirements, identify and define data sets for specified use cases, and address data quality issues at the policy level.

B5 Steps During the Next Twelve Months to Encourage the Adoption of EHRs

First-year incentive payment applications for Adopt/Implement/Upgrade ended with Program Year 2016. Providers will be attesting to Stage 3 Meaningful Use from now to the end of the program. Outreach and education efforts to encourage ongoing program participation are covered in section C.

B6 Plans to Leverage FQHCs with HRSA HIT/EHR Funding to Leverage Adoption

The Bi-State Primary Care Association was awarded an HRSA HIT/EHR grant to provide implementation services to eight FQHCs in the state. This work is now completed. Vermont’s FQHCs are well represented in terms of providers who have been awarded PIP incentive payments.

The State continues to engage Bi-State Primary Care Association to provide data extraction, analysis and quality improvement (QI) for FQHCs. Bi-State will be conducting quality assessment and improvement activities, population-based activities relating to improving health or reducing health care costs, case management, and care coordination. They provide support for primary care providers across initiatives and populations using integrated data, data analytics platforms, and other appropriate data sources to drive quality improvement.

B7 Help to Providers to Adopt and Meaningfully Use EHR Technology

Vermont’s HIE contractor, VITL, provides technical assistance to Medicaid providers to assist them in achieving meaningful use. VITL staff members provide support to all PIP in the form of meaningful use consultations on clinical workflows, assistance to practices developing and reviewing their Security Risk Analyses, and general data interface quality for Public Health Objective reporting.

B8 Plans to Address Special Populations with the Promoting Interoperability Program

A VHCIP project to develop Interfaces from Home Health Agencies’ (HHA) Electronic Health Records to the Vermont Health Information Exchange (VHIE) is underway. To date, five HHAs are either ready to proceed or getting ready to proceed with CCD interfaces. Two HHAs are coordinating with their vendor schedule to accommodate the connection and two HHAs have deferred activity into next year. However, no new populations have been entering the PIP since 2016, which was the last year to start the program for EPs.

B9 Plans to Leverage Other Grants to Implement the Promoting Interoperability Program

As discussed in a few places in this SMHP, the State had been awarded a State Innovation Model (SIM) grant and identified specific HIE/HIT projects. More information about these specific projects can be found here: http://healthcareinnovation.vermont.gov/tags/hdi-status-reports. While not specifically related to the Promoting Interoperability Program, these projects, supported the same statewide goal of achieving meaningful use and interoperability.

Recently the Vermont legislature appropriated $1,500,000 to the Vermont Designated Agencies who deliver behavioral services under contract to Medicaid. These funds will support the acquisition of EHR technology as a coordinated program across nine of the 13 designated agencies.

B10 Anticipated New Legislation to Implement the PIP

New legislation is not required or anticipated to continue Promoting Interoperability Program operations, but as mentioned in section A12 above, Vermont does have statutes that affect health information exchange.

SECTION C: ADMINISTRATION AND OVERSIGHT OF THE PROMOTING INTEROPERABILITY PROGRAM

III. Administration and Oversight of the Promoting Interoperability Program

This section of the SMHP describes Vermont's administration of the Promoting Interoperability Program (formerly the Electronic Health Record Incentive Program. Topics included in this section are:

1. Verify that providers are not sanctioned, and are properly licensed
2. Verify that Eligible Providers (EPs) are not hospital-based
3. Verify the overall content of provider attestations
4. Communicating to providers re: eligibility, payments, etc.
5. Methodology to calculate patient volume
6. Data sources to verify patient volume for EPs and acute care hospitals
7. Verify EPs at FQHC/RHCs meet the "practices predominately" requirement
8. Verify the Acquire, Implement or Upgrade of certified EHR technology (CEHRT)by providers
9. Verify Meaningful Use of CEHRT for the 2nd – 6th participation years
10. Identify any proposed changes to the Meaningful Use definition
11. Verify providers' use of certified electronic health record technology
12. Collect Meaningful Use data, including clinical quality measures,
13. Align data collection and analysis process with collection of other clinical quality measures data
14. Identify and describe IT, fiscal and communication systems used to implement the Promoting Interoperability Program (PIP)
15. Identify and describe IT systems changes needed to implement the PIP
16. Identify the IT timeframe for system modifications
17. Describe the process for testing the interface to CMS's NLR
18. Describe the process for accepting provider registration data from the CMS NLR
19. Describe the website Vermont hosts for providers to accommodate enrollment, information, etc.
20. Identify the timing of an MMIS IAPD if modifications are required
21. Identify call center / help desk and other means to address EP and hospital questions regarding the PIP

22. Describe a provider appeal process for a) incentive payments; b) eligibility determinations; and c) demonstration of efforts to Acquire, Implement or Update and Meaningfully Use CEHRT
23. Describe a process to assure that all Federal funding (100% incentives and also 90/10 Administrative matches) are accounted for separately for HITECH and not commingled with MMIS FFP
24. Define the frequency for making PIP incentive payments
25. Describe a process to assure that provider payments go directly to the provider with no deduction or rebate
26. Describe a process to assure that payments go to an entity promoting certified EHR technology only if participation is voluntary by the EP and that no more than 5% is retained for costs unrelated to EHR technology adoption
27. Describe a process to assure that there are fiscal arrangements with providers, to disburse payments that don’t exceed 105% of the capitation rate per 42 CFR Part 438.6, and a methodology to verify this
28. Describe a process to assure that hospital calculations and EP incentives, including tracking the EPs 15% of net average allowable costs of EHR technology, are consistent with statute and regulations
29. Define the role of existing contractors in implementing the PIP – MMIS, PBM, fiscal agent, managed care contractors, etc.
30. Provide an explicit description of assumptions and dependencies based on a) role of CMS (develop NLR; provider outreach / helpdesk support); b) status/availability of certified EHR technology; c) role, approved plans and status of RECs; d) role, approved plans and status of HIE cooperative agreements; and e) State-specific readiness factors

These items are as specified in the SMHP template provided by CMS. DVHA, as the State Medicaid Agency, will continue to administer the Promoting Interoperability Program directly, and has operational responsibility for the integrated project management of HIT, HIE, the evaluation of achievement of Meaningful Use criteria, Blueprint Medical Home, Community Health Teams, and payment reform program domains. DVHA has organizational units responsible for Fiscal Operations, Program Policy, Provider/Member Relations, Quality Improvement, Oversight and Monitoring, and Program Integrity – each of which contributes information and data integral to the administration of the Promoting Interoperability Program.

C1 Verify that providers are not sanctioned, and are properly licensed

Vermont’s existing Medicaid enrollment process ensures the provider is not sanctioned and is a properly licensed/qualified provider. If a provider is actively enrolled in Medicaid, then there are no pending sanctions against the provider.

Vermont participates in the MAPIR Collaborative and most of the provider interaction and data capture related to PIP will be done through the web based MAPIR system. However, providers who will access the MAPIR application will already be registered Vermont MMIS portal users (and not sanctioned and properly licensed/qualified providers), or they will be required to complete the portal registration process prior to using MAPIR. Vermont's MAPIR implementation created the interface with MMIS services used by the Vermont MMIS Portal to determine that the user is qualified and can subsequently access the MAPIR application. The Vermont MAPIR system validates provider NPI and TIN information received from the NLR against the state's MMIS. If the provider does not have an active license in the state, is not currently enrolled in Medicaid, or is sanctioned, then they will not have an 'Active' status code in the MMIS and will not be able to enter the MAPIR portal to attest. Also, any PIP application underway is aborted if sanctions / eligibility / active Medicaid status issues occur during the process of preparing, submitting, or awaiting payment.

C2 Verify that Eligible Providers are not hospital-based

Once a provider has been authenticated through the secure Vermont state portal and confirmed to be an enrolled Medical Assistance (MA) provider, they confirm their National Registration and Attestation System (NRA System) information in the MAPIR application. This is done through an eligibility questionnaire. The provider is asked "Are you a hospital-based physician?" and "Are you choosing the Medicaid Incentive Program in the state you are applying in?" If either question is answered incompatibly with eligibility, the provider will not be able to continue with the application process. Subsequent questions further refine the type of provider and the setting in which the provider practices (e.g., "Do you predominately practice at an FQHC/RHC (50% or more of your practice time)?"). Exact provider status is determined through this MAPIR questionnaire process.

The provider must confirm the statement that the number of patient encounters number seen in a hospital setting is not more than 90% of their practice. DVHA performs queries on the number of claims as an indicator of hospital-based status as part of pre-payment validation. A report calculates the percentage of Medicaid claims an eligible provider has with a hospital setting place of service code. The data in this report is used to make a hospital-based determination.

C3 Verify the overall content of provider attestations

MAPIR calculates the proper incentive payment at the proper time. Professional and hospital provider incentive payment amounts are variable during the incentive program. Professional provider incentive payments are based upon a maximum incentive payment distributed over six payment years. Hospital incentive payments are made over three years and are based on hospital-specific data including Medicare Cost reports, discharge days, and growth factors. Professional and hospital payments do not need to be made over consecutive years. The MAPIR technical specification document includes detailed calculations and payment schedules. Since the MAPIR Phase VI I-APD has been approved, the technical specifications are not repeated here.

In addition to logic that is built into the MAPIR attestation system to assist in validating the eligibility of providers and the achievement of meaningful use requirements, the PIP administrators also have both pre- and post-payment audit procedures that are detailed in our Audit Plan. Each attestation that is submitted undergoes pre-payment validation procedures, and about 10% of providers are selected for post-payment audit, which is a deeper and more expanded review. To protect the integrity of our review process, details are not listed here because this is a public document.

C4 Communicating to providers re: eligibility, payments, etc.

A certain amount of communication occurs within the portal environment, as providers are interacting with the Vermont portal and the MAPIR system. For example, the eligibility questionnaire is a specific form of communication. Also as an example, if in the process of going through the eligibility questionnaire, an applicant selected "yes" to the question of "Are you a hospital based Physician" and selected "No" to participation in the Medicaid incentive program MAPIR displays the message "As a Hospital based physician, you are not eligible to participate."

Beyond the programmed communication that occurs through either the MAPIR system or the Vermont Medicaid portal, email is the preferred communication method. Email contact information and phone numbers are captured as part of the CMS NLR registration information, and in the MAPIR screens to be completed by the applicant

There are several automated email transmissions that occur from MAPIR to the provider as status changes occur in the attestation process, beginning with confirmation that they are registered to attest and may enter the MAPIR portal, and ending with a notification that payment has been made. In addition, certain automatically generated MAPIR email notifications are configured to the particular way Vermont administers the PIP.

Vermont has established a PIP Team dedicated email address to field policy and technical questions from program participants: ahs.dvhaEHRIP@vermont.gov.

A helpdesk ticket system to support PIP administration is hosted by Vermont's MMIS vendor, DXC Technology. The system allows for communication and documentation of technical and policy issues related to the customization of MAPIR.

C5 Methodology to calculate patient volume

Vermont accepts the methodologies described in paragraphs (c) and (d) of §495.306 of the final rule – Establishing Patient Volume. Paragraph (c) describes the patient encounter methodology. An EP calculates their Medicaid patient volume threshold by dividing the total Medicaid patient encounters in any representative, continuous 90-day period in the preceding calendar year or preceding 12 months by the total patient encounters in the same 90-day period. An eligible hospital divides the total Medicaid encounters in any representative, continuous 90-day period in the preceding fiscal year or preceding 12 months by the total encounters in the same 90-day period. A similar calculation would apply for needy individual patient volume.

Paragraph (d) of §495.306 provides for a patient panel methodology, which Vermont does not offer. The Medicaid system and operational approach is to deliver Medicaid services and associated reimbursement based on a provider delivering a service to a beneficiary as an encounter.

Vermont did not propose alternative methodologies to those described in the final rule in its first draft SMHP submittal. Vermont received CMS approval to not exclude CHIP encounters, as a study demonstrated that this was a very low possibility of introducing payments in error. Certain types of CHIP encounters are now allowed, including Vermont's.

Per paragraph (h) of §495.306 – Group Practices, clinics or group practices are permitted to calculate patient volume at the group practice/clinic level with the following limitations:

1. The clinic or group practice's patient volume is appropriate as a patient volume methodology calculation for the EP;
2. There is an auditable data source to support the clinic's or group practice's patient volume determination;
3. All EPs in the group practice or clinic must use the same methodology for the payment year;
4. The clinic or group practice uses the entire practice or clinic's patient volume and does not limit patient volume in any way;
5. If an EP works inside and outside of the clinic or practice, then the patient volume calculation includes only those encounters associated with the clinic or group practice, and not the EP's outside encounters.

Note: In an expanded patient volume calculation method introduced for program year 2013, EPs may choose to calculate patient volume using the 12 months preceding their attestation. When a provider group uses this method, not all EPs in the group may be able to use the same 90-day period. In these situations, group members will be allowed to choose different 90-day time periods, consistent with CMS guidance.

Within the MAPIR application the EPs have the opportunity to establish a start date for the 90-day attestation period, to indicate if they are predominately practicing at an FQHC/RHC, and to indicate if they are submitting volumes for an individual provider or for a group/clinic. Providers must choose the locations where they practice, and they have the ability to add a service location. Patient volumes can then be listed by location. All of the specified numerator and denominator data types are covered in MAPIR for the full satisfaction of the Final Rule.

C6 Data sources to verify patient volume for EPs and acute care hospitals

Providers enter their patient volume data as part of their MAPIR attestation. Before a payment is made, the Medicaid patient volume numerator is validated by checking Medicaid claims data using the Vermont MMIS. If the MMIS numerator/attested denominator value is below the required threshold (30% or 20% for pediatricians), then supporting documentation is requested from the provider. The attested denominator is assessed for reasonableness. If the patient volume does not meet the threshold, the provider is not eligible to receive an incentive payment. The denominator is validated post-payment on providers selected for an audit, using submitted documentation.

In Vermont, the Green Mountain Care Board (GMCB) clarifies the administrative requirements and provides the data and technical guidance for hospitals regarding health care in Vermont. The GMCB manages the Uniform Hospital Discharge Data Set, which provides an estimate of hospital discharges for any given year. This data source is created from the hospital billing records and is an acceptable data source, as it is reviewed and accepted as accurate by the hospitals. Hospitals can define encounters as inpatient discharges alone, or inpatient discharges plus emergency room discharges. The method used must be consistent between the numerator and denominator. The Vermont Hospitals report of the Uniform Hospital Discharge Data Set includes data for both inpatient discharges and emergency department visits broken down by principal payer, which can be used to validate hospital Medicaid patient volume. In addition, hospitals can provide data files to support their patient volume, and queries of the MMIS are used to validate the Medicaid numerator.

C7 Verify EPs at FQHC/RHCs meet the "practices predominately" requirement

The preamble to the Final Rule specifies that "…an EP practices predominantly at an FQHC or an RHC when the clinical location for over 50 percent of his or her total patient encounters over a period of 6 months occurs at an FQHC or RHC". A query of the Vermont MMIS for paid Medicaid encounters and associated billing NPI and name is used to determine the percent of Medicaid encounters that occurred at the FQHC/RHC. If Vermont Medicaid data does not support the practicing predominantly requirement, then reports regarding patient encounters at the FQHC/RHC and total patient encounters, including visits outside of the FQHC/RHC, are requested and reviewed. This validation occurs as part of post payment audit procedures. If the documentation does not meet the practice predominantly 50% threshold, the EP is not eligible for the incentive payment

C8 Verify the Adopt, Implement or Upgrade of EHR technology by providers

In the MAPIR application, EHR technology is identified by entering the 15-digit CMS EHR Certification ID, obtained from the ONC Certified Health IT Product List. MAPIR performs an online real-time validation of the CEHRT-ID with the ONC data, and the application will proceed only if the validation is successful. Providers designated whether the Adopt, Implement or Update status applied to them. An electronic signature is required as part of the online attestation. The signature page cautions that the provider must be authorized to receive payment, that all information provided is accurate, that the provider is subject to legal penalty for providing false information, and that any funds expended under false pretenses will be recouped.

The Vermont Medicaid PIP audits incentive payments as described in Section D. Documentation establishing proof of CEHRT ownership was required to be submitted for all Adopt/Implement/Upgrade applications, consisting of receipts, invoices, license agreements, etc. This documentation was reviewed before payment was approved and initiated. First-year payments for Adopt/Implement/Upgrade incentive applications ended with Program Year 2016.

C9 Verify Meaningful Use of CEHRT for the 2nd – 6th participation years

The MAPIR system was initially configured first-year incentive claim validation. Subsequent development and design have addressed verification of Meaningful Use attestations for the 2nd through 6th participation years, including Stage 2 and 3 of Meaningful Use. MAPIR logic presents attestation options based on the Certified EHR system identification. The CEHRT ID determined which stage options MAPIR displayed. For Program Years 2019 – 2021, MAPIR will require “15E” to be entered in the 3rd through 5th digits of the CEHRT ID and will only allow a Stage 3 Meaningful Use attestation to be completed.

The Meaningful Use objective and measure verification for each program year’s associated rules has been developed within the core MAPIR software which has been implemented in Vermont’s MMIS environment. In addition, the pre-payment validation procedures require that providers submit reports from their EHR system and documentation to support specific measures. The post payment audit program includes reviewing reports, verification of meaningful use, and full desk audit procedures. Please see the audit plan for further details.

C10 Identify any proposed changes to the Meaningful Use definition

Vermont has not proposed changes to the Meaningful Use definition and is not planning to propose changes in the future.

C11 Verify providers’ use of EHR technology

Through the MAPIR application, providers attest to the use of a certified EHR system by entering the CEHRT-ID obtained by selecting their product and version at the ONC Certified Health IT Product List (CHPL) website. The state requires additional proof of CEHRT utilization through required copies of dated reports generated by the CEHRT. This proof is submitted in the form of attached uploaded documents within the MAPIR application.

C12 Collect Meaningful Use data, including clinical quality measures

The Vermont PIP collects the MU and CQM data that are entered in MAPIR during the attestation process. CQMs are not being collected through QRDA I or III files. Provider CEHRTs are not required to produce all CQMs available to be attested to in the Promoting Interoperability program. This means that providers are able to report different arrays of CQMs, depending on their vendor and product. In addition, changes and updates to CQMs occur every year when new versions are released, and EHR developers/vendors are not required to update to the latest CQM version. The result is that providers at different practices may be running different versions of the same CQM, and not the most recent version. These challenges compromise the value of electronic CQM data.

C13 Align data collection and analysis process with collection of other clinical quality measures data.

Vermont has an All-Payer Accountable Care Organization (ACO) alternative payment model. Medicaid, Medicare, and commercial heath care payers participate in an ACO with associated quality metrics. The performance measures for each ACO have been gathered and reviewed to identify which measures align with PIP CQMs. For the 2019 Promoting Interoperability program year, providers must submit data for six CQMs relevant to their scope of practice. At least one of the CQMs they select must be an outcome measure, if any are relevant. If no outcome measures are relevant, they must select at least one other high-priority measure. If no high-priority measures are relevant, they may report on any six relevant CQMs. The high-priority designation was established thru CMS rule making and includes the option for states to designate additional CQMs as such. The MAPIR attestation system has been designed with the ability to configure the high-priority designation to accommodate the needs of individual states. Vermont has identified three state-specific CQMs that will also be designated as high-priority. Each is a quality measure used by the Vermont ACOs. These CQMs are as follows: CMS130/NQF0034 Colorectal Cancer Screening (part of our Medicare ACO), CMS138/NQF0028 Tobacco Screening and Cessation Intervention (part of Vermont's Medicaid, Medicare, and commercial ACOs), and CMS147/NQF0041 Influenza Immunization (part of Vermont's Medicare ACO). For Program Year 2019 attestations, the MAPIR system will be configured to offer these three CQMs as additional high-priority selection options to promote alignment with Vermont's All-Payer ACO.

C14 Identify and describe IT, fiscal and communication systems used to implement the PIP

Vermont is participating in the 14-state MAPIR Collaborative and has deployed MAPIR as an attestation tool in conjunction with the Vermont MMIS. Other IT systems include state network shared drives and an Access database used together with MAPIR for case management.

Financial systems include MMIS (DXC Technology) and the state's financial software provided by Oracle Peoplesoft Enterprise.

Communication with providers is accomplished through the Vermont PIP website (https://healthdata.vermont.gov/ehrip), a PIP Helpdesk team email resource (ahs.dvhaehrip@vermont.gov), and by phone. Regular email communiques regarding updates on program rules, tips, and technical guidance are distributed to program participants and other interested parties. The list of recipients is generated by contact data derived from the CMS NLR and from the MAPIR contacts data entered by the applicants.

C15 Identify and describe IT systems changes to implement the PIP

MAPIR is the primary system for the operation of the PIP. Design, development and implementation of system changes to address MU stage changes and other rule requirements are accomplished with the Vermont PIP Team's participation in the MAPIR Collaborative. As the lead state in Collaborative, Pennsylvania manages the development effort for core system functionality, and develops and submits plan and funding request documents to CMS. These are all done with the consensus of the multi-state MAPIR Collaborative steering committee.

Vermont also includes MAPIR customization and technical support services in the MMIS vendor contract with DXC Technologies to facilitate integration into the MMIS environment, as well as accommodating other unique process needs.

C16 Identify the IT timeframe for system modifications

Core software releases are planned and scheduled to accommodate the implementation of new proposed rules. Vermont follows each MAPIR version release with the necessary local customization to support the core software with the existing MMIS.

As of November 2019, Vermont is in the process of installing MAPIR Release 6.2.1, and 6.3 is under development to be installed in 2020.

C17 Identify when Vermont will be ready to test the interface to CMS's NLR

In October of 2011, Vermont successfully tested the interface to CMS's NLR prior to obtaining CMS approval to move its incentive payment program into production. As subsequent releases of MAPIR have occurred, the Core MAPIR Collaborative, the Vermont DXC MAPIR Customization Team and the Vermont PIP Team has resolved deployment questions related to the interface functionality with CMS for each MAPIR edition upgrade.

C18 Describe the plan for accepting provider registration data from the CMS NLR

Vermont implemented its plan for accepting provider registration data from the CMS NLR, as was described in its initial SMHP submittal in 2011. That plan language is provided below:

As previously indicated, much of the functionality required to accept provider registration is being addressed through the core MAPIR development. However, there are customization steps required to fully implement this functionality for Vermont:

- MAPIR will need to be integrated into the existing MMIS change management/promotion environments required to support the existing production application;
- The existing Vermont MMIS provider portal and user management process will be used to support secure access and provider authentication of the MAPIR application;
- MAPIR users must first register with the NLR;
- Only Vermont Medicaid enrolled providers will access the MAPIR application via the Vermont MMIS portal;
- Providers who will access the MAPIR application will already be registered Vermont MMIS Provider Portal users or will be required to complete the portal registration process prior to using MAPIR;
- Backend MMIS services used by the Vermont MMIS portal will need to be created to determine whether the user can access the MAPIR application. Some enhancements to

incorporate additional MAPIR specific data needs will be added to the existing user authentication/logon process;

- The provider and financial interfaces to MAPIR will be MMIS batch interfaces;
- There will be an NPI cross reference capability developed in order to maintain unique identifiers across downstream MMIS systems.

C19 Identify the kind of website Vermont will host for providers to accommodate enrollment, information, etc.

The MAPIR system solution and its interface with the Vermont MMIS through the Medicaid Provider Portal accommodates provider enrollment and attestation activity. Additionally, the Vermont Medicaid PIP maintains a general program information and outreach website at https://healthdata.vermont.gov/ehrip. The website includes Announcements, a Help section with FAQs, information about the MAPIR application process, MAPIR User Guides, general FAQs, documentation tools, specific guidance relating to Public Health Objective reporting, Security Risk Analysis, Patient Volume, Audits, Appeals, Reports, and the MAPIR Collaborative.

C20 Identify the timing of an MMIS I-APD if modifications are required

Since Vermont's initial SMHP was submitted and approved, Vermont coordinated a single Jumbo IAPD submission to cover several HIT-related project areas. In 2014, the State split the Jumbo IAPD into each unique program IAPD and the State submits updates to them as needed, and at least annually.

C21 Identify call center / help desk and other means to address EP and hospital questions regarding the PIP

The state contracts with Vermont Information Technology Leaders, Inc. (VITL) to provide health care organizations with consultative services to assist with Meaningful Use readiness assessment, and Security Risk Assessment informational support. Designated VITL staff in scheduling on-site visits to practices and work closely with the Vermont Medicaid PIP Team in fielding and referring PIP policy and technical questions.

In addition, as described in the communications plan, the PIP Team conducts extensive general and targeted outreach to the provider community to prepare Eligible Professionals for PIP attestation requirements. Outreach consists of:

- Regular email blasts to a program participant/recipient list that is derived from data downloaded from the CMS NLR and from the repository of MAPIR contact data entered by the applicants during the attestation process.
- Webinars tailored to provider practices to address the specific circumstances and challenges of their Eligible Professional population in order maximize participation, and to provide guidance and tools regarding the changes to program year requirements for MU Stage 3.

- Maintenance of the Vermont Medicaid PIP website. Weekly content updates to our website keep the information relevant and consistent with the information configured in the MAPIR system, and with the guidance at the CMS Promoting Interoperability website. https://healthdata.vermont.gov/ehrip
- The bimonthly Medicaid Advisory Newsletter is received by all Vermont Medicaid remittance recipients, and the Promoting Interoperability Program has a section where the PIP Team shares program guidance.
- The PIP Team email account functions as a Helpdesk to provide timely responses to providers and preparers for their technical, policy and procedural questions, as well as to request for assistance on the application process.

C22 Describe a provider appeal process for a) incentive payments; b) eligibility determinations; and c) demonstration of efforts to Acquire, Implement or Update and Meaningfully Use EHR Technology

The Promoting Interoperability Program offers a Reconsideration and Appeal process that aligns with that of the Vermont Medicaid program, and is detailed in Section 8 of the Green Mountain Care Provider Manual, available here:

http://www.vtmedicaid.com/assets/manuals/GeneralProviderManual.pdf

The appeals process is described in detail in the PIP Audit Strategy. In summary, there are three levels: 1) Reconsideration by DVHA, 2) DVHA commissioner or Chief Medical Officer Review, and 3) Appeal to Vermont Superior Court. Eligible Professionals and Eligible Hospitals may request Reconsideration of a PIP decision regarding eligibility for: payment amount, overpayment amount, or recoupment. The request must be made within thirty (30) calendar days of the receipt of the overpayment notice OR of the denial notice OR within thirty (30) calendar days of the date of the PIP payment in dispute.

C23 Describe a process to assure that all Federal funding (100% incentives and also 90/10 Administrative matches) are accounted for separately for HITECH and not commingled with MMIS FFP

The State of Vermont has existing accounting systems, and procedures and human resource policies which accommodate the accounting of both the 100 percent incentive payments, as well as the 90 percent HIT Administrative match. As an example, discrete program codes have been established to track the 90 percent HIT administrative match associated with Vermont's IAPD-authorized activities. Staff are instructed in the appropriate use of time coding and purchases, and management at the Director level and above reviews all time and purchases being charged to the appropriate funding source. Quarterly projections of Medicaid PIP funds are made through the CMS-37 process, and quarterly expenditures are reported through the CMS-64 process.

C24 Define the frequency for making EHR payments

The customization work required of the existing MMIS to accommodate MAPIR functionality included enhancements to process financial transactions through the MMIS for Promoting

Interoperability incentive payments. Vermont has been making incentive payments as part of the weekly Medicaid reimbursement process since the inception of the program.

C25 Describe a process to assure that provider payments go directly to the provider with no deduction or rebate

The validation of incentive claim amounts is enforced by the functionality implemented in Core MAPIR system design. The applicant is also required to confirm assignment of payment, if relevant, and system logic prevents an application from proceeding if there is a mismatch with the information related to any health care organization or entity that the provider is associated with in the MMIS for the purposes of Medicaid fund disbursements. The Medicaid Remittance Authorization that accompanies each Medicaid reimbursement to a provider or provider-designated organization lists incentive payments as separate line items.

C26 Describe a process to assure that payments go to an entity promoting EHR technology only if participation is voluntary by the EP AND that no more than 5% is retained for costs unrelated to EHR technology adoption

As described in Section C21, the state contracts with Vermont Information Technology Leaders (VITL) for consultative services for Meaningful Use support. As the state's former REC, VITL continues to support EHR selection, adoption and interface configuration as part of the larger scope of the state's contract. This funding stream is separate and discrete from is the state's disbursement of incentive payments to Eligible Professionals. There are no payments from an EP to VITL for the specific adoption of EHR technology or meeting Meaningful Use related to achieving PIP incentive payments.

C27 Describe a process to assure that there are fiscal arrangements with providers, to disburse payments that don't exceed 105% of the capitation rate per 42 CFR Part 438.6, and a methodology to verify this

Specific to this topic, 42 CFR Part 438.6 addresses contract requirements for risk contracts associated with MCO, PIHP, and PAHP contracts, which utilize capitation rates. Vermont has no contracts of this nature and this is not a concern we need to address. Elsewhere we have discussed our use of the phrase "managed care" in this SMHP document as not meant to imply that we would accept patient panel patient volume calculations.

C28 Describe a process to assure that hospital calculations and EP incentives, (including tracking the EPs 15% of net average allowable costs of EHR technology), are consistent with statute and regulations

Note: All EH incentive payments and EH post-payment audits have concluded in the Vermont Medicaid Promoting Interoperability Program. In addition to a payment calculator tool developed by the Vermont Medicaid PIP and used for prepayment attestations, Vermont also had hospitals complete a calculation adjustment tool spreadsheet during pre-payment as of Program Year 2013 to help ensure that non-allowable values, such as non-acute, dually-eligible, and unpaid bed days, were deducted. This tool is included in the Vermont Medicaid PIP Audit Plan. If a change in the payment calculation was required, it was accomplished through the MAPIR attestation system, which calculates and makes an adjusted payment accordingly. While some hospitals were paid before the advent of this adjustment tool, none were in their third and final year of payment. All hospitals were asked to complete this adjustment tool before their third and final payment was made. The payment calculation was also reviewed as part of post-payment hospital audits. If audit identified an error in the calculation that resulted in an overpayment, and the hospital had not received their third and final payment, then the adjustment occurred with the hospital's subsequent payment year attestation. This may have resulted in a reduced payment or a recoupment of funds if money was owed to satisfy the adjustment. The audit was not closed until the corrected payment adjustment was made. If audit identified a calculation error that resulted in an overpayment, and the hospital had already received their 3rd and final payment, then the hospital would have been notified via letter that they must return the overpayment, or it would be recouped.

Regarding EP incentive payments, a ten percent of EP attestations undergo audit every program year, per the Vermont Medicaid PIP Audit Plan. Negative audit findings are reviewed and impact the next audit plan, including risk factor design and weight, as well as pre-payment verification procedures. For example, after a finding occurs, it may be possible to build and implement a screening tool that can be used as part of the pre-payment review process and/or part of risk factor analysis for future audits.

C29 Define the role of existing contractors in implementing PIP – MMIS, PBM, fiscal agent, managed care contractors, etc.

As the Information Technology solution that is the platform of Vermont's Promoting Interoperability Program, MAPIR design, development, implementation, customization and technical support are functions supported by Vermont's fiscal agent/MMIS contractor, DXC. State staff maintains administrative oversight of the PIP and manages the vendor relationship with DXC with regard to all PIP functionality of the MMIS.

As described in sections C21 and C26, the state's contract with VITL related to the services supporting the PIP includes consultation with EPs for Meaningful Use attestation readiness, assistance with generating and reviewing Security Risk Assessments, and on-site visits to health care organizations to aid in evaluating EHR options and clinical workflows to enhance compliance with Meaningful Use measures.

C30 Provide an explicit description of assumptions and dependencies based on a) role of CMS (develop NLR; provider outreach / helpdesk support); b) status/availability of certified EHR technology; c) role, approved plans and status of RECs; d) role, approved plans and status of HIE cooperative agreements; and e) State-specific readiness factors

Vermont has successfully operated the incentive payment program since 2011. There are no remaining critical assumptions or dependencies.

SECTION D: Vermont's Audit Strategy

IV. State's Audit Strategy:

Due to the sensitive nature of this section as it relates to the PIP/EHRIP audit process, it is marked for CMS viewing only and is not released to the public. There may be PIP/EHRIP participants that are being audited or may seek information related to the audit process that would compromise the integrity of our program. This section and the corresponding audit plan are submitted to CMS separately.

SECTION E: VERMONT'S HIT ROADMAP

V. State's HIT Roadmap and Annual Measurable Targets Tied to Goals:

In this section of the SMHP we describe Vermont's HIT Roadmap, from a five-year perspective. Topics included in this section are:

1. Graphical and narrative pathway to show the As-Is, To-Be (5 Year), and plans to get there
2. Expectations for provider EHR technology adoption over time: annual benchmarks by provider type
3. Annual benchmarks for each of DVHA's goals that will serve as clearly measurable indicators of progress along this scenario
4. Annual benchmarks for audit and oversight activities

E1 Graphical and narrative pathway to show the As-Is, To-Be (5 year), and plans to get there

While the SMHP is an enabling document to support planning and funding for HIT and HIE, especially as related to HIE expansion, EHR adoption, Meaningful Use, and the Promoting Interoperability Program (PIP), these efforts occur in the larger and integrated landscape of Health Care Reform and transformation in Vermont. That landscape is evolving over time from the As-Is description in Section A to the To-Be description in Section B of this SMHP. It is appropriate to pay brief attention to the pathways and timelines of the other Health Care Reform initiatives in the To-Be landscape before focusing on the specific HIT/HIE related projects for which funding has been sought in the IAPD that covers the SMHP and all other initiatives in the Medicaid Enterprise. It is appropriate because the overlaps make it hard to cleanly separate HIT/HIE initiatives from other health care reform initiatives planned or underway. Overlaps occur with, for example, the Master Data Management (MDM) initiatives of enterprise Master Person Index (eMPI) and Provider Directory (PD). The Clinical Data Registry (CDR) supports the health care delivery reform of the Vermont Blueprint for Health (VBH) program and the Vermont Chronic Care Initiative (VCCI). The VHIE supports Meaningful Use requirements of information exchange but also directly supports the Blueprint for Health. As measure sets become normalized, providers can report on one common measure set that supports clinical decision support, population health analysis, and the goal of combined real time clinical information combined with claims-based retrospective. At that point, the Blueprint for Health program itself supports Meaningful Use and the associated PIP. Certainly, many of the staff functions of the Blueprint for Health – practice facilitators and workflow analysts – can be considered as supporting both Meaningful Use and HIE expansion.

Overlaps with other major initiatives the Medicaid Enterprise are primarily in the areas of eMPI and PD, but also with the APCD which includes Medicaid claims history. Elsewhere in the To-Be landscape, and currently underway, is the deployment of Accountable Care Organizations, which can benefit from the HIE, from access to information in the APCD and the CDR, and which will include providers who are meeting Meaningful Use and participating in the PIP.

There is a major overlap of the PIP and the MMIS system. The MAPIR system which supports both provider attestations and staff administration of the PIP is an MMIS integration project requiring design, development, and implementation through several stages of enhancements. MMIS claims and encounter data must be accessed through the integrated solution to validate information submitted through the attestation portal. The specific functionality and funding requirements of MAPIR core development is presented in Pennsylvania's IAPD. The CMS approval letter for the Pennsylvania IAPD, and Vermont's Document of Intent for the October 1, 2018 - September 30, 2020 are attached to this SMHP as APPENDIX D.

This is too much to attempt to incorporate into a single timeline, but the HIT Roadmap included in the HIE Strategic Plan Update in Appendix B includes tables of initiatives mapped to near- intermediate- and long-term timeframes. A timeline activity table of SMHP-related HIT/HIE initiatives is included further below as part of an IAPD-U discussion.

Figure 7 below depicts the current high-level Medicaid Enterprise, while Figure 8 is a conceptual of the Medicaid Enterprise environment envisioned in the 2030 timeframe.

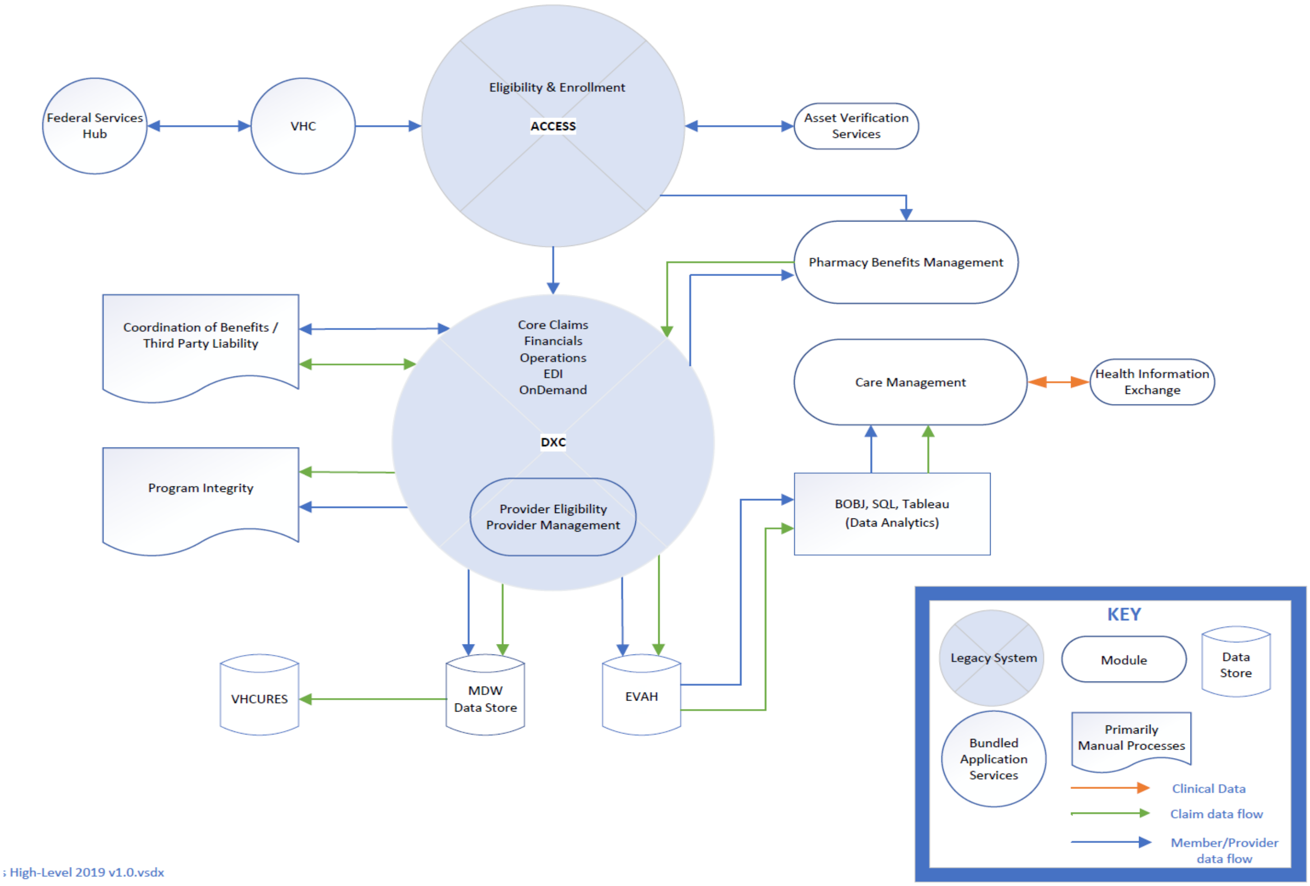


Figure 7: Medicaid Enterprise, Current 2019 Diagram

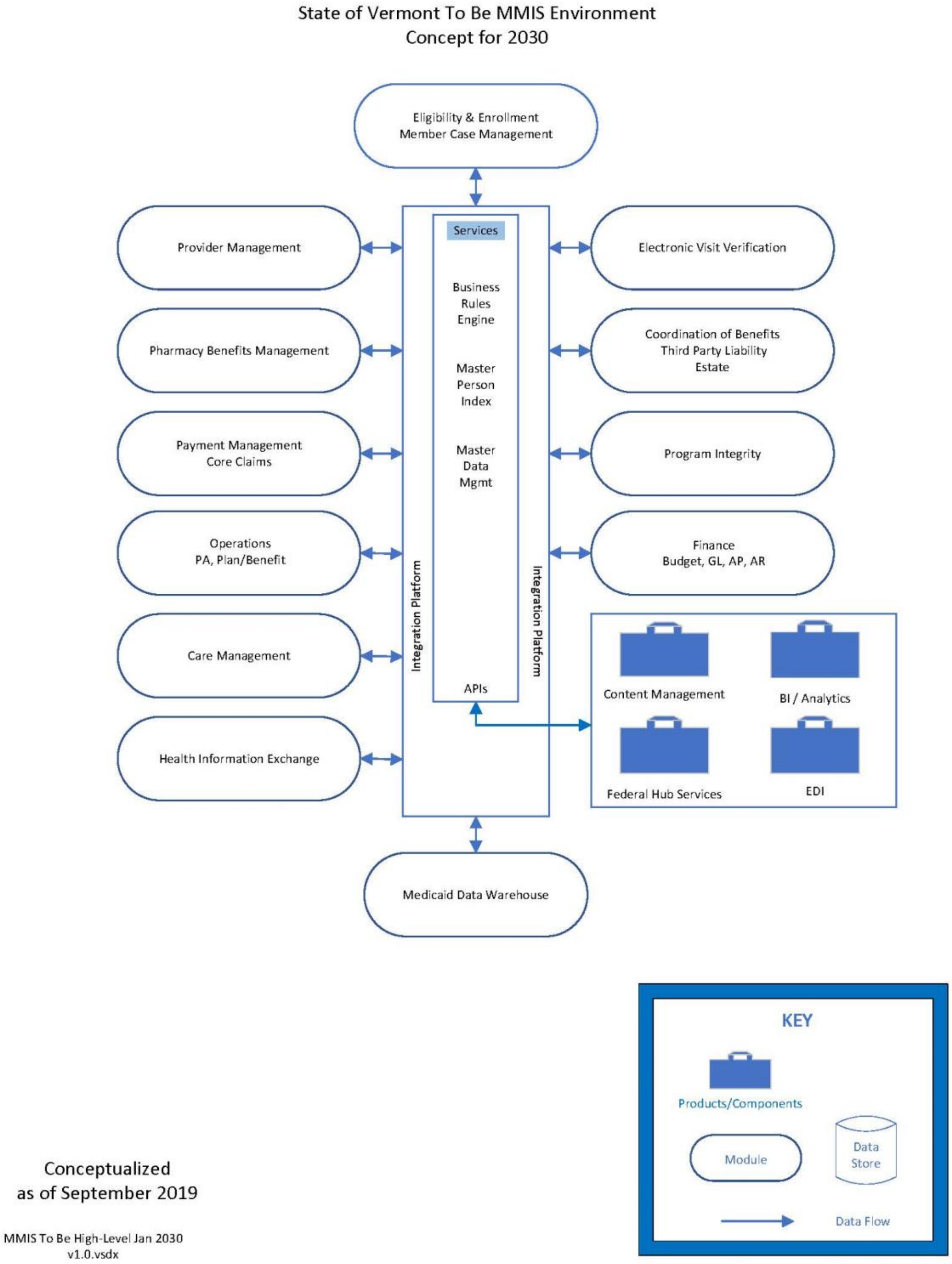


Figure 8: Medicaid Enterprise, 2030 Conceptual Diagram

Initiatives specific to the SMHP – included in an updated Implementation Advance Planning Document (IAPD) funding request

The July 2019 submission of the Vermont IAPD- U:

As of this writing, the most recent submission of the HITECH IAPD-U contains the following specific goals and objectives in section III.

Vermont's HITECH IAPD-U requests are guided by the following core principles:

11. The State and its partners are actively working to align with newly proposed federal rules from the Office of the National Coordinator (ONC) and the Center for Medicare Services (CMS) to support interoperability on a local, regional, and national scale in the most efficient and cost-effective way possible.
12. All HIT/HIE investments must align with goals and strategies set forth by the statewide HIE Plan developed by Vermont's HIE Steering Committee.
13. The State is committed to promoting interoperability through activities that support the essence of the HITECH Act, further the objectives of Meaningful Use, and adhere to the guidance set forth in relevant State Medicaid Director's Letters and CMS and ONC guidance.

Program Goals, Objectives, and Vision

There are five focus areas of Vermont's HITECH program for which we are asking for IAPD-U funding:

1. The Promoting Interoperability Program (PIP - formerly, The Electronic Health Record Incentive Program - EHRIP)
2. Public Health Infrastructure Development to Enable Clinical Decision Support and Public Health Reporting
3. Deploying and Developing Care Coordination and Clinical Decision Support Tools for Medicaid Next Generation ACO Program Participants (Vermont's Alternate Payment Model)
4. Expanding Health Data Exchange and Network Interoperability – Building the Needed "Shared Services" to Support HIE Goals
5. Pursuing Proven HIE Initiatives Such as IT to Enable Screening, Referral and Transitions to Care, a Personal Health Record, and HIE Connections to Emergency and Disaster Services

Each of these five parts supports Vermont's goals for improved use of technology to support better care, lower costs, and better health.

1. **The Promoting Interoperability Program (PIP) is designed to support providers during the period of transition in health information technology. The vision is that electronic**

health record use will improve the quality, efficacy, and efficiency of patient health care.

Goal: Maximize incentive payments and reduce provider burden associated with MU attestation.

Objective 1: Enroll as many providers as possible.

Objective 2: Continue to provide incentive payments to support providers use of EHR's

Objective 3: Continue to Audit program payments to verify accuracy of attestations

Objective 4: Continue supporting the Medical Assistance Provider Incentive Repository (MAPIR) collaborative efforts to make attestation to MU easier.

Objective 5: Investigate use of eCQM's

2. **Public Health Infrastructure Development to Enable Clinical Decision Support and Public Health Reporting is directly tied to a key objective identified in the 2019 HIT Roadmap, augmenting the use of public health registries.**

Goal: Increase adoption and efficiency of electronic Public Health Registry reporting and integrate into provider workflow.

In March 2019, the Vermont Department of Health (VDH) was charged by AHS to develop a department-wide informatics strategy. That work is on-going as of this writing. Preliminary findings related to system needs align well with the HIE Strategic Plan update and the HIT Roadmap and are summarized in a project report as follows:

- Master Data Management with necessary data governance in place
- API capability to consume and deliver relevant subsets of data
- Presentation ready and intuitive to use downloadable data
- Capability to create Infographics
- Ability to generate curated data set by aggregating raw data
- Ability to do trending analysis
- Ability to integrate with legacy systems in the backend for near real-time data flow
- Ability to create summary data sets with drill down capability

The PH Reporting use cases cover

Objective 6: Providers submitting data to state registries;

Objective 7: Providers submitting data to CDC; and

Objective 8: Providers querying state registries for information.

Specific tactics identified in the HIT Roadmap related to this goal include:

1. Investigate integration of outpatient cancer reporting: Increase adoption of the reporting Cancer registry information (HL7 Cancer CDA) from ambulatory settings and ensure that automation and data reuse data is optimized. (Requirements stage)
2. Automate reportable labs: Use the HL7 V2.x standard for mandated reporting of lab results via STARLIMS. (Requirements stage)
3. Increase ambulatory cancer reporting (Planning stage)
4. Support birth and fetal death standard reporting: Support standards-based electronic reporting from providers using the HL7 national standard for birth defect and fetal death reporting as a Specialized Registry for Meaningful Use Credit (adhering to HL7 CDA® Release 2 Implementation Guide: Birth and Fetal Death Reporting, Release 1, STU 2 - US Realm. (Planning stage)
5. Improve standard immunization reporting: Increase and improve use of standards for Immunization reporting (HL7 VXU) from providers and pharmacies – Validate VXU submissions further upstream, within VHIE; Develop timely remediation policy; adopt an informative acknowledgement message; encourage wider adoption of standards based electronic submissions. (Planning stage)
6. Design query/retrieve for immunizations: Develop public health capability to receive and respond to queries for Immunization History and Forecast electronically using standards developed by the CDC to improve clinicians' ability to obtain real time and forecasted immunization data and support public health registries (Planning stage)

   This Public Health goal is supported by a combination of components in Vermont's HIE architecture including Reporting Services, Patient Attribution, and virtually all Exchange and Foundational Services.

3. Deploying and Developing Care Coordination and Clinical Decision Support Tools for Medicaid Next Generation ACO Program Participants (Vermont's Alternate Payment Model)

In 2017-2018, CMS supported DVHA's agreement with OneCare Vermont related to the development and deployment of the Care Navigator care coordination platform. DVHA is now seeking continued and expanded HITECH funding to support Medicaid VMNG-participating providers in exchanging health information, coordinating care, and relying on trusted data sources to support clinical decision making related to priority health areas. The developments of OneCare's systems are also aimed at engaging patients in their care.

The VMNG Program is predicated on the phased deployment of a statewide Complex Care Coordination model that recognizes the value of having active patient and family participation and coordinated, team-based approach across the continuum of care. The vision behind the model is that, patients and caregivers have access to their shared care plan and the contents and are actively involved in the selection of their lead care coordinator, setting goals and associated tasks, and decision making, to fulfill the expectation that they participate in their care team to enhance the outcomes of their care experience.

To achieve the vision of a Complex Care Coordination model, in 2017-2018, OneCare developed Care Navigator as a tool for organizations implementing community-based care coordination. The tool acts as a collaboration, communication, and engagement solution designed to deliver scalable care coordination recognizing ACO attribution, geography, and accessibility. At that same time, OneCare also developed a system called WorkBenchOne (not funded by HITECH), a population health management and analytics platform that provides ACO providers with a comprehensive suite of reports and analytics tools to be able to access data for their attributed patients quickly and easily, as well as to benchmark cost, utilization, and quality metrics for the ACO and their own panel.

Care Navigator and WorkBenchOne were developed to work in concert to support clinical care and enable patient engagement and care coordination. For example, care coordination data, such as goals and barriers to care, are fed from OneCare's Care Navigator software tool into WorkBenchOne where the data are combined with utilization, cost, and quality data to create a comprehensive view of the impact of the complex care coordination program across care-settings. These outputs are then used to identify care gaps, drive clinical insights, and identify variations in engagement and care across organizations and communities. The advanced analytics tools can be accessed by care team members, providers, and clinical governance committees to drive reform efforts, including opportunities to refine and advance the ACO's clinical model, quality foci, and payment models as they relate to driving clinical improvements (e.g. complex care coordination payment model). WorkBenchOne's population health management tools also support timely utilization monitoring, including potential over and under-utilization of care (e.g. unnecessary tests or procedures, use of preventive care). This information allows care team members to make timely and informed decisions to navigate patients to appropriate levels of care (i.e. primary care versus the emergency room).

The State of Vermont understands that HITECH funding can be used to enable exchange of data and care coordination in support of clinical care, but this funding may not be used to support ACO operations.

The HIT Roadmap has identified a key objective of delivering information at the point of care.

Objective 9: Share appropriate information with patient's care team to support care management and care coordination.

Specific tactics identified in the HIT Roadmap related to this goal include:

1. Define care coordination tool requirements: Key requirements should reflect issues identified prohibiting widespread adoption and effective use of care coordination applications, critically, integration between OCV, Bi-State Primary Care Association ("Bi-State"), and related providers. (requirements phase)

2. Assess care coordination tools against requirements: Determine whether CareNavigator or alternate applications can address key requirements. (requirements phase)
3. Expand care coordination tool adoption: Proceed on the basis of the previous two steps to move forward with care coordination tools that meet requirements that address current concerns. (requirements phase)

4. **Expanding Health Data Exchange and Network Interoperability – Building the Needed "Shared Services" to Support HIE Goals**

Vermont is working to solidify the foundation the health information exchange infrastructure while evolving to meet the needs of an ever-more-integrated system of care. Vermont's requests are guided by the following core principles (repeated from above):

1. The State and its partners are actively working to align with newly proposed federal rules from the Office of the National Coordinator (ONC) and the Center for Medicare Services (CMS) to support interoperability on a local, regional, and national scale in the most efficient and cost-effective way possible.
2. All HIT/HIE investments must align with goals and strategies set forth by the statewide HIE Plan developed by Vermont's HIE Steering Committee.
3. The State is committed to promoting interoperability through activities that support the essence of the HITECH Act, further the objectives of Meaningful Use, and adhere to the guidance set forth in relevant State Medicaid Director's Letters and CMS and ONC guidance.

A summary of the requests in a recently approved IAPD-U follows.

- Development of public health systems to support aggregation, exchange, and extraction of essential public health data for clinical decision support and public health reporting purposes.
- Technical Support for HIT/HIE Planning – bringing national experts to Vermont to ensure that planning, which guides investments, meets the guiding principles stated above.
- Ongoing support for expansion and adoption of data systems and tools that facilitate the effective and efficient exchange of data and improved coordination of care executed under Vermont's Alternative Payment Model, the Medicaid Next Generation ACO Program.
- Further development of Vermont's HIE (the VHIE, operated by VITL). This includes transitioning a project originally intended for Vermont's Blueprint for Health Program technical infrastructure to VITL as they are better positioned to offer "shared services" in the form of patient matching, terminology services, parsing of clinically

sensitive data, storage and routing, to stakeholders that span the health care system, the vast majority of whom serve Medicaid patients in some form.

- Support for Vermont to successfully transition HIE activities from HITECH to the MMIS/MITA funding stream.
- Exploration of CMS supported initiatives including technology to enable transitions of care, personal health record technology, and connections between the HIE and emergency medical services and disaster planning.
- Staffing and contract resources to enable the successful execution of planned activities.

Over the next few years, Vermont plans to pursue HIE projects that continue to position our state HIE infrastructure to support real-time delivery system needs, enable measurement and analysis of state-level health programs, and align with the goal of nationwide interoperability. Vermont's HIE goals are detailed in the statewide HIE Plan, and to ensure achievement of those goals, the deliverables in the State's contract with VITL directly align with the essential elements defined in the plan. To that end, this annual IAPD-U includes HIE requests related to:

- Deploying shared HIE services/infrastructure: VITL is well positioned to deploy a suite of services that will have a two-pronged benefit – 1. Improving the quality of health records used for the provision of direct care and clinical operations and 2. Improving the quality of clinical data used for health system analysis and data-informed system investment and policy making. The services that will be applied to health records will exist on the "front-end" or before data is transmitted for end use. Services include a master patient index, terminology services, data storage, and a routing engine. The deployment of these front-end services will also allow VITL to manage clinically sensitive data, a service they have been previously unable to offer.
- Expanding connectivity to the VHIE: This will include the development of an "interface model" that accounts for shifts to new data standards and transmission options (e.g., core data set and FHIR), and envelopes all of the facets of data quality – from source issues (data quality workflow support) to translation needs – into the connectivity process.
- Supporting eligible providers in meeting meaningful use objectives: Vermont's providers continue to report that they value VITL's provision of Meaningful Use and Security Risk Assessment consulting. The State plans to continue this service through the remainder of the PIP program.
- Expanding HIE data access and use: VITL continues to offer data access options that meet provider's real needs. They offer direct results feeds, query/retrieve

options, and a provider portal. To realize the value of the HIE, it is essential that these options continue to be used and developed.

- Building on proven technologies and HIE activities: With a solid foundation, VITL can now begin to explore HIE activities for which other states and communities have already demonstrated success. These activities include development of a personal health record, connection to emergency and disaster services and connecting to other HIEs or HIE hubs.

  The HIT Roadmap has identified additional objectives related to interoperability:

  Objective 10: Increase utilization of federated approach for sharing transactional data and supporting analytic programs.

  Objective 11: Provide multiple options for sharing information, including query, push, and view.

Technical support of interoperability reduces the burden on participants by supporting industry-standards for data sharing that integrate into workflows for each service (e.g., APIs, Direct Secure Messaging, FHIR). Existing options must scale, and new options must be implemented to meet market demand as use cases and standards evolve. Specific tactics identified in the HIT Roadmap related to these objectives include:

1. Evaluate federal regulations/rules: Evaluate how VHIE will need to change to support new interoperability requirements for patients, providers and health plans cited in federal regulations and proposed rulings (e.g., TEFCA, CMS, ONC). (requirements phase)
    a. APIs for sharing claims data
    b. APIs for sharing clinical data
    c. Participation in data sharing networks
2. Evaluate federated exchange solutions: Evaluate existing and emerging standards and solutions for federated exchange and application across Vermont health data sharing landscape. (Requirements Phase)
3. Explore expanding FHIR and query-based capabilities: Explore opportunities to compliment and expand existing FHIR and query-based (e.g., Carequality, CommonWell) capabilities across Vermont with key stakeholders. (requirements phase)
4. Identify and initiate FHIR and query-based use case pilot: Work with partners such as Blueprint, Bi-State, OCV, GMCB in identifying FHIR and query-based functionality to optimize real-time data sharing and analytics support including VCR, VHCURES, Qlik Sense, Care Navigator and All-Payer Model evaluation. Pilot FHIR through identification and prioritization of potential FHIR use cases and implementation of (test)

standard FHIR server (HAPI) and REST APIs to facilitate FHIR resource exchange. Create FHIR implementation strategy for smooth transition integrating existing infrastructure and leveraging FHIR for where there is not a legacy interface in place. (planning phase)

5. Support standards for existing use cases: Support participant preferences for secure, industry-standard methods for sharing data for existing use cases. (execution phase)
6. Ensure data alignment with USCDI: Identify where standards are defined for structured information exchange and ensure that data align with US Core Data for Interoperability (USCDI) specified in TEFCA. Create a transition path for data aligned with earlier national standards (C32, etc.). (execution phase)
7. Provide education regarding all available services, including VHIE Direct Secure Messaging (DSM) service: Educate VHIE end users on the availability of VHIE services, including the VITLDirect secure, point to point DSM service based on customer needs to share Protected Health Information (PHI), focusing on providers seeking HIPAA-compliant options to fax and phone. (execution service)

5. **Pursuing proven HIE Initiatives Such as IT to Enable Screening, Referral and Transitions to Care, a Personal Health Record, and HIE Connections to Emergency and Disaster Services (See table starting on next page).**

Activity	Start Date	End Date	Status
Conduct PIP prepayment operations for PY 2018 (Section 3 Objective 2)	January, 2018	September, 2019	In Progress
Conduct PIP prepayment operations for PY 2019 (Section 3 Objective 2)	January, 2019	September, 2020	Planning
Complete Audits for PY2017 (Section 3 Objective 3)	July, 2019	June, 2020	In Progress
Implement MAPIR 6.1 (Section 3 Objective 4)	September, 2018	January, 2019	Complete
Implement MAPIR 6.2 (Section 3 Objective 4)	February, 2019	December, 2019	In Progress
Vermont Care Network expansion of data repository capabilities (Section 3 Objective 13)	March, 2018	September, 2019	Planning
Vermont Care Network interface with VHIE and other state data sets (Section 3 Objective 14)	January, 2018	September, 2019	Planning
APM Support – Continue rollout of Care Management tools (Section 3 Objective 9, 10)	October, 2018	September, 2019	In Progress
Public Health Informatics and IZ registry support- Procure consulting services for health informatics across health department registries. (Section 3 Objective 5)	October, 2019	September, 2021	In Progress
Information Security- Perform Independent penetration test and vulnerability scanning as prescribed by MARS-E/NIST 800-53 r4 control CA-8 (Section D3 Objective7)	October, 2018	September, 2019	In Progress
Re-develop the Blueprint provider registry web portal in a more sustainable and secure infrastructure (Section 3 Objective 8)	October, 2018	September, 2021	Planning
Replace the Immunization Registry Forecaster in preparation for MU stage 3 Section 3 Objective 5)	June, 2018	September, 2022	Planning
Expand the capability of the Vermont Clinical Registry to include new data analytic systems, datasets, and products enabling the capability to link clinical and claims data, measurement of healthcare services utilization, quality and outcomes (Section 3 Objective 7)	October, 2018	September, 2022	Planning

Section VI of the IAPD shows these specific milestones and activities that support the near-term goals and objectives above. This list is the actual work in the coming two years related to the three work streams of the program. (PIP, HIE/HIT, Medicaid Enterprise) Additionally, the following tables represent the projects over the next two years specific to the Vermont HIE vendor (VITL) from the July 2019 IAPD-U:

Associated Projects	Project Detail	MU Measures Supported	Match Rate	Total Project Budget	FFP	State
2020 HIE Expansion - HITECH HIE Funded						
Connectivity to the VHIE (Section D3 Objective 1)	This work pertains to the creation and repair of interfaces that connect HCOs electronic health records and other health data systems to the VHIE for the purpose of exchanging health care data. The list of HCO's or other organizations targeted for new or remediated interfaces is prioritized jointly by VITL and the State.	MU stage 3 Obj 7 Health Information Exchange MU stage 3 Obj 8 Public Health Reporting	Activity is 100% Medicaid Match Rate = 90/10	$1,500,000	$1,350,000	$150,000
Client Services Meaningful Use and Security Risk Assessment Consulting (Section 3 Objective 6)	Provide consulting services to Vermont HCO's to include MU and security risk assessment consulting.	MU stage 3 Obj 1 Protect ePHI	Activity is 100% Medicaid Match Rate = 90/10	$150,000	$135,000	$15,000
VHIE Access and Use (Section D3 Objectives 4,5,6)	Ensure continued expansion of VITLAccess and to provide implementation support of other new products along with ongoing expansion and implementation of the State's patient consent policy for the State's EPs and EHs. Roll-out of the provider porta and new products is critical to continued improvement of decision making at the point of care.	MU stage 3 Obj 3 Clinical Decision Support MU stage 3 Obj 6 Coordination of Care	Activity is 100% Medicaid Match Rate = 90/10	$350,000	$315,000	$35,000
Funding at 90/10 2020 Subtotal				**$2,000,000**	**$1,800,000**	**$200,000**
Terminology Services (Section D3 Objective 2)	Terminology Services provides data normalization services for data coming into the VHIE. This initiative will take disparate code sets from source systems, analyze the data, and transform the code sets into standard terminology. By transforming the data into standardized terms, it will allow VITL to increase their focus on improving the quality of the data in the VHIE.	MU stage 3 Obj 7 Health Information Exchange	Activity is Medicaid and Private Match Rate = Fair Share 88.2/11.8	$250,000	$220,500	$29,500

Associated Projects	Project Detail	MU Measures Supported	Match Rate	Total Project Budget	FFP	State
2020 HIE Expansion - HITECH HIE Funded						
Aggregation and Management of Clinically Sensitive Data	This work pertains to the development and deployment of a technical solution to allow for aggregation and protection of the confidentiality of clinically sensitive data including, but not limited to, Substance Use Disorder (SUD) Patient Records as required by 42 CFR Part II, which specifies parameters for consent and redisclosure.	MU stage 3 Obj 3 Clinical Decision Support MU stage 3 Obj 6 Coordination of Care	Activity is Medicaid and Private Match Rate = Fair Share 88.2/11.8	$175,000	$154,350	$20,650
Connecting EMS and other Emergency Services to the HIE	This request is for a project that would leverage the Patient Unified Lookup Service for Emergencies (PULSE) architecture developed by the California Emergency Medical Services Authority (EMSA) in collaboration with HHS representatives from ONC and ASPR. The target population includes Medicaid recipients along with disaster victims who need medical treatment or medication refills, all victims experiencing a medical or trauma emergency, and displaced Victims of Disasters outside of their normal health system or geographic area of service. Connecting through VT HIE, providers and emergency responders have a way to access health information across systems, respond to disasters, improve clinical decision making, improve patient health and measure outcomes.	MU Stage 3 Objective 6: Coordination of Care through Patient Engagement	Activity is Medicaid and Private Match Rate = Fair Share 88.2/11.8	$250,000	$220,500	$29,500

Associated Projects	***Project Detail***	***MU Measures Supported***	***Match Rate***	***Total Project Budget***	***FFP***	***State***
2020 HIE Expansion - HITECH HIE Funded						
Data Quality Workflow support (D3 Objective 10)	Work with health care organizations to identify opportunities to improve the extent to which clinical data are structured, complete, and standards compliant, as well as develop workflows, policies, and procedures necessary to support on-going data quality maintenance in the health care organization's electronic health record system.	MU stage 3 Obj 7 Health Information Exchange	Activity is Medicaid and Private Match Rate = Fair Share 88.2/11.8	$155,000	$136,710	$18,290
HIE Evaluation Support	This funding will support the VHIE operators reasonable and necessary staff time and effort to comply with the requests of the State and their contracted vendor as it pertains to the comprehensive review of Vermont's Health Information Exchange and Health Information Technology.	MU stage 3 Obj 7 Health Information Exchange	Activity is Medicaid and Private Match Rate = Fair Share 88.2/11.8	$40,000	$35,280	$4,720
Shared HIE Services	This request modifies a previous request for "system enhancements of the State's Clinical Registry" (Blueprint Clinical Registry DDI). The HIE operator, VITL, has proposed a technical solution that offers shared infrastructure (Master Patient Index, Terminology Services, Integration Engine, Data Storage) to meet the needs of both the Clinical Registry and all consumers of health data from the HIE. We anticipate	MU stage 3 Obj 3 Clinical Decision Support MU stage 3 Obj 6 Coordination of Care MU stage 3 Obj 7 Health Information Exchange MU stage 3 Obj 8 Public Health Reporting	Activity is Medicaid and Private Match Rate = Fair Share 88.2/11.8	$4,000,000	$3,528,000	$472,000
that this solution will come in at less **Funding Subject to 88.2 % Fair Share 2020 Subtotal**				**$4,870,000**	**$4,295,340**	**$574,660**

Associated Projects	***Project Detail***	***MU Measures Supported***	***Match Rate***	***Total Project Budget***	***FFP***	***State***
2020 HIE Expansion - HITECH HIE Funded						

	Total Project Budget	***FFP***	***State***
2020 HITECH Total (90/10 + Fair Share)	**$6,870,000**	**$6,095,340**	**$774,660**
90/10 Match Rate Fair Share Match Rate	$2,000,000	$1,800,000	$200,000
	$4,870,000	$4,295,340	$574,660

Associated Projects	***Project Detail***	***MU Measures Supported***	***Match Rate***	***Total Project Budget***	***FFP***	***State***
2021 HIE Expansion - HITECH HIE Funded						
Connectivity to the VHIE (Section D3 Objective 1)	This work pertains to the creation and repair of interfaces that connect HCOs electronic health records and other health data systems to the VHIE for the purpose of exchanging health care data. The list of HCO's or other organizations targeted for new or remediated interfaces is prioritized jointly by VITL and the State.	MU stage 3 Obj 7 Health Information Exchange MU stage 3 Obj 8 Public Health Reporting	Activity is 100% Medicaid Match Rate = 90/10	$1,500,000	$1,350,000	$150,000
Client Services Meaningful Use and Security Risk Assessment Consulting (Section 3 Objective 6)	Provide consulting services to Vermont HCO's to include MU and security risk assessment consulting.	MU stage 3 Obj 1 Protect ePHI	Activity is 100% Medicaid Match Rate = 90/10	$150,000	$135,000	$15,000
VHIE Access and Use (Section D3 Objectives 4,5,6)	Ensure continued expansion of VITLAccess and to provide implementation support of other new products along with ongoing expansion and implementation of the State's patient consent policy for the State's EPs and EHs. Roll-out of the provider porta and new products is critical to continued improvement of decision making at the point of care.	MU stage 3 Obj 3 Clinical Decision Support MU stage 3 Obj 6 Coordination of Care	Activity is 100% Medicaid Match Rate = 90/10	$350,000	$315,000	$35,000
Funding at 90/10 2021 Subtotal				**$2,000,000**	**$1,800,000**	**$200,000**

Associated Projects	***Project Detail***	***MU Measures Supported***	***Match Rate***	***Total Project Budget***	***FFP***	***State***
2021 HIE Expansion - HITECH HIE Funded						
Terminology Services (Section D3 Objective 2)	Terminology Services provides data normalization services for data coming into the VHIE. This initiative will take disparate code sets from source systems, analyze the data, and transform the code sets into standard terminology. By transforming the data into standardized terms, it will allow VITL to increase their focus on improving the quality of the data in the VHIE.	MU stage 3 Obj 7 Health Information Exchange	Activity is Medicaid and Private Match Rate = Fair Share 88.2/11.8	$250,000	$220,500	$29,500
Aggregation and Management of Clinically Sensitive Data	This work pertains to the development and deployment of a technical solution to allow for aggregation and protection of the confidentiality of clinically sensitive data including, but not limited to, Substance Use Disorder (SUD) Patient Records as required by 42 CFR Part II, which specifies parameters for consent and redisclosure.	MU stage 3 Obj 3 Clinical Decision Support MU stage 3 Obj 6 Coordination of Care	Activity is Medicaid and Private Match Rate = Fair Share 88.2/11.8	$175,000	$154,350	$20,650
Connecting EMS and other Emergency Services to the HIE	This request is for a project that would leverage the Patient Unified Lookup Service for Emergencies (PULSE) architecture developed by the California Emergency Medical Services Authority (EMSA) in collaboration with HHS representatives from ONC and ASPR. The target population includes Medicaid recipients along with disaster victims who need medical treatment or medication refills, all victims experiencing a medical or trauma emergency, and displaced Victims of Disasters outside of their normal health system or geographic area of service. Connecting through VT HIE, providers and emergency responders have a way to access health information across systems, respond to disasters, improve clinical decision making, improve patient health and measure outcomes.	MU Stage 3 Objective 6: Coordination of Care through Patient Engagement	Activity is Medicaid and Private Match Rate = Fair Share 88.2/11.8	$250,000	$220,500	$29,500

Associated Projects	***Project Detail***	***MU Measures Supported***	***Match Rate***	***Total Project Budget***	***FFP***	***State***
2021 HIE Expansion - HITECH HIE Funded						
Data Quality Workflow support (D3 Objective 10)	Work with health care organizations to identify opportunities to improve the extent to which clinical data are structured, complete, and standards compliant, as well as develop workflows, policies, and procedures necessary to support on-going data quality maintenance in the health care organization's electronic health record system.	MU stage 3 Obj 7 Health Information Exchange	Activity is Medicaid and Private Match Rate = Fair Share 88.2/11.8	$155,000	$136,710	$18,290
Shared HIE Services	This request modifies a previous request for "system enhancements of the State's Clinical Registry" (Blueprint Clinical Registry DDI). The HIE operator, VITL, has proposed a technical solution that offers shared infrastructure (Master Patient Index, Terminology Services, Integration Engine, Data Storage) to meet the needs of both the Clinical Registry and all consumers of health data from the HIE. We anticipate	MU stage 3 Obj 3 Clinical Decision Support MU stage 3 Obj 6 Coordination of Care MU stage 3 Obj 7 Health Information Exchange MU stage 3 Obj 8 Public Health Reporting	Activity is Medicaid and Private Match Rate = Fair Share 88.2/11.8	$2,000,000	$1,764,000	$236,000
that this solution will come in at less **Funding Subject to 88.2% Fair Share 2021 Subtotal**				**$2,830,000**	**$2,496,060**	**$333,940**

	Total Project Budget	***FFP***	***State***
2021 HITECH Total (90/10 + Fair Share)	**$4,830,000**	**$4,296,060**	**$533,940**
90/10 Match Rate	$2,000,000	$1,800,000	$200,000
Fair Share Match Rate	$2,830,000	$2,496,060	$333,940

E2 Expectations for provider EHR technology adoption over time: annual benchmarks by provider type

The Vermont PIP team conducted a provider survey as part of the Section A1 HIE landscape environmental scan in this SMHP. See that section for a full description of the survey methodology and results. In addition to characterizing the current adoption of EHR technology the survey results identify obstacles to EHR adoption, HIE participation, and willingness to consider state-funded incentive payment programs after the PIP program ends in 2021. Targeted outreach has been ongoing to educate providers about the program and incentive payment possibilities, and although we anticipate some growth in EHR adoption we don’t expect that growth to be the result of the PIP program.

E3 Annual benchmarks for each of DVHA’s goals that will serve as clearly measurable indicators of progress along this scenario

The Department of Vermont Health Access and its Health Care Reform Team will continue to provide detailed reporting of progress of the programs and initiatives. We have received specific guidance from CMS on our Enterprise goals and continue to have regularly scheduled calls to discuss progress.

E4 Annual benchmarks for audit and oversight activities

Program year 2017 PIP audits are currently being performed under version 7.0 of the Audit Plan, approved by CMS in July of 2019. The audit strategy is typically revised annually to accommodate program Rule changes. Risk assessments and audit selection have been completed for program year 2017 and audits are underway. Audit progress is reported in the CMS quarterly reports and individual audit statuses are reported via the HITECH research and support user interface

APPENDIX A: TABLE OF ACRONYMS

Acronyms appearing in this edition of the SMHP

ACA	Affordable Care Act
ACCESS	Not an acronym, stands for Vermont's legacy eligibility system
ACO	Accountable Care Organization
Acronym	Explanation
ADAP	(Division of) Alcohol and Drug Abuse Programs
ADHD	Attention Deficit / Hyperactive Disorder
ADT	Admit Discharge Transfer
AHS	Agency of Human Services
AIU	Adopt, Implement, or Upgrade
APCD	All Payer Claims Database
ARRA	American Recovery and Reinvestment Act of 2009
BCBS	Blue Cross Blue Shield
BH	Behavioral Health
BHPr	(HRSA) Bureau of Health Professionals
BISHCA	(Vermont Department of) Banking, Insurance, Securities and Health Care Administration (now DFR)
BPHC	(HRSA) Bureau of Primary Health Care
CAH	Critical Access Hospital
CBOC	Community Based Outpatient Clinic
CCD	Continuity of Care Document
CDC	Centers for Disease Control
CDR	Consolidated Data Record
CHCB	Community Health Centers of Burlington, a Vermont FQHC
CHCRR	Community Health Centers of the Rutland Region, a Vermont FQHC
CHIPRA	Children's Health Insurance Program Reauthorization Act
CHSLV	Community Health Services of Lamoille Valley, a Vermont FQHC
CHT	Community Health Team
CIS	Children's Integrated Services
CMHC	Community Mental Health Center
CMMI	Center for Medicare and Medicaid Innovation
CMS	Centers for Medicare and Medicaid Services
CPOE	Computerized Provider Order Entry
CRS	Center for Rural Studies
CSME	Central Source for Measurement and Evaluation
DAIL	Department of Disabilities, Aging and Independent Living
Das	Designated Agencies
DCF	Department for Children and Families
DDI	Design, Development and Implementation
DFR	Department of Financial Regulation
DHMC	Dartmouth Hitchcock Medical Center
DHR	Department of Human Resources

DIRECT	A protocol for Direct point-to-point secure email transmission of health Information
DMH	Department of Mental Health
DocSite	Covisint DocSite Clinical Data Registry
DPS	Department of Public Safety
DUALS	Refers to individuals dually eligible for Medicare and Medicaid benefits
DVHA	Department of Vermont Health Access
eCQM	electronic Clinical Quality Measures
EH	Eligible Hospital
HER	Electronic Health Record
EHRIP	Electronic Health Record Incentive Program
ELR	Electronic Lab Reporting
eMPI	electronic Master Person Index
EMR	Electronic Medical Record
EP	Eligible Professional
EPSDT	Early and Periodic Screening, Diagnosis, and Treatment
ESB	Electronic Service Bus
FAHC	Fletcher Allen Health Care
FFY	Federal Fiscal Year
FQHC	Federally Qualified Health Center
GMCB	Green Mountain Care Board
GUI	Graphical User Interface
HBE	Health Benefit Exchange
HCCN	Health Center Controlled Network
HCR	Health Care Reform
HH	Home Health
HI	Health Information
HIE	Health Information Exchange
HIT	Health Information Technology
HIT and HIE	Health Information Technology and Health Information Exchange
HITECH	Health Information Technology for Economic and Clinical Health
HIX	Health Insurance Exchange
HIXNY	Healthcare Information Xchange of New York
HL7	Health Level 7 International – standard for interoperability
HRSA	Health Resources and Services Administration
HSE	Health and Human Services Enterprise (outdated)
HSEP	Health and Human Services Enterprise Platform (outdated)
IAPD	Implementation Advance Planning Document
IE	Integrated Eligibility
IZ	Immunization Registry
LRHC	Little Rivers Health Care, a Vermont FQHC
LTC	Long Term Care
LTPAC	Long Term and Post-Acute Care
LTSS	Long Term Support Services
MA	Medical Assistance

MAPIR	Medical Assistance Provider Incentive Repository
MDM	Master Data Management
MDS	(Long Term Care) Minimum Data Set
MH	Mental Health
MHISSION-VT	Mental Health/Substance Abuse Intergovernmental Service System Interactive On-Line Network for Vermont
MITA	Medicaid Information Technology Architecture
MITA-SS-A	Medicaid Information Technology Architecture – State Self-Assessment
MMIS	Medicaid Management Information System
NCQA	National Committee for Quality Assurance
NEHIN	New England Health Information Network
NESCSO	New England States Consortium Systems Organization
NLR	National Level Repository
NoTCH	Northern Tier Center for Health, a Vermont FQHC
NRandA	National Registration and Attestation System
ONC	Office of the National Coordinator
ONC-HIE-PIN	Office of the National Coordinator – Health Information Exchange – Program Information Notice
ORHP	(HRSA) Office of Rural Health Policy
PA OMAP	Pennsylvania Office of Medical Assistance Programs
P-APD	Planning Advance Planning Document
PBM	Pharmacy Benefits Manager
PHI	Personal Health Information
PHIN MS	Public Health Information Network Messaging System
PIP	Promoting Interoperability Program (formerly the EHR Incentive Program)
PMO	Project Management Office
QI	Quality Improvement
RCF	Residential Care Facility
REC	Regional Extension Center
RFP	Request for Proposals
RHC	Regional Health Center
ROSITA	Reusable OMOP (Observational Medical Outcomes Partnership) - SAFTINet (Scalable Architecture for Federated Translational Inquiries Network) Interface Transformation Adaptor
SA	Substance Abuse
SaaS	Software as a Service
SAMHSA	Substance Abuse and Mental Health Services Administration
SASH	Support and Services at Home
SBIRT	Screening, Brief Intervention, and Referral to Treatment
SIM	State Innovation Model
SMA	State Medicaid Agency
SMCS	Springfield Medical Care Systems, a Vermont FQHC
SMDL	State Medicaid Director Letter
SMHP	State Medicaid HIT Plan

SNF	Skilled Nursing Facility
SOA	Service Oriented Architecture
SOP	Strategic and Operational Plans
SOV	State of Vermont
Surescripts	The Surescripts e-Prescription network
THC	The Health Center, a Vermont FQHC
T-MSIS	Transformed Medicaid Statistical Information System
UDS	Uniform Data System
UHIN	Utah Health Information Network
USDA	United States Department of Agriculture
UVM	University of Vermont
V. S. A.	Vermont Statutes Annotated
VA	Veterans Administration
VAHHA	Vermont Assembly of Home Health Agencies
VBH	The Vermont Blueprint for Health
VCDMHS	Vermont Council of Developmental and Mental Health Services
VCDR	Vermont Coalition for Disability Rights
VCGI	Vermont Center for Geographic Information
VCIL	Vermont Center for Independent Living
VDH	Vermont Department of Health
VHC	Vermont Health Connect
VHCURES	Vermont Healthcare Claims Uniform Reporting and Evaluation System
VHIE	Vermont Health Information Exchange
VHCIP	Vermont Health Care Innovation Project
VHITP	Vermont Health Information Technology Plan
VITL	Vermont Information Technology Leaders, Inc.
VRHA	Vermont Rural Health Alliance
VSH	Vermont State Hospital
VSOP	Vermont Strategic and Operational Plans
VTA	Vermont Telecommunications Authority
VTel	Vermont Telephone Company, Inc.
WIC EBT	Women, Infants, and Children Electronic Benefit Transfer

APPENDIX B: HIE STRATEGIC PLAN

Health Information Exchange Strategic Plan

2019 - 2020

SUBMITTED TO THE GREEN MOUNTAIN CARE BOARD

Submitted by the Department of Vermont Health Access, Agency of Human Services

Contents

Key Terms

Health information – Administrative and clinical information created during care delivery which supports coordination of care, reimbursement, public health and quality reporting, analytics, and the policy and governance surrounding management of the health care system.

Health information exchange (HIE) verb – The action of sharing health information across facilities, organizations, and government agencies according to national standards. HIE is often used as shorthand for programs, tools, and investments that help aggregate and exchange health information.

Health Information Exchange (HIE) noun –An organization that collects health information electronically, manages it, and makes it available across the health care system. There is at least one HIE in almost every state in the nation, and HIEs can offer a variety of services. In Vermont there is one HIE, referred to as the Vermont Health Information Exchange (VHIE), which is operated by the Vermont Information Technology Leaders (VITL).

People – Throughout this plan there are references to "people" - not patients, clients, members or beneficiaries. Fundamentally, all actors in the health system are people, not the diseases they have or the insurance cards they hold. Using this term maintains the reminder that the health system is here to support health and well-being, not stigmatize or reduce any person to their symptoms, situation or relationships.[1]

Health System – A "system" can be understood as an arrangement of parts and their interconnections that come together for a purpose. A health system has many parts. In addition to individuals and families, health providers, health services organizations, pharmaceutical companies, government, and other organizations play important roles. The interconnections of the health system can be viewed as the functions and roles played by these parts. The health system includes all activities focused on promoting, restoring, and maintaining health.[2]

A note on the name of this plan: 18 V.S.A. § 9351 calls for a Health Information Technology Plan which "shall include the implementation of an integrated electronic health information infrastructure for the sharing of electronic health information among health care facilities, health care professionals, public and private payers, and patients." The term *Health Information Exchange* describes the act of sharing health information, often electronically, while the term *Health Information Technology* is a broad term that describes the technical capabilities and equipment an individual or organization might use to meet any variety of health-related needs. Therefore, to best align with the focus of this plan to provide a transparent view of the State's health information exchange needs and challenges, this plan is hereafter referred to as the Health Information Exchange Plan, or the HIE Plan for short.

Executive Summary

This is the first annual update to the initial 2018-2019 HIE Strategic Plan (Plan) approved by the Green Mountain Care Board (GMCB) in November 2018. The 2018-2019 HIE Strategic Plan articulated the vision, goals, and major

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[1] Williams, S. T. (2013, November 22). *A person, not a patient: Words about the words we use*. MinnPost. Retrieved from https://www.minnpost.com

[2] World Bank. 2007. Healthy Development: The World Bank Strategy for Health, Nutrition, and Population Results. Washington, DC. World Bank. https://openknowledge.worldbank.org/handle/10986/6843 License: CC BY 3.0 IGO.

objectives, which are unchanged in this update. This update builds on the work reflected in the approved Plan, noting progress made and identifying the work anticipated for 2020.

The HIE Strategic Plan established three key goals:

1. **Create One Health Record for Every Person -** Support optimal care delivery and coordination by ensuring access to complete and accurate health records.
2. **Improve Health Care Operations -** Enrich health care operations through data collection and analysis to support quality improvement and reporting.
3. **Use Data to Enable Investment and Policy Decisions -** Bolster the health system's ability to learn and improve by using accurate, comprehensive data to guide investment of time, labor and capital, and inform policy making and program development.

In its first full year of collaboration, using the HIE Plan objectives as the basis of its work, DVHA, VITL and the HIE Steering Committee made advancements in governance, tactical activities, the development of an HIE Technical Roadmap, and the implementation of a new consent policy for information stored in the VHIE. The 2019-2020 HIE Strategic Plan highlights the progress made with these initiatives with a focus on 5 key areas of work including:

- Collaborative Services
- HIE Governance
- Health Information Technology Roadmap (Roadmap)
- Operational Efficiency and Effectiveness through the Tactical Plan
- Opt-out Consent Policy Implementation

Each of these areas is discussed briefly in this executive summary and more fully in the body of this Plan.

Collaborative Services Project: The HIE Collaborative Services project is an effort to continue to improve the foundational and exchange services required for a robust system of health information exchange. With a modular design, the project focuses on implementing a Master Patient Index (MPI), a Terminology Services Engine, an Integration Engine, and a new data repository to enable aggregation of clinical and other health-related data in support of point of care data delivery, analysis, and reporting. Moving MPI, Terminology Services, and the Integration Engine to the front end (Phase 1), coupled with the new data repository (Phase 2), increases overall data quality, enhances the availability of non-standard data, and supports segregation of sensitive data from nonsensitive data. Going forward, these advancements will facilitate the exchange of health care-related data not already in the VHIE including social determinants of health, clinically sensitive data such as mental health and substance use, and health care utilization and cost data (claims).

HIE Governance: The HIE Steering Committee is the permanent governance structure for HIE in Vermont. In 2019, the Committee developed and finalized a Steering Committee Charter to clarify its vision, guiding principles, membership, responsibilities, and decision-making processes (Appendix A). The Committee also identified specific sub-tasks including connectivity criteria and data governance.

Connectivity Criteria - Essential to the success of the Collaborative Services Project, connectivity criteria establish conditions for health care organizations to connect to the VHIE. Three tiers of performance reflect achievement in meeting baseline standards, common data set and data quality standards, and expanded data set and data quality standards. In 2019, a subcommittee developed updates to the criteria which were approved by the Committee. In 2020, the subcommittee will consider needs beyond primary care and the potential to have differing criteria for specialty programs like women's health, mental health, and substance use disorder. Connectivity Criteria additions developed in 2019 are shown in Appendix B. Current connectivity criteria are posted on the VITL website.

Data Governance - In 2019, the Committee investigated the current data governance efforts across state government and within organizations managing HIE systems. To support Data Governance, the Committee plans to convene an HIE Data Governance sub-committee to draft policy on data sharing requirements, identify and define data sets for specified use cases, and address data quality issues at the policy level. In 2020, the Committee will consider establishing standing and/or ad hoc committees to leverage its ability to make progress with expanded sub-tasks in the tactical plan portfolio of activities.

Health Information Technology Roadmap: The initial HIE Strategic Plan called for the development of a technical roadmap and the development of that roadmap has been a major portion of the Committee's work in 2019 (Appendix C). A major section of this Plan presents a summary of the Roadmap process and contents. The Roadmap document will guide the technical aspects of the Committee's work for several years, beginning with the determination of tactical work for 2020. The Roadmap document is included in its entirety as an appendix to this Plan.

2018-2019 Tactical Plan Update: The tactical plan identified tactics and lead responsibilities in categories of foundational services, exchange services, and end-user services. This Plan provides an update on these activities and the progress that has been made. The Committee incorporated the tactical plan elements identified in the HIE Technical Roadmap for Vermont (Roadmap) to prioritize the work of the Committee.

Opt-out Consent Policy Implementation: Act 53 of 2019 changes the state's consent policy for sharing information stored in the VHIE from opt-in to opt-out. DVHA formed a project team, developed a workplan, and the workplan is currently being implemented across three workstreams:
stakeholder engagement, mechanisms to support the opt-out policy, and an evaluation plan (Appendix D). The consent policy change will be effective March 1, 2020.

Building on the Framework for Success

Nationwide, it is anticipated that the exchange of health information supports an efficient health care system that effectively manages costs while promoting improved health and well-being. Many states have struggled with implementing an HIE program. Accordingly, a state driven HIE program must be clear in its vision, goals, and accountability. To that end, this HIE plan covers three essential elements:

1. Vermont's specific vision and goals for the exchange of health data that express what the State aims to achieve.
2. The HIE ecosystem - the environment required for HIE to effectively function.
3. Clear objectives and a tactical plan - a clear path for achieving progress toward the vision.

The ideal state must be easily understood by stakeholders, policymakers, and the operator of the VHIE. Understandable goals will promote common expectations, accountability, and the likelihood that HIE vendors will meet the needs of health system stakeholders.

To get from a set of objectives to an actionable plan, early in the process, the HIE Steering Committee reviewed and approved a set of Operational and Technical Guiding Principles, both of which informed and provided structure to the path laid out here. These Principles, combined with a review of current infrastructure, collaboration among parallel planning efforts under Agency for Human Services (AHS) and within stakeholder organizations, and the combined and cumulative experience of the Roadmap authors resulted in a Technical Roadmap and a 2019-2020 Tactical Plan.

The Value Proposition for HIE: Fundamental Goals

The HIE goals reflect what the State hopes to achieve through HIE to better the health and wellbeing of Vermonters.

In 2019, the HIE Steering Committee continues to agree with the work done in 2017, in which use cases were gathered to articulate how individuals and organizations from across the continuum of care interact with, and rely upon, HIE tools and services. The use cases reflect current needs across the health delivery system and are intended to support ongoing planning efforts. The use cases represent a variety of needs ranging from public health reports that require the collection of disease data, to quality reports that measure efforts to improve process and outcomes, to the need for realtime notifications of changes to health status to effectively coordinate care.

The three HIE goals are essential to continuously improve the health delivery system, however, there are underlying barriers to each, which are explained in greater detail in this plan. If Vermont wants to build a health care system that uses resources efficiently and realizes the best possible health outcomes, the State requires the right tools. HIE tools are critical to building an efficient and outcome-oriented health delivery system.

The HIE Ecosystem

The environment required for HIE to function effectively requires four pillars. Along with technology, these include a formalized governance structure, policy and processes that facilitate system goals, and a financial model that ensures resources are available to maintain and advance HIE systems. The following section includes an overview of the essential structural components, gives an overview of how the pillars of the ecosystem have matured throughout 2019 and sets a framework for continued growth through the Guiding Principles and the technical roadmap.

As you read through the key overview, advancements and future direction, note that though each pillar and related structural components may evolve independently, consistent progress must continue across all pillars to ensure the foundation is in place to support achievement of HIE goals.

Figure 1, below, defines how the components of the HIE Ecosystem interrelate to form a cohesive strategy.

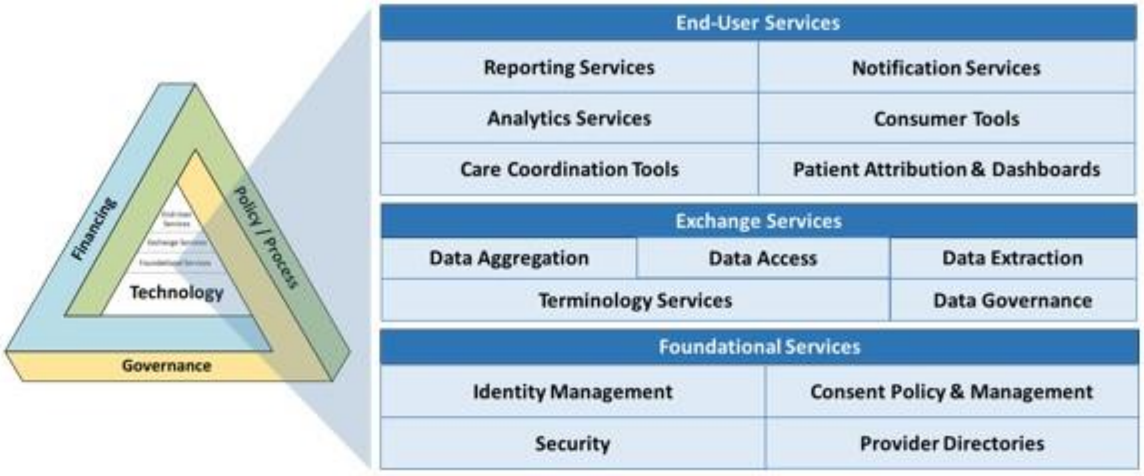

Figure 1: HIE Ecosystem

HIE Ecosystem: Governance

Developing a Sustainable Governance Model

Governance establishes the structure for effective leadership including the rules of engagement, decision making rights, and accountability, creating a trusted environment for sharing information. The Office of the National Coordinator[3] defines HIE governance as, "The establishment and oversight of a common set of behaviors, policies, and standards that enable trusted electronic health information exchange among a set of participants."[4] The 2017 Evaluation of Health Information

Technology in Vermont, noted that the State lacked such a governance structure,[5][6] and in response in 2018 DVHA established a permanent governing body, the HIE Steering Committee, to act as a single point of contact responsible for formally convening key HIE stakeholders to develop and oversee execution of an annual statewide HIE strategic plan.

In addition to the Steering Committee, which establishes the strategic direction and monitor's progress, Vermont's HIE Governance Ecosystem involves multiple checks and balances and oversight entities including DVHA (contract manager), the VITL Board (oversight of VHIE operations), and the GMCB approval of VITL budget and the statewide HIE Strategic Plan[6]).

In brief, in 2019 the HIE Steering Committee developed a Steering Committee Charter which has been approved, oversaw the opt-out consent policy implementation planning, oversaw the development of an HIE Technical Roadmap, oversaw an update to connectivity criteria for the VHIE, and made significant progress with data governance. Several other topics were considered by the Committee as well and a full accounting is covered in the 2018-2019 Tactical Plan update section of this Plan.

In 2020, the HIE Steering Committee will continue to assess the roles of stakeholders in HIE governance. The HIE Strategic Plan, updated annually on November 1, will be a mechanism for recommending refinements to the governance model to best support statewide HIE goals.

HIE Steering Committee Model and Structure

The steering committee model is designed to identify where decision makers go for support, who is responsible for oversight, who provides HIE services, and how service providers are held accountable. It also calls for the steering committee to:

- define an HIE investment portfolio and monitor statewide investments in service of the Vermont's HIE goals;
- assess the viability of investments, to identify the needed level of investments, and to consider the appropriate balance of public and private funds; and,

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[3] The Office of the National Coordinator (ONC) is the principal federal entity charged with coordination of nationwide efforts to implement and use the most advanced health information technology and the electronic exchange of health information. The position of National Coordinator was created in 2004, through an Executive Order, and legislatively mandated in the Health Information Technology for Economic and Clinical Health Act (HITECH Act) of 2009.

[4] Daniel, J. G., The Office of the National Coordinator for Health Information Technology. (2014). *Health Information Exchange Governance.* Retrieved from https://www.healthit.gov/topics.

[5] Health Tech Solutions. (2017). *Vermont Evaluation of Health Information Technology Activities: Final Report*. Retrieved from https://legislature.vermont.gov/reports-and-research.

[6] V.S.A. § 9375(b)(2)(A)

- advance HIE use cases, ensure accountability of all parties involved in furthering the State's HIE goals, and engage a broad range of stakeholders in the strategic planning and oversight activities.

To that end, in the past year the Committee developed and approved a Steering Committee Charter to clarify its vision, guiding principles, membership, responsibilities, and decision-making processes; assessed current and future governance needs to ensure success in implementing the HIE Strategic Plan; and, based on those needs determined that convening sub-committees or workgroups will accomplish broader, more tangible workstreams.

Potential for leveraging effectiveness through sub-committees

While the Steering Committee will continue to hold the strategic vision for HIE in Vermont and be responsible for updating and monitoring progress on the HIE Strategic Plan, sub-committees or workgroups will provide subject matter expertise, operational support, and projected work efforts to bring specific recommendations to the larger body. The group plans to convene sub-committees early in 2020 to further the objectives identified above.

The HIE Steering Committee understands that this work is iterative in nature and through its work executing and evaluating the 2018-2019 Plan the Committee determined that the ideal nature of subcommittees will be on an as-needed, or ad-hoc basis. Consideration is forthcoming for the subcommittees structure in 2020. Examples of sub-committee topics that can be considered by the Committee include data governance, quality management, HIE-related considerations for mental health and social determinants of health, interoperability, and use case development. The HIE Steering Committee Charter may need to be revised to recognize the role of sub-committees and to provide guidance on how sub-committees are formed and how they will function. Three ad-hoc working groups that emerged in 2019 demonstrate, as you can see below, the need for subcommittees were Connectivity Criteria, Consent, and Data Governance. These three topical areas are candidates to continue in 2020.

Connectivity Criteria Workgroup: The development of connectivity criteria is critical to the functionality of the VHIE. As the landscape continues to shift, the connectivity criteria should align with stakeholder needs. Ensuring that connectivity criteria is defined for end-users such as designated agencies, OneCare Vermont, data access at the point of care, and the management of sensitive data is an ongoing process that is best accomplished through a specialized sub-committee. The US Core Data for Interoperability (USCDI) is the foundation for the that process. In 2019 the Connectivity Criteria were updated through the work of a working group or ad hoc sub-committee. This group was informally organized, the work was effective in achieving approval for the Connectivity Criteria update recommendations, and the Steering Committee will consider formal adoption of the sub-committee candidate for 2020.

One priority of the connectivity criteria work is establishing criteria to support broader data types including potentially social determinants of health, claims, and mental health data. Substance use data may be considered, with the understanding that the management of substance use data falls under 42 CFR Part 2. Understanding these unique connectivity needs will allow VITL to manage 42 CFR Part 2 data in Phase 2 of Collaborative Services.

Interoperability is a key concept and is the subject of activity at both federal and state levels. Data sharing is at the heart of interoperability and a common concern expressed across Vermont are the legal and perceived barriers to appropriate data sharing. An overarching clear framework expressed through the connectivity criteria will empower data sources and data receivers to confidently share data throughout Vermont and nationwide. Communicating a shared framework that includes representations from all stakeholder groups, applicable federal, state, and jurisdictional laws as well as organizational policy will likely reduce the risk of inappropriate data exposure or consumption and will encourage appropriate data sharing. If this topic becomes a priority for 2020, potentially through a sub-committee, the Steering Committee could work with stakeholders to define a process for identifying new data sharing requirements including industry-standards for new use cases and evolving standards for existing use cases and develop and agree upon a trusted legal framework to ensure consistent rules for data sharing across states. By establishing clear requirements, the HIE Steering Committee will be able to realize the needs of end users of health data throughout the State and work to develop projects that are in support of both key stakeholders and the three goals outlined above.

Consent Workgroup: Act 53 of 2019, An act relating to informed health care financial decision making and the consent policy for the Vermont Health Information Exchange, adopts an opt-out consent policy for the sharing of patient health information through the Vermont Health Information Exchange (VHIE) and specifies that the implementation strategy shall include substantial opportunities for public input. Act 53 further specifies several requirements for associated patient education mechanisms and processes and required DVHA to develop an implementation strategy for the new consent policy (the change to consent policy is effective March 1, 2020). To accomplish this work, a workgroup or subcommittee was formed.

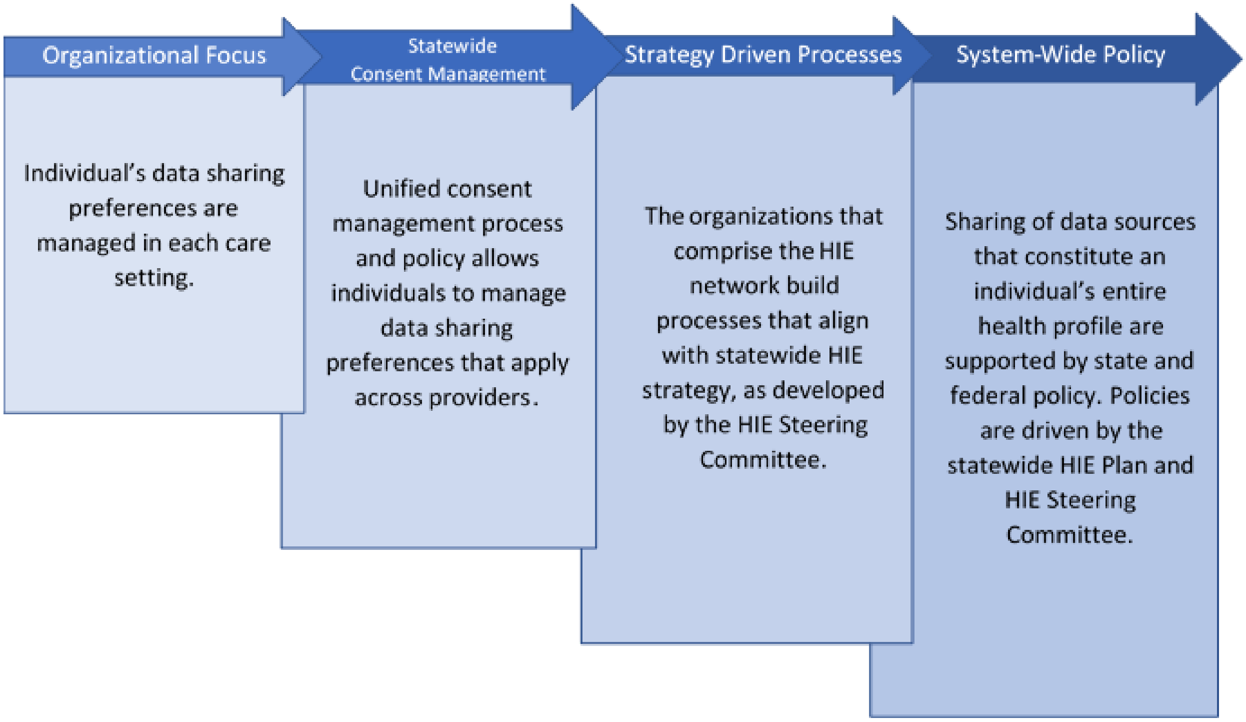
In the short amount of time since Act 53 was signed into law on June 10, 2019, initial activities completed included establishment of a project team and planning for the successful implementation of the requirements of the Act. Three main workstreams were identified to ensure a successful implementation: stakeholder engagement, supporting mechanisms, and evaluation of the success of the stakeholder engagement. An initial update report of the Act 53 consent policy implementation work and the three workstreams was submitted on August 1, 2019. A second update, required for submission on or before November 1, 2019 is being submitted with this HIE Plan as Appendix D. A final report is due January 15, 2020.

Data Governance Workgroup: Many efforts are underway in Vermont and beyond to assess Data Governance in health IT. The complex nature of HIE calls presents unique challenges to data governance. Convening a data governance sub-committee ensures that these challenges and concerns are investigated through the lens of nationwide best practice, industry trends, and existing statewide governance bodies. In order to best position HIE Data Governance capability, the 2019 HIE Steering Committee investigated the current data governance efforts across state government and within organizations managing HIE systems, as directed by the 2018-2019 Plan. To support Data Governance, the HIE Steering Committee is considering an HIE Data Governance subcommittee. The sub-committee will draft policy on data sharing requirements, identify and define data sets for specified use cases, and address data quality issues at the policy level.

HIE Ecosystem: Policy & Process

The 2018-2019 Plan stated that Vermont needs data exchange policies and processes that recognize individualized needs while supporting holistic care and system measurement and improvement.
Figure 2 below sets forth an evolutionary path for Vermont's HIE Policy.

Figure 2: HIE Policy and Process Maturity Model



Individual's data sharing preferences are managed in each care setting.

Unified consent management process and policy allows individuals to manage data sharing preferences that apply across providers.

The organizations that comprise the HIE network build processes that align with statewide HIE strategy, as developed by the HIE Steering Committee.

Sharing of data sources that constitute an individual's entire health profile are supported by state and federal policy. Policies are driven by the statewide HIE Plan and HIE Steering Committee.

Vermont's Legislature has repeatedly acted to ensure that HIE policies bolster the health care system. Most recently, the Legislature passed Act 53 of 2019 which changes the policy regulating consent to share information in the VHIE.

Opt-out Consent Policy Implementation

Act 73 of 2017 required an evaluation of the performance of the HIE and highlighted Vermont's consent policy environment as a barrier to health information exchange. The evaluation report identified that the exchange of health information was restricted by the opt-in policy resulting in limited value due to limited usage of the HIE. Further, a majority of other states had adopted optout consent policies and Vermont was out of sync with much of the rest of the country.

Act 53 of 2019, An act relating to informed health care financial decision making and the consent policy for the Vermont Health Information Exchange, adopts an opt-out consent policy for the sharing of patient health information through the Vermont Health Information Exchange (VHIE). The change to the consent policy will allow a higher volume of patient records to be exchanged in the Vermont Health Information Exchange which will support improvements in patient outcomes by allowing providers to make better informed decisions at the point of care.

Act 53 specifies that the implementation strategy include substantial opportunities for public input and includes two major areas of implementation that are the responsibility of the Department of Vermont Health Access (DVHA) – an updated statewide Health Information Technology Plan (the HIE Plan) that provides for the new consent policy and development of an implementation strategy for the new consent policy. Act 53 further specifies several requirements for associated patient education mechanisms and processes.

DVHA, in consultation with stakeholders, has developed an implementation plan for the new optout consent policy based on meaningful consent and is on target to implement opt-out consent for March 1, 2020. More details may be found in the Appendix D, Progress Report on the Stakeholder Engagement Process and Consent Policy Implementation Strategy of November 1, 2019.

Future Policy and Process

Sharing sensitive health information, including data types associated with 42 CFR Part 2 restrictions, is a topic of ongoing interest and concern in Vermont. Sharing sensitive information will be considered by the Committee in 2020 as part of data governance work, but the Committee recognizes that there are policy implications.

HIE Ecosystem: Financing

Predicated on the idea that HIE infrastructure is necessary to support health care delivery and operations, Vermont has made significant financial investments in the HIE ecosystem over the past decade with substantial support from the federal government. Management and continual renewal of the HIE infrastructure requires long-term, dedicated financing for services that support system users and a clear value proposition for those users to generate continued investment.

Since 2009, the State has expended over $20.6 million from the HIT Fund contributing to a total of $115,036,559.74 financing HIT/HIE activities.[7] As demonstrated by leading HIE systems around the nation, some level of public investment is needed. However, government does not have the ability to bear the entire financial burden of HIE in the long-term, necessitating an equitable public-private funding model that allows public funds to target broad-reaching foundational components of HIE and consumer demand to drive development of fee-based services and tools.

A sustainable financial model for HIE must draw support from the stakeholders who benefit from it as well as from the State, which recognizes the critical role it plays.[8] The HIE model on which this plan is based initiates an evolution from the current state of close to full reliance on public funds, to a sustainable public/private model.

Below is a depiction of how the HIE Steering Committee envisions the HIE financial model evolving over time toward a sustainable state.

Figure 3: HIE Financing Maturity Model

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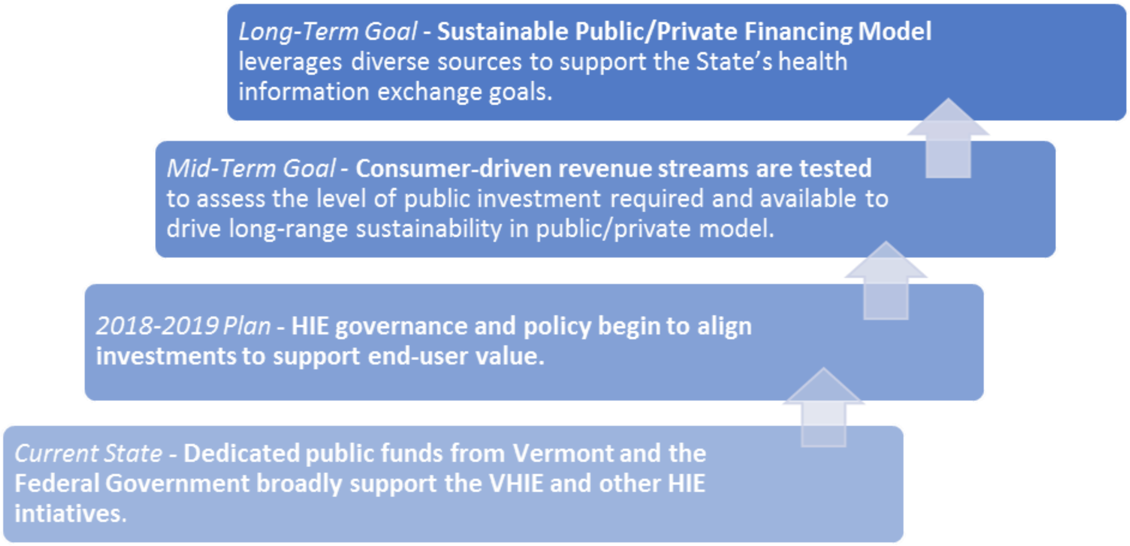
[7] State of Vermont Agency of Administration. (2018). *Health Information Technology Fund Annual Report per 32 V.S.A. § 10301(g).* Retrieved from https://legislature.vermont.gov/reports-and-research.

[8] Health Tech Solutions. (2017). *Vermont Evaluation of Health Information Technology Activities: Final Report*. Retrieved from https://legislature.vermont.gov/reports-and-research.



Long-Term Goal - **Sustainable Public/Private Financing Model** leverages diverse sources to support the State's health information exchange goals.

Mid-Term Goal - **Consumer-driven revenue streams are tested** to assess the level of public investment required and available to drive long-range sustainability in public/private model.

2018-2019 Plan - **HIE governance and policy begin to align investments to support end-user value.**

Current State - **Dedicated public funds from Vermont and the Federal Government broadly support the VHIE and other HIE intiatives.**

HIE Sustainability

Building a Financing Model

The HIE Steering Committee is responsible for defining an HIE investment portfolio and monitoring statewide investments in service of achieving the goals laid out in this strategic plan. To do this, they must design an HIE network financing model (beginning in 2019), consistently evaluate the value of the financing model to ensure alignment with goals and adjust the model in a judicious and timely manner.

The Committee will continually develop the financing model through the lens of the following questions:

- *Will the State continue to invest in HIE?*
- *If yes, what criteria will be used to evaluate the viability of current and future investments?*
- *Based on statewide needs, what is the total level of investment required in the future?*
- *Considering the nature of future investment, what is the appropriate balance of public and private funds?*
- *How will investments capitalize on foundational services and opportunities for reuse?*

There are federal and state policies that make financing more challenging including, but not limited to, the following.

- HITECH (federal Health-IT) funds that support adoption of health-IT and development of HIE infrastructure must be drawn down and managed by Medicaid agencies and the funds must be primarily used to benefit Medicaid members.
- To leverage the significant investment dollars currently available through HITECH, states are required to provide state-sourced matching funding. The main source of this state funding in Vermont is the HIT-Fund, a tax on health care claims. The claims tax requires legislative intervention to prevent it from sunsetting.
- As the HITECH Act sunsets on September 30, 2021, funding strategies for State-directed HIE work begin to shift. The Centers for Medicaid and Medicaid Care (CMS) is continuing their commitment to HIE investments but changing the way in which they invest by merging several funding streams together under the Medicaid Management Information System (MMIS).

- The federal investment funds that were directly targeted at establishing HIE institutions, like the VHIE, are no longer available.
- Value is intrinsically linked to a financial relationship. Public funds supported the development of the VHIE and offset costs of adopting EHR systems and connecting to the VHIE. Providers and other stakeholders have not been asked to invest in these areas, which has limited their financial relationship to outcomes.

However, certain federal initiatives may provide narrow funding opportunities or may include new requirements for which some level of federal funding could be realistically expected to be offered. Examples of a few such initiatives are discussed in the discussion of HIE Collaborative Services and the section on National Initiatives and Trends, further on in this document.

Holding HIE Service Providers Accountable

The 2017 Health Information Technology Evaluation clearly articulated that public and private investments in HIE must be tied to defined outcomes and performance measures. The establishment of a unified HIE governing body (the HIE Steering Committee) that oversees the investment strategy coupled with well-crafted contracts between the State and HIE service providers, such as VITL, will go a long way toward addressing this need. We have seen this validated in 2018 and 2019.

In overseeing the implementation of the statewide HIE Plan, it is incumbent upon the HIE Steering Committee to ensure there are appropriate instruments to hold accountable service providers who receive HIE investment funds, with a focus on public funds. This is particularly true in the case of VITL as the state designated entity for HIE services.

The HIE Steering Committee's goal is to focus the VHIE's work and enable the organization to demonstrate value to customers, garnering investment from private funding sources. The Steering Committee must work to identify the appropriate balance of public and private funds to ensure that basic HIE needs are met statewide.

Influences on Sustainability

In 2020 the HIE Steering Committee will explore incentive and other models to support financial sustainability for the VHIE and the participation of its stakeholders. Areas to review are suggested in the Technical Roadmap and include:

- **Convergence with national priorities:** Review near and mid-term objectives and tactics for convergence with funding opportunities under CMS, CDC, SAMHSA, Health Resources and Services Administration (HRSA), and other agencies. Key opportunities include the development of a Provider Directory.
- **UMPI value to stakeholders:** The development of a universally unique key for each person with records in the VHIE is an asset that has value outside of the shared repository and VITL. The HIE SC should review how UMPIs support sustainability in other exchanges and determine where it can contribute to the VHIE.

Ecosystem: Technology

Technology remains a foundational pillar of health information exchange in Vermont. With an everchanging landscape, Health IT efforts nationwide continue to mature and develop. While governance and financing models shift in Vermont and nationwide, it is imperative that technology efforts are aligned with national initiatives and comply with industry standards and best practices, all while serving Vermonters to ensure positive health care outcomes.

To this end, The HIE Steering Committee spent much of 2019 working with a contractor to develop a Technical Roadmap, outlining technical investment strategy for near and medium-term efforts. The Committee included updates to the Roadmap in its bi-weekly meeting agendas, participated in facilitated exercises to refine and validate findings from the Roadmap consultant, and provided direction where needed to keep the Roadmap development on course. The consultant's report encompassing their findings for the Roadmap was finalized in September 2019 and is attached in its entirety in Appendix C. Technical and comprehensive nature, of the Roadmap requires thorough and thoughtful review only a part of which the Committee was able to complete. Further, the HIE Roadmap has areas of focus that go beyond what the Committee has defined as health information exchange, such as care coordination and analytics, delving into the health information technology landscape. While important to help the Committee understand what is necessary to support with health information exchange and in use case development, these may be out of scope. Areas the Committee reviewed and felt comfortable are reflected in the 2019-2020 Tactical Plan. Additional review by the Committee of the findings in the consultant's report will be necessary to further define and vet the HIE strategic direction.

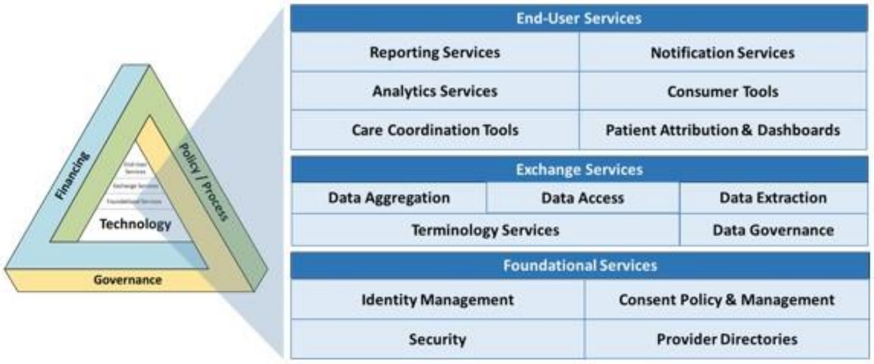
The 2019 Technical Roadmap picks up from the 2018-2019 Health Information Exchange (HIE) Plan and expands the breadth and depth of the planning effort. It maintains a focus on the three goals for health information exchange in Vermont:

1. Create One Health Record for Every Person—Ensure access to complete and accurate health records to support optimal care delivery and coordination.
2. Improve Healthcare Operations—Enrich healthcare operations through data collection and analysis to support quality improvement and reporting.
3. Use Data to Support Investment and Policy Decisions—Bolster the health system to learn and improve based on accurate, comprehensive data; guide investment of time, labor, and capital; and inform policies and program development.

With these Goals as a starting point, the 2019 Technical Roadmap developed out of two rounds of stakeholder engagement (see sidebar) which informed and then refined the focus on six Key Objectives:

1. Delivering Information at the Point of Care
2. Augmenting Use of Public Health Registries
3. Managing Sensitive Health Information
4. Leveraging Social Determinants of Health Information
5. Automating Quality Reporting
6. Providing Consumer Access

Each of these is supported by planned activities spread across the Vermont Health Information Exchange (VHIE) architecture, as depicted in Figure 1 above and inserted here for ready reference.



Different Key Objectives require different combinations of elements or services in the architecture stack and in the Roadmap document each Key Objective is cross referenced to the applicable architecture stack elements. Figure 3, below, depicts the HIE architecture stack of foundational, exchange and end user services.

The Technical Roadmap that follows consists of narrative descriptions of its development and derivation, an updated section on the vision for health information exchange in Vermont, and the Roadmap itself.

Vision for the Technical Roadmap

The goal of this Plan to provide actionable guidance for initiatives that can and should launch in the near term, defined as twelve to eighteen months from adoption of the Plan. At the same time, the Plan describes actions needed to achieve these goals that should launch in the midterm, defined as

STAKEHOLDER ENGAGEMENT

Overall, 44 individuals representing 16 agencies and organizations participated in the discussions which were held in two phases. Stage 1 engaged stakeholder organizations individually to determine their current use and desired use of the VHIE. Phase 2 engaged stakeholders in a series of six focus groups held over a period of two days. There was some overlap among individuals and organizations participating in the two phases. An appendix in the Roadmap document provides a detailed account of the stakeholder engagement process including summaries of the conversations and focus group exercises.one and a half to three years from adoption, and the long term, defined as three to five years. Given the rapid state of change that remains a constant in health information technology (IT) as well as the policy that surrounds it, no attempt is made here to spell out each step required over the next five years. Over a third of the tactics described here are for requirements gathering or standing up ad hoc or persistent teams that are needed to ensure that planning is practical, in sync with health reform, and positioned to provide tangible value to participants.

These changes require a high level of commitment and effort. Should all parties engage as needed and all tasks be performed as outlined, each incremental step in the Vermont Health Information Exchange (VHIE) planning will get closer to the establishment of a sustainable network providing essential services and positioned to grow and adapt as the need for information and the technology that supports it evolve.

Guiding Principles

Following are the guiding principles developed by the HIE Steering Committee to guide the planning process. Adherence to these principles, over time, will ensure that future decisions continue to support the current vision and establish a consistent framework that is adaptable and extensible.

Operational Principles:

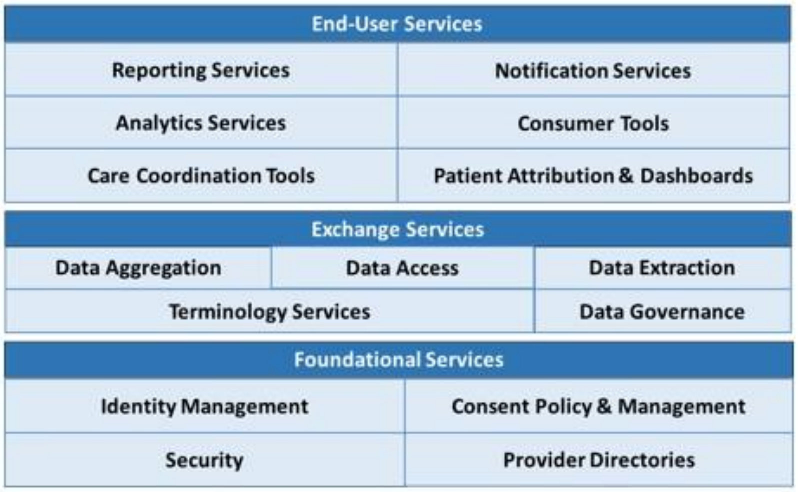
- Goals are achieved through Objectives expressed in a Tactical Plan; elements of the plan can be traced back to Objectives and Goals.
- The Roadmap must highlight the value proposition for every objective which can be illustrated by examples.
- The Roadmap Tactical Plan should be reviewed every 6 months, at minimum, and updated, if necessary, with any changes/additions to existing or future Tactical Plans.
- The Roadmap objectives span 3-5 years; the Tactical Plan to achieve those objectives is designed 1-2 years at a time.
- Value to the consumer is the primary value proposition for health information technology (IT) planning in Vermont. Consumers are:
  - Patients and providers delivering and recording the delivery of care
  - Data analysts for quality reporting and improvement, operations, and public health
- Establish a culture of trust and cooperation among all stakeholders and accountable parties in the state.
- Identify where market innovation can and should support the Roadmap.
- Identify where federal regulation is operative and where state policy must fill gaps.
- Business objectives and plans for initiatives must focus on sustainability.
- Streamline statewide roles, initiatives, and programs to achieve efficient use of resources and effective progress toward goals.

Technical Principles:

The technical principles further support the services in the architecture stack (figure 3, below), but primarily represent the needs that support the foundational and exchange services of HIE.

- Vermont's HIE Technical Architecture consists of Foundational Services, Exchange Services, and End-user Services.
- The Foundational and Exchange Services are the primary areas of public investment; they support end-user services that provide lasting value to consumers.
- Employ an agile, test-driven approach to all implementations.
- Start with the simple systems. Complex systems that work evolved from simple systems that work (Gall's Law).
- Start and mature pilot projects to production deployment.
- Information will outlive the application upon which it is created. Base interoperability and acquisition decisions on that understanding
- Evaluate technology from the aspect of lock-in and ease of migration.

- Base data reuse decisions on increasing predictability and reliability of information.
- Data are the most valuable HIE resource and must be portable.
- Reuse across systems is a bedrock principle



End-User Services

Reporting Services
Notification Services
Analytics Services
Consumer Tools
Care Coordination Tools
Patient Attribution & Dashboards

Exchange Services

Data Aggregation
Data Access
Data Extraction
Terminology Services
Data Governance

Foundational Services

Identity Management
Consent Policy & Management
Security
Provider Directories

Figure 4: HIE Three-Layer Architecture Stack

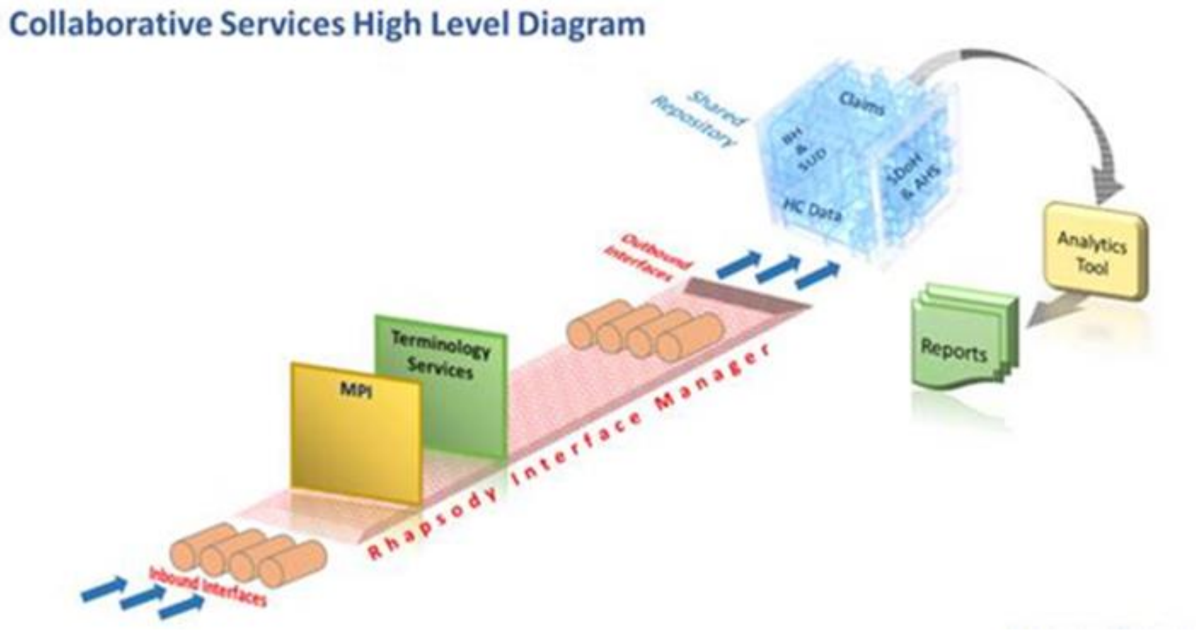
HIE Collaborative Services

With the Technical Roadmap's guiding principles in mind, the HIE Collaborative Services project was developed as an effort to continue to improve the foundational and exchange services required for a robust system of health information exchange. With a more modular design the project focuses on implementing a Master Patient Index (MPI), a Terminology Services Engine, an Integration Engine, and a new data repository to enable aggregation of clinical and other health related data in support of Point of Care data delivery, Analysis, and Reporting. Together, these combined technologies serve the three overarching HIE Goals, above. Moving MPI, Terminology Services, and the Integration Engine to the front end, coupled with the new data repository, enhances the availability of non-standard data, increases overall data quality, and supports segregation of sensitive data from non-sensitive data, which have previously been roadblocks to full utilization of the VHIE.

As the State moves toward a more integrated approach to data sharing, the availability of sensitive data will enable organizations such as OneCare Vermont, the Blueprint for Health and Designated Agencies to conduct broader analysis of agency or population level reporting and analysis. These tools will provide quality data to a broader range of end-users, enabling data driven decision making by key stakeholders.

DVHA has set an aggressive target for the Collaborative Services project. Completed in two phases, Phase One will implement the main components of MPI, Terminology Services and a Data Integration Engine to build the necessary foundation for collecting and managing the target data types. This phase has an expected completion of April 1, 2020.

Phase Two of the project builds on the foundational technologies by providing a data repository platform, which will enable Analysis and Reporting operations on sensitive and non-sensitive clinical data as well as other health related data that can be linked. This phase is expected to be completed by January 2021. The overall project is depicted in the following diagram which provides a sense of the timing of the two phases and how the functionality of phase 1 supports the services provided in phase 2.


Collaborative Services High Level Diagram

The Collaborative Services project aligns with federal initiatives that encourage harmonious management and sharing of sensitive data. The SUPPORT Act[9] is one such initiative that Vermont can leverage as a potential funding stream for broader integration of substance use disorder data from other sources (VPMS) to help combat the opioid epidemic. In 2020, DVHA will continue to investigate these federal opportunities to broaden our efforts towards aggregating sensitive data in the VHIE. Additionally, the Collaborative Services project aligns with the ONC/CMS proposed rule in promoting interoperability and consumer empowerment through the adoption of the FIHR data schema and use of restful Application Programming Interfaces (APIs).

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[9] On October 24, 2018, President Trump signed the Substance Use-Disorder Prevention that Promotes Opioid Recovery and Treatment for Patients and Communities Act (SUPPORT for Patients and Communities Act) into law (Pub. L. No. 115-271). Subtitle E of the SUPPORT for Patients and Communities Act ("SUPPORT Act") is the "Medicaid Providers are Required to Note Experiences in Record Systems to Help In-need Patients Act (Medicaid PARTNERSHIP Act), which includes Section 5042 which adds section 1944 to Title XIX of the Social Security Act (Act). Under section 1944 of the Act, beginning October 1, 2021, states must have a qualified prescription drug monitoring program (PDMP) and must require that certain Medicaid providers check information about certain Medicaid beneficiaries' prescription drug history in the qualified PDMP before prescribing controlled substances to the beneficiary. Under section 1944(f) of the Act states can claim 100 percent federal Medicaid matching funds for certain expenditures related to qualified PDMPs. The 100 percent federal match under section 1944(f) of the Act is available only for FY 2019 and FY 2020.

National Initiatives and Trends

Many initiatives and trends developing in parallel with Vermont's planning efforts should be taken into consideration, in addition to the evolving state of infrastructure, regulation, and engagement in the state. These include the following federal initiatives:

1. Trust Exchange Framework and Common Agreement (TEFCA)
2. Proposed Rule from the Office of the National Coordinator for Health Information Technology (ONC)
3. Proposed Rule from the Centers for Medicare & Medicaid Services (CMS)
4. 42 CFR Part 2

Several trends in national public health reporting supported by the Centers for Disease Control and Prevention (CDC) are also changing the landscape, increasing the degree to which reporting requirements are tailored to EHR capabilities and expanding to encompass the technical capabilities in long-term care (LTC) facilities.

Also, when a national initiative becomes a requirement by the Federal government there may be a funding opportunity associated with it to bring the Medicaid program into compliance. The ONC rule on information blocking and the CMS rule on interoperability are two such rules that the Steering Committee and DVHA will monitor for possible impact on activity and funding.

The ONC proposed rule aligns itself with the CMS proposed rule and TEFCA drafts; their ultimate interests are all vested in national interoperability and healthcare accessibility. In general, the industry is highly supportive of interoperability as a concept, so although the initiatives are taking time to get off the ground, they represent an overarching trend throughout the healthcare industry. All entities should be preparing to undertake these changes sometime soon.

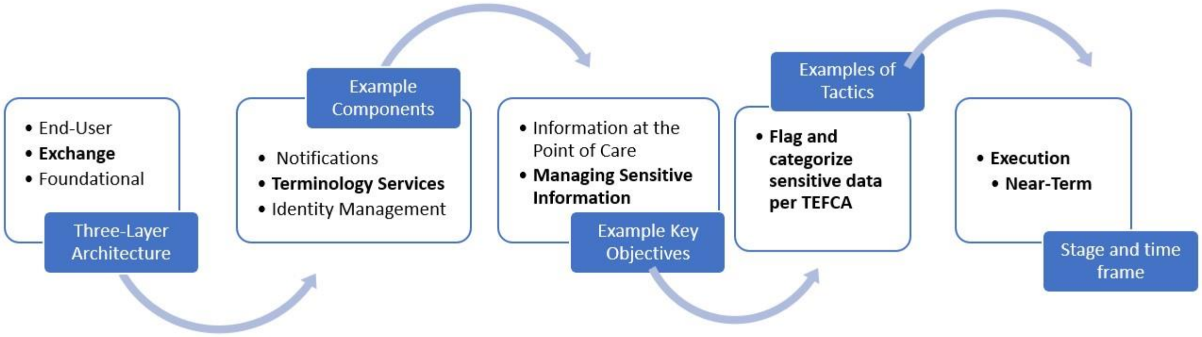
Within Vermont, the Proposed Rule from ONC impacts tactics supporting Key Objectives for exchange including Delivering Information at the Point of Care and Providing Consumer Access by reinforcing standards for health IT vendor certification including US Core Data for Interoperability (USCDI) and patient/population Application Programming Interfaces (APIs), as well as increasing patient (and provider) access to health information.

VITL's implementation of Vermont's new opt-out policy is the launch point to initiate granular, electronic consent management to address the challenges in sharing sensitive data in adherence with local, state, and federal laws including 42 CFR Part 2. Ability to manage consent at a granular level supports the Key Objective of Managing Sensitive Health Information and addresses challenges faced by Blueprint, OneCare Vermont (OCV), VITL and others attempting to integrate physical health, behavioral health, and substance use data.

The Roadmap Development

The HIE Technical Roadmap presents a structured discussion of tactical plans that can be completed in different time frames and in different stages of work to achieve the Key Objectives. Several sections of the Roadmap develop the components in the three-layer architecture (Foundational, Exchange, and End User Services) and relate these components or services to the Key Objectives. Each component is reviewed, and most have associated actions (tactics) named in the Roadmap. Each tactic is then identified by stage of implementation under the near-term plan where the stages are requirements gathering, planning, and execution. Below is a graphical conception of the relationship of concepts used in the Roadmap.

Figure 5: Sample Roadmap Conceptual Relationships



This diagram illustrates that, for instance, flagging and categorizing sensitive data per TEFCA is an executable near-term tactic for managing sensitive information, associated with the Terminology Services component of the Exchange Services layer in the architecture.2019-2020 Tactical Plan

A tactical plan translates strategy into achievable actions that support long-term goals. Vermont's HIE Tactical Plan will be developed annually and constantly monitored and refined by the HIE Steering Committee. The HIE Tactical Plan identifies actions related to maturing all core services and furthering the three HIE goals across the dimensions of: Governance, Technology, Policy/Process and Financing. An accountable party is assigned to each tactic to ensure it is clear who is responsible for which aspects of the work.

2018-2019 Tactical Plan Update

The 2018-2019 Tactical Plan included several planned actions with identified responsible parties, including the topics discussed in the Executive Summary. Tactics were grouped by topical areas in three major categories of foundational services, exchange services, and end-user services. Within each category and topic there are multiple tactics or activities so that the total work reflected by the tactical plan is significant.

The 2018-2019 Tactical Plan focused on enhancing foundational and exchange services in support of future and existing end-user services. It focused on steps to establish the HIE's permanent governance model; make progress on consent management, data quality, and identity matching; initiate long term, sustainable financial planning; and developing a 2020 plan including a technical roadmap. It featured a checklist of key activities and cited the party accountable for each activity to ensure that accountability is clear and help policymakers and regulators hold the program accountable.

The 2019-2020 Tactical Plan continues the work outlined in the 2018-2019 Tactical Plan. Developed from the key objectives identified in the HIE Technical Roadmap, the 2019-2020 Tactical Plan further supports the workstreams of governance, consent, and collaborative services in support of the HIE goals outlined in the 2019-2020 HIE Strategic Plan.

HIE Goals:

1. Create One Health Record for Every Person—Ensure access to complete and accurate health records to support optimal care delivery and coordination.
2. Improve Healthcare Operations—Enrich healthcare operations through data collection and analysis to support quality improvement and reporting.
3. Use Data to Support Investment and Policy Decisions—Bolster the health system to learn and improve based on accurate, comprehensive data; guide investment of time, labor, and capital; and inform policies and program development.

This Tactical Plan ties the Goals above to these Key Objectives.

Key Objectives	**Goals**
1. Delivering Information at the Point of Care	1, 2
2. Augmenting Use of Public Health Registries	1, 2, 3
3. Managing Sensitive Health Information	1, 2, 3
4. Leveraging Social Determinants of Health Information	1, 2, 3
5. Automating Quality Reporting	1, 2, 3
6. Providing Consumer Access	1, 2

Summary of Tactical Plan

This section provides a condensed view of the Tactics described in Section 3.2 of the HIE Technical roadmap - Deploying the Plan with a Three-level Service Architecture. In the Roadmap document the Tactical Plan is developed in detail in the body of the Roadmap. In the In the table that follows, each tactic is described in a simplified phrase and is associated with the Accountable Party or Parties and an approximate time frame for initiation of the activity.

The set of Accountable Parties is as follows:

Per 2018 Plan:

- Agency of Digital Services (ADS)
- Bi-state Primary Care Association
- Blueprint for Health
- Department of Vermont Health Access (DVHA)
- HIE Steering Committee (HIE SC)
- OneCare Vermont (OCV)
- Vermont Care Partners (VCP)
- Vermont Department of Health (VDH)
- Vermont Information Technology Leaders (VITL)

Additional accountable parties as identified by the HIE Steering Committee

- All providers
- Payers
- VHIE participants (or subsets, i.e., all those submitted data to the VHIE)
- Legal (legal experts from provider organizations and the state)

- Green Mountain Care Board (GMCB)

Potential future entities:

- Additional HIE Steering Committee sub-committees: Tactics ascribed to the HIE Steering Committee may be delegated to one or more sub-committees if developed by the Steering Committee.

Table 1: Accountable Party or Parties and Timeframe per Tactic

Component/Tactic (stage)	**Accountable Party/Parties**	**Launch Timeframe**
End-User Services		
Investigate integration of outpatient cancer reporting	• Vermont Department of Health (VDH) • VITL	Near Term
Assess data availability against Quality program requirements	• HIE Steering Committee	Near Term
Improve standard immunization reporting	• Vermont Department of Health (VDH) • VITL	Near Term
Design Query/Retrieve for Immunizations	• Vermont Department of Health (VDH) • VITL	Near Term
Notification Services		
Identify use cases and understand workflow for notifications	• HIE Steering Committee • All providers	Near Term
Consumer Tools		
Assess current consumer access activities	• HIE Steering Committee	Near Term
Exchange Services		
Data Extraction & Aggregation		
Identify what SDOH will be beneficial	• HIE Steering Committee • Data Analysts	Near Term
Review data on SDOH	• HIE Steering Committee • Agency of Digital Services • Agency of Human Services • VITL	Near Term
Map and align state agency data to standards	• HIE Steering Committee • Agency of Digital Services • Agency of Human Services	Mid Term

Data Extraction & Aggregation		
Monitor standards for capture of SDOH at point of care	• VITL	Near Term
Pilot integration of AHS data into EHRs	• VITL • VHIE participants • Agency of Human Services Agency of Digital Services • OneCare Vermont	Near Term
Terminology Services		
Flag and categorize sensitive data	• VITL	Near Term

Component/Tactic (stage)	Accountable Party/Parties	Launch Timeframe
Normalize coded data to standards	• VITL	Near Term
Interoperability		
Evaluate federal regulations/rules	• HIE Steering Committee • Department of Vermont Health Access • Agency of Digital Services • VITL	Near Term
Evaluate federated exchange solutions	• HIE Steering Committee • VITL • Department of Vermont Health Access • Agency of Digital Services	Near Term
Explore expanding FHIR and query-based capabilities	• HIE Steering Committee • VITL	Near Term
Identify and initiate FHIR and query-based use case pilot	• HIE Steering Committee • VITL • VHIE stakeholders	Mid Term
Support standards for existing use cases	• VHIE stakeholders • VITL	Near Term
Ensure data alignment with USCDI	• VITL • HIE Steering Committee	Near Term
Provide education regarding all available services, including VHIE Direct Secure Messaging (DSM) service	• VITL	Near Term

Data Quality		
Develop data quality work queue and process	• HIE Steering Committee • VITL	Near Term
Continue advancing Connectivity Criteria	• HIE Steering Committee • VITL	Near Term
Data Quality		
Consider tools and methods for local validation	• VITL	Near Term
Data Governance		
Define sensitive data	• Data Governance – HIE Steering	Near Term
Map sensitive data to standards	• Data Governance – HIE Steering	Near Term
Foundational Services		
Identity Management		
Investigate how to support identity management associated with sensitive data exchange	• HIE Steering Committee • Green Mountain Care Board • VITL	Near Term
Component/Tactic (stage)	**Accountable Party/Parties**	**Launch Timeframe**
VHIE to provide mechanisms for stakeholders to use UMPI matching	• HIE Steering Committee • VITL	Near Term
Define UMPI value derivation processes	• VITL	Mid Term
Provide UMPI-matched identities to initial stakeholders	• HIE Steering Committee • VITL	Near Term
Test reconciliation process	• VITL	Near Term
Consent Policy & Management		
Evaluate and pilot granular consent management	• HIE Steering Committee • VITL • VHIE stakeholders	Mid Term
Implement approved consent policy	• HIE Steering Committee • VITL • VHIE stakeholders	Near Term

Future HIE Planning

The HIE Steering Committee recognizes that technology is always changing. Whether it's an announcement that Silicon Valley is taking on the challenge of HIE, the EHR companies are collaborating on an exchange network, or the federal government is taking a new look at drivers of interoperability, the only constant is change. The HIE Steering Committee's most crucial role going forward will be to develop a consistently reliable governance and financing model that can adapt to, and thrive in, a constantly evolving landscape.

HIE investments should be assessed considering stakeholder needs, where the value provided by the network begins, where network services support value provided by end user applications, and the current state of maturity.

Each year, the HIE Plan will be updated by DVHA in partnership with the HIE Steering Committee. At a minimum, DVHA will fulfill statutory requirements and ensure that the plan be revised annually and updated comprehensively every five years.[9]

The Technical Roadmap will be monitored and audited quarterly, at minimum, timed such that the next update cycle can be informed by a report on status against 2019 tactics and objectives. Starting with the acceptance of this Plan, the HIE Steering Committee will work to establish benchmarks, quantitative wherever feasible to do so, for each tactic in the adopted Plan.

Timely reporting will be prepared addressing each benchmark, potentially in the form of a Technical Roadmap Dashboard. Where progress is less than optimal, the Committee will consider troubleshooting the process using the principles outlined in the Governance section of this document. DVHA, in partnership with the HIE Steering Committee, will identify risks and mitigation strategies to ensure that the Plan stays on track and should document recommendations to be considered in Plan updates.

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[9] Act 187. *An act relating to health information technology and health information exchange*. (2018).

APPENDIX A: 2019 HIE Steering Committee Charter

VERMONT®

AGENCY OF HUMAN SERVICES

Health Information Exchange

Health Information Exchange Strategic Plan

Approved by the Steering Committee, May 2019

Revision History

Date	Version	Description	Author
12/05/2018	0.1	Initial Draft	HIE Unit
4/16/2019	0.2	Updated with feedback from Tyler Gauthier	HIE Unit
4/17/2019	0.3	Updated with feedback from Simone Rueschemeyer	HIE Unit
4/18/2019	0.3	Updated with feedback from Georgia Maheras	HIE Unit

Table of Contents

HIE Defined

Health Information Exchange (HIE) is used as both a verb and a noun.

Health information exchange (HIE) verb – The action of sharing health information across facilities, organizations, and government agencies according to national standards. HIE is often used as shorthand for programs, tools, and investments that help aggregate and exchange health information.

Health Information Exchange (HIE) noun –An organization that collects health information electronically, manages it, and makes it available across the health care system. There is at least one HIE in almost every state in the nation, and HIEs can offer a variety of services. In Vermont there is one HIE, referred to as the Vermont Health Information Exchange (VHIE), which is operated by the Vermont Information Technology Leaders (VITL).

HIE is widely thought to have the potential to allow healthcare providers, payers, and policymakers to measure and understand the impact and efficacy of clinical choices and healthcare reform efforts. At its core, the purpose of HIE, or making health data available for exchange across treating providers, analysis, and measurement, is to support the Quadruple Aim: improving the health of populations, enhancing the experience of care for individuals, reducing the per capita cost of health care, and improving the work life of health care providers, including clinicians and staff.

Purpose of the HIE Steering Committee

The HIE Steering Committee exists to -

1. Serve the needs of HIE users by advancing HIE use cases;
2. Strengthen the relationship between authority and accountability; and
3. Engage a broad range of stakeholders in strategic planning and oversight activities.

The Steering Committee's Vision & Mission

Vision: To enable health information exchange that promotes quality healthcare in Vermont.

Mission: To work across organizations and disciplines to create and endorse a shared view of the definition, purpose, and goals of HIE in Vermont.

Ultimately, the Steering Committee exists to support development of a statewide strategic plan (the HIE Plan) and guide implementation of that plan. In 2018, the Steering Committee identified three overarching goals in the HIE Plan that are intended to guide the state's health information exchange work. The goals include:

1. **Create One Health Record for Every Person**
    a. Support optimal care delivery and coordination by ensuring access to complete and accurate health records
    b. Reduce provider burden by aggregating essential data in one, useful location
    c. Provide people with a comprehensive understanding of their health and care
2. **Improve Health Care Operations**

   a. Enrich health care practices with data collection and analysis to support quality improvement and reporting
   b. Align data aggregation and data quality efforts to support real needs
   c. Reduce burden associated with reporting
   d. Allow providers to analyze their own data and put information into action

3. **Use Data to Enable Investment and Policy Decisions**
   a. Bolster the health system's ability to learn and improve by using accurate, comprehensive data to guide investment of time, labor and capital, and inform policy making and program development
   b. Put data in the hands of program's serving population-wide needs
   c. Enable data-informed decision making

The Steering Committee's Guiding Principles

- We commit to creating an HIE Plan that is accurate, reliable and actionable.
- We drive to use technology and data to support value-based care.
- We are accountable for meaningful work that furthers the goals of HIE.
- We work to optimize what exists today and be thoughtful about future developments.
- We are good stewards of limited public and private resources.
- We exist to develop systems that better the health and well-being of Vermonters.

Scope

In 2019 and beyond, the HIE Steering Committee will:

- Support development, execution, and oversight of Vermont's HIE Plan.
    - Annually, develop and/or update the HIE Steering Committee charter and bylaws to clearly define roles of members, voting procedures, and other essential operational functions.
    - Annually, update the State's HIE plan to support the health system's needs and priorities. The plan must comply with state law and guidance provided by the Green Mountain Care Board (GMCB) through the annual plan review process.
    - Develop and maintain a technical roadmap to support the State's HIE network and achieve the goals stated in the HIE Plan.
    - Oversee and manage activities set forth in the annual HIE plan.
- Continue to grow and evolve the HIE Steering Committee to best meet the State's needs.
    - Identify growth opportunities for the governance body and assign ad-hoc committees as needed (e.g., data governance, connectivity, finance, audit).

  - Act as the central point of review for new or adjusted priorities with HIE stakeholders.
  - Identifying alignment opportunities to further integrate the statewide data management architecture.
- Support the Department of Vermont Health Access (DVHA) and other stakeholders in focusing HIE investments to align with statewide HIE goals.
  - Define the portfolio of investments needed to further HIE goals and, annually, refine the HIE financial sustainability model through evaluation of progress made in the preceding year.
  - <u>Note</u>: The Committee does *not* approve or review public investments. Rather, they aid in the development of strategy that may guide both public and private investments in support of shared, statewide goals.
- Support development of processes and policies that enable achievement of statewide HIE goals.
  - Provide recommendations to the legislature, GMCB and other stakeholders on actions they can take to support the State's HIE plans and goals and support the development of policy and legislation to further statewide HIE goals and objectives.
  - Identify priority policies that must be focused on to expand interoperability of health information.
  - Review and provide feedback on policies developed by AHS, the VHIE, and other stakeholders related to the exchange of health data.
- Engage stakeholders in the Steering Committee's work.
  - Actively and consistently engage with existing stakeholder advisory groups to ensure that planning and implementation considers insights from impacted and interested parties. o Act as ambassadors of and liaisons to individuals' respective population or organization represented as Committee members on matters discussed or pursued by the HIE Steering Committee.

Steering Committee Membership

The members of the committee were selected by the Chair to best enable HIE progress in Vermont. Membership is comprised of 9 voting members and 4 non-voting members. DVHA's HIE Unit will act as the Steering Committee's administrative and operational support.

Name	Role	Population or Organization Represented
Jenney Samuelson	Chair / Voting Member	Vermont's Agency of Human Services

Tracy Dolan	Voting Member	Vermont's Department of Health
Jimmy Mauro *Blue Cross Blue Shield of Vermont*	Voting Member	Payer Representative
Simone Rueschemeyer *Vermont Care Partners*	Voting Member	Mental Health & Substance Use & Intellectual Developmental Disabilities Representative
Georgia Maheras	Voting Member	Primary Care Representative
Bi-State Primary Care Association		
Emma Harrigan *Vermont Association of Hospitals and Health Systems*	Voting Member	Hospital Care Representative
Linda Leu	Voting Member	Representative of people who engage with the health care system
Tyler Gauthier *OneCare Vermont*	Voting Member	Accountable Care Organization Representative
Beth Tanzman	Voting Member	The Blueprint for Health Program
Sarah Kinsler	Non-Voting Member	The Green Mountain Care Board
Andrew Laing	Non-Voting Member	The Agency of Digital Services
Michael Smith	Non-Voting Member	VITL, Vermont's Health Information Exchange Operator
Emily Richards	Operational Support / NonVoting Member	DVHA Health Information Exchange Unit, Agency of Human Services
Lantana Consulting Group in partnership with Velatura	Third-Party Vendor Hired to Support Development of the HIE Plan (Non-Voting)	N/A

Decision Making

Decisions will be made by a majority vote (unanimity minus 2). The committee will make attempts to bring in affected parties beforehand for their advice. Decisions will be logged by the scribe for that meeting, the Committee Coordinator or HIE Program Manager. The committee will produce a decision document that names, explains, and describes the impact of all decisions. Affected entities will be notified within 30 days.

Communications

Meetings

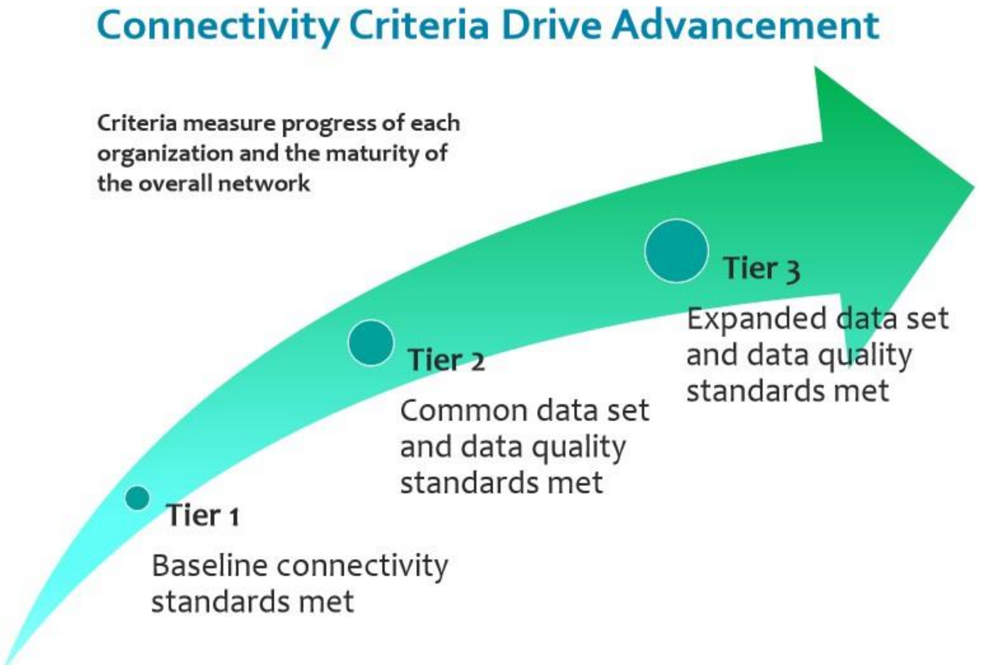
The expectations for the meetings are that (a) people participate in person, (b) they have done any applicable work beforehand, and (c) individuals do not use distracting devices during the meeting.

Generally, meetings are held every other week for two hours (10:30am-12:00pm) at the Waterbury State Office Complex. Meetings are scheduled using Microsoft Outlook, and schedule changes are conveyed in electronic meeting invitations and verbally in meetings.

HIE Steering Committee Website

Meeting agenda, minutes, and resource materials will be posted on
https://healthdata.vermont.gov/.
Draft materials may be sent via email from the HIE Unit directly to Steering Committee members.

APPENDIX B: Proposed 2020 Connectivity Criteria



Connectivity Criteria Drive Advancement

Criteria measure progress of each organization and the maturity of the overall network

Tier 1

Baseline connectivity standards met

Tier 2

Common data set and data quality standards met

Tier 3

Expanded data set and data quality standards met

Evolution of the Criteria

Existing Criteria	Revised Criteria
Created in 2018 for application in 2019	Connectivity sub-committee engaged in 2019 to update Criteria based on experience and utilization in 2019
Tier 2 defined with optional elements	Data Prevalence was evaluated for 2019 Tier 2 criteria to help in decision making for 2020. Tier 2 was updated to reflect additional key common data elements for health reform program requirements and to move some to Tier 3

Tier 3 not defined yet	Tier 3 defined to support the health reform program requirements and the U.S. Core Data for Interoperability (USCDI) elements
Customer and stakeholder education to help them understand how the criteria are applied, the benefits and the outcomes in achieving the criteria.	Updated documentation based on feedback from Customers and Stakeholders who have been through the process.

Updates to the Criteria

Existing Tier 2 Criteria	**Revised Tier 2 Criteria**
5 Immunizations	10 new Immunizations added to align with stakeholder program needs (HiB, Hep A, Hep B, DTap, TDap, Rotavirus, MCV4, Men B, IPV, and HPV)
Servicing Provider NPI	Added Assigned Provider NPI and sending facility
9 diagnostic results	3 new diagnostic results added to align with stakeholder program needs (fasting blood glucose, Lyme disease test, and cervical cancer screening HPV test)
9 problems	5 new problems added to align with stakeholder program needs (COPD, stroke, anxiety, depression, tobacco use including nicotine)
5 procedures	2 new procedures added to align with stakeholder program needs (cervical cancer pap and Ultrasound or CT for cancer)

3 screenings	2 new screenings added to align with stakeholder program needs (substance use disorder and breast cancer)
No Hospital encounters	3 new inpatient encounters were added for Hospital Admissions, Discharges and Transfers
10 vital signs	2 vital signs for Body Temperature and Inhaled Oxygen Concentration were moved to Tier 3

Appendix C: HIE Technical Roadmap for Vermont

HIE Technical Roadmap for Vermont

September 17, 2019

Prepared for:
State of Vermont, HIE Steering Committee

Submitted by: Lantana Consulting Group, Inc. & Velatura

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Technical Roadmap Executive Summary

The 2019 Technical Roadmap picks up from the 2018 Health Information Exchange (HIE) Plan and expands the breadth and depth of the planning effort. It maintains a focus on the three overriding goals for health information exchange in Vermont, as articulated in 2018:

4. Create One Health Record for Every Person—Ensure access to complete and accurate health records to support optimal care delivery and coordination.
5. Improve Healthcare Operations—Enrich healthcare operations through data collection and analysis to support quality improvement and reporting.
6. Use Data to Support Investment and Policy Decisions—Bolster the health system to learn and improve based on accurate, comprehensive data; guide investment of time, labor, and capital; and inform policies and program development.

With these Goals as a starting point, the 2019 Technical Roadmap developed out of two rounds of stakeholder engagement which informed and then refined the focus on six Key Objectives:

7. Delivering Information at the Point of Care
8. Augmenting Use of Public Health Registries
9. Managing Sensitive Health Information
10. Leveraging Social Determinants of Health Information
11. Automating Quality Reporting
12. Providing Consumer Access

Each of these is supported by planned activities spread across the Vermont Health Information Exchange (VHIE) architecture.

To get from a set of objectives to an actionable plan, early in the process, the HIE Steering Committee (HIE SC) reviewed and approved a set of Operational and Technical Guiding Principles, both of which informed and provided structure to the path laid out here. These Principles, combined with a review of current infrastructure, collaboration among parallel planning efforts under Agency for Health Services (AHS) and within stakeholder organizations, and the combined and cumulative experience of the Roadmap authors resulted in this Tactical Plan. The Plan is presented here within the framework of an update to the three-level architecture presented in 2018.

The detailed plan encompasses 72 discrete tactics, each characterized as requirements gathering, planning, or execution. Five tactics were referred to non-technical aspects of the 2019 Plan because they deal with the setting up of new work groups or the development of policy.

The 72 tactics presented here spread unevenly across the architecture stack, depending on the needs of the Key Objectives. For example, the Data Extraction & Aggregation service centers on social determinants of health (SDOH), given the primacy of that objective and the strong recommendations from stakeholders to access available state data. In the area of Security, the areas called out in the 2018 Plan are on-going or addressed on a regular schedule within Vermont Information Technology Leaders (VITL). No requirements were surfaced that remain unaddressed from 2018, so there are no further actions called out under the plan.

Two features distinguish this Plan from prior efforts: the establishment of a set of Guiding Principles and the spin-off of related, non-technical requirements. The success and viability of the Technical Roadmap is dependent on these areas including data governance, convening of subject matter experts to guide requirements for quality reporting and care coordination, and formal use case development.

The Technical Roadmap that follows consists of narrative descriptions of its development and derivation, an updated section on the vision for health information exchange in Vermont, the Roadmap itself comprised of descriptions of the six Key Objectives and the Tactical Plan to support them. Final sections cover recommendations to be integrated into non-technical HIE planning, and appendices providing a summary of the Tactical Plan and background materials.

1 Development of the 2019 Technical Roadmap

The 2019 Technical Roadmap is the continuation of efforts begun under the 2018 Health Information Exchange (HIE) Plan. In April 2019, Department of Vermont Health Access (DVHA) signed a contract with Lantana Consulting Group, in partnership with Velatura, to produce the Technical Roadmap for the Health Information Exchange Steering Committee (HIE SC). The Roadmap Team provided a plan for the plan and timeline and checked in regularly with the Steering Committee.

The first work product was the Operational and Technical Guiding Principles (Section 2.1), approved by the Steering Committee on June 12th, 2019.

Stakeholders and the Steering Committee were heavily engaged in the development of the Plan. Fortyfour individuals at sixteen organizations were interviewed. The key findings from these discussions were shared with the HIE SC (See Appendix F).

Several requirements, planning, and implementation efforts with bearing on the shape of HIE in Vermont were carried out in parallel with this effort. The Roadmap Team met periodically with Vermont Information Technology Leaders (VITL) as they developed plans for Collaborative services, with Murali Athuluri as he developed a draft of the Vermont Department of Health (VDH) Health Informatics Project, and with Terry Bequette as he worked on the plans for the changeover in consent policy. A partial picture which illustrates the many interrelated efforts is shown in the Integrated Timeline, Appendix B.

The high value of working with social determinants of health (SDOH) data was highlighted by a presentation on current work from the DVHA Vermont Blueprint for Health (“Blueprint”) under the auspices of the National Governors Association.[10] The project uses linked data sets—in this case, claims and incarceration data—to determine how they could inform operations and analytics. The researchers looked at the total cost of care of non-using populations and those with opioid use disorder (OUD) receiving medication-assisted treatment (MAT) and those receiving other treatments. By all measures, among the using population, those receiving MAT had fewer episodes and days of incarceration. Spending on healthcare was close, overall, for the using population, while the MAT population had few inpatient admissions and fewer emergency room visits.

The investigation is on-going and is just one example of the findings available to influence treatment plans and policy when data is linked across domains. The state has SDOH data in several areas including housing and food subsidies that could drive similar investigations in future. One strong advantage of this approach to SDOH assessment is that it used data that, while siloed, is already being collected. Extending this type of study will require resources, however, it avoids placing a new data collection burden on providers and sidesteps, at least for the present, dependency on the priorities of the electronic health record (EHR) vendors.

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[10] Initial Analysis Of Expenditures, Utilization, and Incarceration Among Vermonters Receiving Treatment For OUD: Test Use Case for NGA and AISP Technical Assistance for Linking and Using Data to Drive Policy, AHS Policy Governance Council Meeting, dated May 13, 2019; presented at AHS roundtable by Mary Kate Mohlman, June 12, 2019.

As the plan took shape, the Team pulled together an early draft of Key Objectives and led the Steering Committee through a Gallery Walk exercise where every attending member had a chance to review each of the objectives. That review was followed by revisions to the Key Objectives and a rough cut on related Tactics which the Steering Committee reviewed in teams, providing feedback on the Tactic, Responsible Party, and timeframe.

In preparation for review of the plan, the Roadmap Team provided an extensive review of national initiatives and trends. Four key national initiatives are summarized in Appendix G and the aspects most immediately relevant to this Plan are noted in the Vision for the HIE Technical Roadmap.

The second and final phase of Stakeholder Engagement took place in a series of four in-person focus groups held at Agency for Health Services (AHS) over two days in early August (See Appendix C). The groups covered key outstanding questions related to their areas of interest—care coordination, analytics, payer information exchange, and technical architecture. Throughout the process the Roadmap Team met with stakeholders as needed.

The draft tactics were presented to the HIE SC on September 4 in the context of a draft timeline for implementation. Final technical review was provided by DVHA and VITL through September 10 and the final draft presented to DVHA on September 14.

2 Vision for the HIE Technical Roadmap

The High-Level Goals are unchanged from the 2018 HIE Plan:

1. Create One Health Record for Every Person—Ensure access to complete and accurate health records to support optimal care delivery and coordination.
2. Improve Healthcare Operations—Enrich healthcare operations through data collection and analysis to support quality improvement and reporting.
3. Use Data to Support Investment and Policy Decisions—Bolster the health system to learn and improve based on accurate, comprehensive data; guide investment of time, labor, and capital; and inform policies and program development.

The goal of this Plan to provide actionable guidance for initiatives that can and should launch in the near term, defined as twelve to eighteen months from adoption of the Plan. At the same time, the Plan describes actions needed to achieve these goals that should launch in the midterm, defined as one and a half to three years from adoption, and the long term, defined as three to five years. Given the rapid state of change that remains a constant in health information technology (IT) as well as the policy that surrounds it, no attempt is made here to spell out each step required over the next five years. Over a third of the tactics described here are for requirements gathering or standing up ad hoc or persistent teams that are needed to ensure that planning is practical, in sync with health reform, and positioned to provide tangible value to participants.

These changes require a high level of commitment and effort. Should all parties engage as needed and all tasks be performed as outlined, each incremental step in the Vermont Health Information Exchange (VHIE) planning will get closer to the establishment of a sustainable network providing essential services and positioned to grow and adapt as the need for information and the technology that supports it evolve.

2.1 Guiding Principles

Following are the guiding principles adopted by the HIE Steering Committee to guide the planning process. Adherence to these principles, over time, will ensure that future decisions continue to support the current vision and establish a consistent framework that is adaptable and extensible.

Operational Principles:

- Goals are achieved through Objectives expressed in a Tactical Plan; elements of the plan can be traced back to Objectives and Goals.
- The Roadmap must highlight the value proposition for every objective which can be illustrated by examples.
- The Roadmap Tactical Plan should be reviewed every 6 months, at minimum, and updated, if necessary, with any changes/additions to existing or future Tactical Plans.
- The Roadmap objectives span 3-5 years; the Tactical Plan to achieve those objectives is designed 1-2 years at a time.
- Value to the consumer is the primary value proposition for health information technology (IT) planning in Vermont. Consumers are:
    - Patients and providers delivering and recording the delivery of care
    - Data analysts for quality reporting and improvement, operations, and public health

- Establish a culture of trust and cooperation among all stakeholders and accountable parties in the state.

- Identify where market innovation can and should support the Roadmap.
- Identify where federal regulation is operative and where state policy must fill gaps.
- Business objectives and plans for initiatives must focus on sustainability.
- Streamline statewide roles, initiatives, and programs to achieve efficient use of resources and effective progress toward goals.

Technical Principles:

- Vermont's HIE Technical Architecture consists of Foundational Services, Exchange Services, and End-user Services.
- The Foundational and Exchange Services are the primary areas of public investment; they support end-user services that provide lasting value to consumers.
- Employ an agile, test-driven approach to all implementations.
- Start with the simple systems. Complex systems that work evolved from simple systems that work (Gall's Law).
- Start and mature pilot projects to production deployment.
- Information will outlive the application upon which it is created. Base interoperability and acquisition decisions on that understanding
- Evaluate technology from the aspect of lock-in and ease of migration.
- Base data reuse decisions on increasing predictability and reliability of information.
- Data are the most valuable HIE resource and must be portable.
- Reuse across systems is a bedrock principle

2.2 National Initiatives and Trends

Many initiatives and trends developing in parallel with Vermont's planning efforts should be taken into consideration, in addition to the evolving state of infrastructure, regulation, and engagement in the state. These include the following federal initiatives:

5. Trust Exchange Framework and Common Agreement (TEFCA)
6. Proposed Rule from the Office of the National Coordinator for Health Information Technology (ONC)
7. Proposed Rule from the Centers for Medicare & Medicaid Services (CMS)
8. 42 CFR Part 2

Several trends in national public health reporting supported by the Centers for Disease Control and Prevention (CDC) are also changing the landscape, increasing the degree to which reporting requirements are tailored to EHR capabilities and expanding to encompass the technical capabilities in long-term care (LTC) facilities.

On September 3, 2019, the ONC awarded a common agreement to the Sequoia Project to act as the Recognized Coordinating Entity for TEFCA. Sequoia will create baseline technical and legal requirements to share electronic health information under the 21st Century Cures Act. In this capacity, Sequoia will

> "collaborate with ONC to designate and monitor Qualified Health Information Networks (QHIN), modify and update accompanying QHIN technical requirements, engage with stakeholders through

> virtual public listening sessions, adjudicate noncompliance with the Common Agreement, and propose sustainability strategies to support TEFCA beyond the cooperative agreement's period of performance."[12]

As Vermont realizes the HIE Strategic Plan's vision, the technical and legal requirements defined by the Recognized Coordinating Entity (RCE) must be evaluated against existing and proposed use cases for health information. Additionally, the HIE Steering Committee must monitor, and VHIE adhere to, the Common Agreement's requirements, which will dictate rules for participating in the QHIN model to share and query data across the national network of networks.

Across Vermont health plans and providers participating in CMS programs face a number of new requirements for sharing patient and provider information with new exchange partners in accordance with CMS' proposed rule. These new requirements serve as opportunities for VHIE and the HIE Steering Committee to provide increasing value to those across the network through successful development and seamless implementation of use cases to meet the demands of these new requirements.

The ONC proposed rule aligns itself with the CMS proposed rule and TEFCA drafts; their ultimate interests are all vested in national interoperability and healthcare accessibility. In general, the industry is highly supportive of interoperability as a concept, so although the initiatives are taking time to get off the ground, they represent an overarching trend throughout the healthcare industry. All entities should be preparing to undertake these changes sometime soon.

Within Vermont, the Proposed Rule from ONC impact tactics supporting Key Objectives for exchange including Delivering Information at the Point of Care and Providing Consumer Access by reinforcing standards for health IT vendor certification including US Core Data for Interoperability (USCDI) and patient/population Application Programming Interfaces (APIs), as well as increasing patient (and provider) access to health information.

VITL's implementation of Vermont's new opt-out policy is the launch point to initiate granular, electronic consent management to address the challenges in sharing sensitive data in adherence with local, state, and federal laws including 42 CFR Part 2. Ability to manage consent at a granular level supports the Key Objective of Managing Sensitive Health Information and addresses challenges faced by Blueprint, OneCare Vermont (OCV), VITL and others attempting to integrate physical health, behavioral health, and substance use data.

Key public/private initiatives include the following:

1. Da Vinci Project[13]
2. Sequoia[14]
3. Carequality[15]
4. CommonWell Health Alliance[16]
5. Surescripts[17]

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[12] https://www.hhs .gov/about/news/2019/09/03/onc-awards-the-sequoia-project-cooperative-agreement.html

[13] http://www.hl7.org/about/davinci/

[14] https://sequoiaproject.org/

[15] https://carequality.org/

[16] https://www.commonwellalliance.org/

[17] https://surescripts.com/

6. OpenNotes[18]

Key aspects of these initiatives have been incorporated into the Technical Roadmap.

3 Roadmap for Vermont

3.1 Key Objectives Supporting HIE Goals HIE Goals:

4. Create One Health Record for Every Person—Ensure access to complete and accurate health records to support optimal care delivery and coordination.
5. Improve Healthcare Operations—Enrich healthcare operations through data collection and analysis to support quality improvement and reporting.
6. Use Data to Support Investment and Policy Decisions—Bolster the health system to learn and improve based on accurate, comprehensive data; guide investment of time, labor, and capital; and inform policies and program development.

This section ties the Goals above to these Key Objectives.

Table 2: Key Objectives Support Multiple Goals

Key Objectives	Goals
1. Delivering Information at the Point of Care	1, 2
2. Augmenting Use of Public Health Registries	1, 2, 3
3. Managing Sensitive Health Information	1, 2, 3
4. Leveraging Social Determinants of Health Information	1, 2, 3
5. Automating Quality Reporting	1, 2, 3
6. Providing Consumer Access	1, 2

Note that most of Key Objectives support all three VHIE Goals, while the first and last listed are not directly related to population analytics.

This section describes each of these Key Objectives. The following section describes how the Key Objectives will be realized across the components of the VHIE three-level architecture

3.1.1 Delivering Information at the Point of Care

Key Objective 1: Share appropriate information with patient's care team to support care management and care coordination.

Many types and forms of information are needed at the point of care to support high quality outcomes and efficient operation. This objective is about information in the patient record and supporting care coordination. Virtually all aspects of the VHIE architecture, apart from Consumer Tools, drive some aspect of delivery of information at the point of care.

The EHR is the primary source of information for clinicians at the point of care, regardless of the origin of that information. Locally, clinical information is captured and managed in an electronic medical record (EMR). The concept of an EHR is broader, encompassing information that may originate outside the EMR, and which is integrated into an environment that, to the user, operates as a single application.

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[18] https://www.opennotes.org/

Increasingly, open APIs invite integration of distinct “apps” within a single environment.[11] In recognition of the key role of the EHR, this plan has added “EHR Integration” as primary component of the VHIE architecture.

The HIE is a key supplier of information to the EHR, information captured anywhere within the network that a person seeks and receives care including home health or hospice, nutritional counseling, physical therapy, and specialty care of all kinds. New, challenging, and emerging sources of information for whole-person care span the full set of potential and priority use cases.

Information captured in one locale requires consistent contextual information to be useful to clinicians and care managers when imported into applications in undefined and potentially unknown external environments. Using data standards to define information context makes it possible to index and manage the incoming information and, in some cases, to integrate it in structured, coded form into a local EMR. Much effort has been expended over the past decades to define these standards, focusing on essential context—the who, when, what, why, and where of the information —and the essential data elements. Today, the US Core Data for Interoperability[20] (USCDI) represents the most complete and upto-date expression of this effort. The USCDI includes clinical notes; clinical note sections such as History of Present Illness, Problems, Medications, and Family History; and key data elements covering patient demographics, medications, allergies, immunizations, problems, procedures, and more.

HIE planning supports a continual, incremental rise in the level of adherence to these standards while maximizing the amount of information available—a balancing act between excluding key information that fails to meet all aspects of the standard and passing through non-standard information unusable at the destination. The tactics laid out here and throughout this Technical Roadmap seek a balance that is liberal in what it accepts and more stringent in what it sends, and, where feasible, using tools to improve the adherence to standards and usability of information. Critically, both USCDI and the VHIE should continue to augment the quality and quantity of structured data while providing access to semistructured and narrative data which are important to clinicians, more expressive than most coded data can achieve, and often the sole method to communicate findings at the cutting edge of medicine.

A wholistic view of the information to be captured and accessible across the network includes the following:

- EMR data including minimum structured, coded data sets
- Clinical notes with sufficient context to be indexed and managed including ○ Discharge Summaries ○ Progress Notes ○ Consult Notes ○ History & Physicals ○ Pathology Report ○ Procedure Note
    - ○ Summarization of Episode (CCD)
- Long-term Care assessments
- Lab orders/results
- Imaging notes, images
- Patient-generated information

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[11] SMART on FHIR. https://docs.smarthealthit.org/

- Telemonitoring data
- Telehealth note
- Claim status
- Referrals
- Prior authorizations
- Care plans
- Available beds
- Notifications

While much attention is focused on structured and coded or quantified information, the narrative of clinical notes remains critical for clinical decision making. The Provider Survey[21] shed some light on what may be useful, however, more review is required to understand where and when types of information provide value. Most responding sites (157 of 282) receive clinical notes from outside their organization and of those, 130 of 134 find the information useful. Of those not currently receiving notes, about half of the respondents were unsure whether the notes would be useful and of the balance, the majority (35 of 58) felt they would be useful. Other findings indicate that most sites do not receive a reconciled medication list and that the information would be very useful. Opinions were split on pharmacy fill and claims information. While most sites do not receive it, most of those that do find it useful while most of those that do not receive it do not believe it would be useful.

This plan addresses high-priority areas and lays the groundwork, through requirements gathering, use case development, or planning and assessment to build out the information available over time.

3.1.2 Augmenting Use of Public Health Registries

Key Objective 2: Increase adoption and efficiency of electronic Public Health Registry reporting and integrate into provider workflow.

A registry is an organized system for the secure collection, storage, retrieval, and analysis of health information for a defined patient population. It focuses on a defined disease or health event. Disease registries, such as the Vermont Cancer Registry, provide insights about the incidence, prevalence, and trends of a specific disease. Health Event Registries, such as the Vermont Immunization Registry, combine health event information from different sources into a single, consolidated record even when individuals have received services from different providers.

VDH uses information from registries to improve health services, inform health outreach programs, allocate health resources, and engage partners in the public health community toward the larger goal of improving the health of all Vermonters.

VDH registries include, but are not limited to:

- Immunization Registry
- Cancer Registry
- Newborn Screening:
  - State Lab screening
  - Point-of-Care screening including hearing and Critical Congenital Heart Disease (CCHD)

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[20] https://www.healthit.gov/isa/us-core-data-interoperability-uscdi

- Vermont Prescription Monitoring System (VPMS) a prescription drug monitoring program

Current methods for reporting information include file submission and manual, often redundant, data entry into online portals. As part of the requirements for meeting Meaningful Use (MU) in the Medicare and Medicaid Promoting Interoperability (PI) programs, Eligible Professionals (EPs), Eligible Hospitals (EHs), and Critical Access Hospitals (CAHs) must electronically submit certain forms of public health data to various registries within Vermont's VDH. An expansion of reporting capabilities to support electronic submission, meaning, submission directly from electronic clinical/administrative systems, using national standards implemented by EHR and Public Health Registry vendors can increase the prevalence of reporting while integrating it into existing workflow.

In March 2019, VDH was charged by AHS to develop a department-wide informatics strategy. That work is on-going as of this writing. Preliminary findings related to system needs align well with this Plan and are summarized in a project report as follows[22]:

- Master Data Management with necessary data governance in place
- API capability to consume and deliver relevant subsets of data
- Presentation ready and intuitive to use downloadable data
- Capability to create Infographics
- Ability to generate curated data set by aggregating raw data
- Ability to do trending analysis
- Ability to integrate with legacy systems in the backend for near real-time data flow
- Ability to create summary data sets with drill down capability

The PH Reporting use cases cover 1) Providers submitting data to state registries; 2) Providers submitting data to CDC; and 3) Providers querying state registries for information.

This Key Objective is supported by Reporting Services, Patient Attribution, and virtually all Exchange and Foundational Services.

3.1.3 Managing Sensitive Health Information

Key Objective 3: Create safe, effective solutions to share sensitive data (e.g., SUD, behavioral health, other), adhering to state and federal regulations.

Appropriate access to information on substance use disorders (SUDs) is essential to addressing and mitigating the epidemic and the harm to individuals, families, and the State. This is particularly challenging given the heightened sensitivity to sharing this information. Appropriate exchange of sensitive data is governed by laws, organizational policies, and individual preferences. An exchange solution needs to support these perspectives.

The legal restrictions are felt nationwide and are being addressed at the federal level (Ref. section on National initiatives above). This Technical Roadmap lays out the steps required to share effectively under current regulation and can provide state-regulated safeguards should federal regulations be lowered to the current standard under the Health Insurance Portability and Accountability Act (HIPAA). While there are several technical components to address, organizational and governance issues must be addressed to set the stage for effective technical solutions. Technical components span several areas, from the fundamentals of identity management to data extraction and aggregation and delivery to the point of care.

3.1.4 Leveraging Social Determinants of Health Information

Key Objective 4: Develop tools and methods to collect, aggregate, and share Social Determinants of Health (SDOH) data.

SDOH exchange has been identified on a national level as key to compiling a whole-patient view and has given rise to organizations focused on optimal exchange of SDOH. The Social Interventions and Research Evaluation (SIREN) Project from the University of California, San Francisco,[23] is at the forefront of developing national standards-based exchange of SDOH. In June 2019, under the Gravity Project,[24] SIREN began developing a Health Level Seven International (HL7) Fast Healthcare Interoperability Resources (FHIR) SDOH implementation guide for publication in early 2020. HL7 Implementation Guides establish a structured code format, which can be applied to SDOH question/answers.

The question/answer format is similar to current LTC assessment tools (MDS, OASIS, IRF-PAI, CARE) and provides one pathway to standardizing questions and answers. Integrating question/answer (Q/A) data into clinical repositories, however, remains a serious issue for the established assessment tools. Rather than back into SDOH using a Q/A format, this plan calls for the VHIE to monitor the development and use of the Gravity work against current needs, available data, and other initiatives including development of International Classification of Diseases, Tenth Revision social diagnostic codes (Z codes).[25]

In addition to monitoring national standards and pilot programs, Vermont should review and catalog current sources of SDOH information across State agencies including the agencies of Human Resources, Education, Transport, and Digital Services.

3.1.5 Automating Quality Reporting

Key Objective 5: Support and enhance quality reporting by harmonizing reporting requirements, standardizing reporting formats, and creating a reliable, predictable pipeline of information captured with minimal disruption to workflow.

Analytics, quality measurement, research, business intelligence all rely on a consistent, predictable flow of data. Today's providers report data for quality measurement for up to 100 distinct recipients, according to Vermont stakeholders. This information is required for assessment, management, and reimbursement. Addressing this on a statewide basis is a long-term project that involves communication and collaboration among stakeholders and an assessment of the highest possible use from data that is most readily and reliably available. To be effective, it requires balancing what is available against what is

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[22] VDH-Wide Health Informatics Project, Consensus and Understanding, Current State of Health Informatics. Received August 27, 2019.

[23] https://sirenetwork.ucsf.edu/

[24] https://sirenetwork.ucsf.edu/sites/sirenetwork.ucsf.edu/files/wysiwyg/Gravity-Project-Charter.pdf

[25] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6207437/

desirable, adjusting both data capture/coding practices and data submission requirements in the process.

The results of the 2019 Provider Survey[26] support this direction with these key findings:

- Of those respondents cognizant of their facility's reporting practices, approximately 85% report on quality measures from their EHR. Those not using an EHR were primarily in behavioral health and specialties with low EHR adoption (e.g., physical and occupational therapy).
- Nearly 2/3 of respondents reported that the information captured for quality reporting ***is not useful to them.***
- At the same time, slightly more than 2/3 of respondents reported that they would like to increase EHR use for quality reporting.
- X% of respondents reported sending information to 3 or more quality programs and Y% report sending information to 5 or more programs. Forty-four respondents report sending information to 8, 9, or 10 quality programs.
- Fifty-one respondents (Z% of those responding yes or no) reported that they send the same or similar information in different ways to different programs.

The survey data reflect what has been reported nationally and within other state initiatives—that with a framework for coordination and collaboration, reporting requirements can be simplified and more fully supported by current tools.

Fully automating and optimizing reporting is a long-term, on-going process. This plan starts with a recommendation to form a Quality Leaders Task Force to work through the possible avenues to simplify and reduce the quality reporting burden.

3.1.6 Providing Consumer Access

Key Objective 6: Individual consumers and their personal caregivers (family and friends in their support network) should have access to comprehensive longitudinal record of their own care.

Consumer demand for access to electronic health information continues to rise as individuals increasingly seek health care advice, track health status and metrics, and share health data electronically. Patient portals hosted by payer and provider organizations are the most common instances of personal health records (PHRs), yet they are not widely adopted. Site by site, information may be incomplete or out of date, and across sites, it is not possible to get a single, cohesive, reconciled, and comprehensive view of care history. (See Appendix A.)

In response to consumer demand, the federal government is supporting data access standards and rules that expand the opportunity for third party applications to pull patient information from multiple sources to create the desired patient-centered record independent of any single payer or provider PHR.

Apple Health is one example of a company engaging consumers directly and acting as an intermediary with care providers using industry standard open APIs (FHIR) to aggregate a patient’s data from disparate sources. As of this writing, three hospitals in Vermont share information through Apple Health, and the number of sources will continue to rise.[12]

The current research clearly shows that consumer access to their medical record is a process still in discovery. Successful approaches are those that empower patients to make actionable use of their health data such as integration into a user-centered health app or the ability for consumers to communicate with their healthcare providers. It is clear that medical data is only useful if contextualized in a way that the patient can make some secondary use from the data, and this position is further emphasized when looking at patients’ preference for the ability to communicate/schedule/request refills/etc. rather than have access to a static picture of their medical history. One should not overlook the fact that patient access to medical data has not shown any significant outcome benefits, and this should be kept in mind when setting expectations for the usefulness of a state HIE. That said, improvements in patient empowerment, understanding of one’s own health history, satisfaction and communication with health care providers stand to benefit significantly from consumer access to their health record.

When developing the strategy and plan for consumer access, key drivers are the ability to receive, aggregate, and share medical information in a simplified manner. The approach recommended here is consistent with the federal effort to expand API-based access to information expanding the preconditions for broad-based private sector PHR solutions.

3.2 Deploying the Plan within a Three-level Service Architecture

This section walks through the Technical Roadmap using the VHIE three-level architecture as a guide. The 2018 HIE Plan introduced a three-level service architecture as the organizing principle for VHIE. This Roadmap continues use of the architecture with these changes from 2018:

Addition of “EHR Integration” as an End-User Service: Integrating information from the VHIE into provider workflow at the point of care is an essential stakeholder requirement. We envision new suites of end-user tools built on greater access to data through open interfaces; however, these tools will be required to integrate into provider workflow where the EHR remains the dominant provider application.

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[12] Apple, “Institutions that support health records on iPhone and iPod touch.” The three are Brattleboro Memorial, Grace Cottage, and Mt. Ascutney. Note that all three use the Cerner EMR.
https://support.apple.com/enus/HT208647

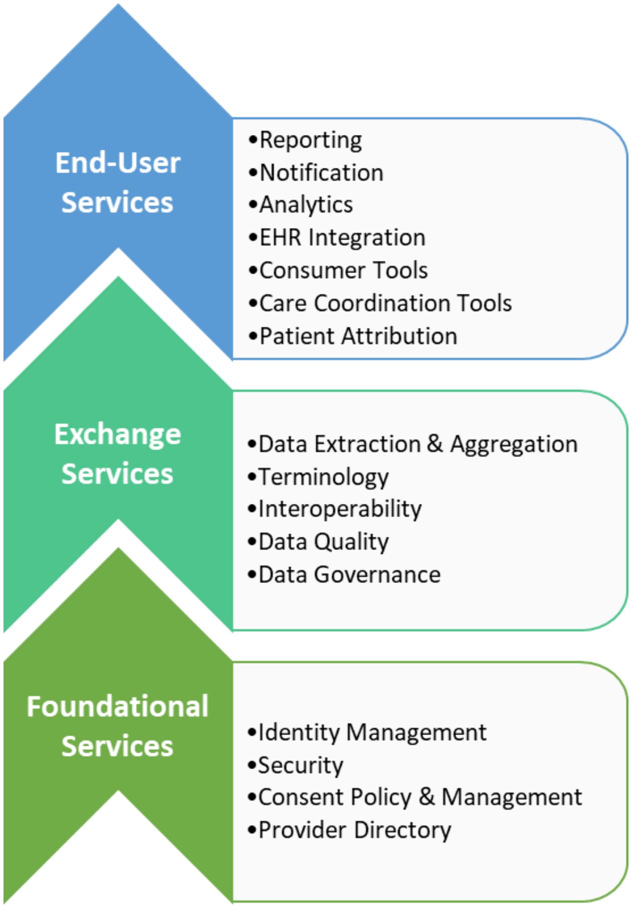
The SMART application platform is a leading example of how EHR integration is broadening provider access to information.[13]

Addition of "Terminology Services" as an Exchange Service: Terminology Services promote consistency and accuracy across a network of stakeholders. This plan introduces an initial application for Terminology Services supporting identification and classification of sensitive information. Future use will support greater consistency in structured and coded lab results and other key observations and findings.

Deletion of "Data Access" from Exchange Services: Data access functions rely on an integrated combination of interoperability, extraction, and aggregation services deployed across an array of EndUser Services and are not useful as a stand-alone service.

Deletion of "Dashboards" from Patient Attribution: Dashboards are a common approach to aggregating information for display and can be developed, as needed, as Reporting Services, Care Coordination Tools, Analytics, or EHR Integration functions.

Figure 2: The 2019 VHIE Three-Level Architecture



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[13] https://smarthealthit.org/

The following sections present the actions required to realize the Roadmap Key Objectives. Some services are directly related to the end-user objectives described in the previous sections while others are equally important as essential preconditions and supportive of those end-user objectives. Note that many, if not all, of the objectives, use cases, and services described here will make it easier to contribute and make use of information in the exchange including the move to opt-out permissions and upgrading patient matching and provider directory services.

Each component is reviewed below. Most have associated actions (tactics) named in the Plan, while several stand out as most critical to the six Key Objectives. Each tactic is identified by stage of implementation under the near-term Plan. These stages are: requirements gathering, planning, and execution (implementation).

Where requirements gathering and assessment involve potential changes in policy or financial management, these processes are discussed under the non-technical portions of this Plan (Section 4). In some cases, there will need to be close collaboration between responsible parties working on the policy side and the technical side, for example, setting policy on simplification of quality reporting and doing the deep dive into data standards, terminology, and EHR data models to determine feasibility.

The following sections review each component of the three-level architecture, describing the tactics to be deployed for each and the interdependence or dependencies of the components themselves. The review starts with End-User Services which represent the areas where the impact is most evident from a stakeholder perspective noting that these are built on and rely on the Exchange and Foundational Services which provide value across the network.

3.2.1 End-User Services

3.2.1.1 Reporting Services

Reporting services encompass public health and quality reporting. The actions described here support these Key Objectives:

- Augmenting Use of Public Health Registries
- Automating Quality Reporting

And rely on these Exchange and Foundational Services:

- Data Extraction & Aggregation
- Identity Management
- Data Quality
- Provider Directory

Note that access to registry data by provider sites is to be evaluated first for the Immunization Registry. We anticipate that subsequent plans will use that experience to provide similar services for additional public health resources. There is an ongoing VDH-wide Health Informatics Project targeted at understanding the current state of health informatics within Vermont. While the preliminary findings from this project are currently aligned with the recommendations in this Roadmap, a review of final findings and recommendations between the Informatics project and this Roadmap will result in a comprehensive and cohesive vision for Vermont. For example, expectations of an informatics solution include Master Data Management with necessary data governance and use of APIs to exchange information between systems. These components are also fundamental to delivering end-user value not only within VDH but also to VHIE in general.

Requirements stage: Public Health Reporting

1. **Investigate integration of outpatient cancer reporting:** Increase adoption of the reporting Cancer registry information (HL7 Cancer CDA) from ambulatory settings and ensure that automation and data reuse data is optimized.
2. **Automate reportable labs:** Use the HL7 V2.x standard for mandated reporting of lab results via STARLIMS.

Requirements stage: Quality Reporting

Required precondition: Convene stakeholders in a VHIE Quality Reporting Task Force to consider harmonization, simplification, and consolidation of measures across programs.

1. **Define Quality program universe through census:** Take census of reporting requirements across providers/plans, define universe of quality programs requesting clinical and claims data (e.g., health plan Healthcare Effectiveness Data and Information Set [HEDIS], CMS, value-based programs).
2. **Assess data availability against Quality program requirements:** Assess quality measures, data requirements and quality, and gaps in care for highest use and data availability.
3. **Identify opportunities for simplification/harmonization:** Consider harmonization opportunities for quality reporting including data submission and gaps in care.

Planning stage: Public Health Reporting

1. **Increase ambulatory cancer reporting**
2. **Support birth and fetal death standard reporting:** Support standards-based electronic reporting from providers using the HL7 national standard for birth defect and fetal death reporting as a Specialized Registry for Meaningful Use Credit (adhering to HL7 CDA® Release 2 Implementation Guide: Birth and Fetal Death Reporting, Release 1, STU 2 - US Realm.
3. **Improve standard immunization reporting:** Increase and improve use of standards for Immunization reporting (HL7 VXU) from providers and pharmacies.
    a. Validate VXU submissions further upstream, within VHIE.
    b. Develop timely remediation policy
    c. Adopt informative acknowledgment message
    d. Encourage wider adoption of standards-based electronic submissions
4. **Design Query/Retrieve for Immunizations:** Develop public health capability to receive and respond to queries for Immunization History and Forecast electronically using standards developed by the CDC to improve clinicians’ ability to obtain real time and forecasted immunization data and support public health registries

Planning stage: Quality Reporting

1. **Standard quality reporting formats:** Consider adoption of CMS-standards for electronic clinical quality measure (eCQM) submission and alternate standard formats where feasible.

Execution stage: Quality Reporting

1. **Implement query/retrieve for immunizations:**
2. **Pilot standard quality reporting formats:** Pilot standardized quality reporting formats; move to production within 3 years

3.2.1.2 Notification Services

Notification services encompass sharing information of a patient encounter with a patient's care team. Notification applications are compatible if the data sent through the VHIE is based on standards. The VHIE should remain vendor and transport agnostic, hosting all compatible solutions. This plan anticipates that participating organizations will select a vendor of choice and that application will support notification over the VHIE.

The actions described here support this Key Objective:

- Delivering Information at the Point of Care And rely on these services:

- Data Extraction & Aggregation
- Identity Management
- Data Quality

- Provider Directory
- Patient Attribution
- Electronic Health Record Integration
- Managing Consent

Increasing value of existing Notification Services including Admissions, Discharge, and Transfer (ADT) notifications and sharing Summary of Care documents correlates to number of sources and delivering consistent, high-quality notifications, aligning with delivery on the following tactics.

Currently, home health and hospital notifications are available through VITL.

Planning stage:

1. **Identify use cases and understand workflow for notifications.** This investigation will ensure that tools are leveraged as intended and with respect to VHIE priorities.

Execution stage:

1. **Increase sources of notifications:** Increase the number of provider sources sharing data including hospitals, physicians, federally qualified health centers (FQHCs), skilled nursing facilities (SNFs), and home health.
2. **Expand sources to new VHIE participants:** Expand the sources to include mental health and social services, which are dependent on the definition and implementation of electronic consent management.
3. **Increase recipients of notifications:** Increase the number of notification service recipients including provider, health plans, and state agencies.
4. **Adhere to standards for consistency:** Ensure consistency and quality of data within notifications shared with recipients through adherence to Connectivity Criteria and translation to consistent code sets.

3.2.1.3 Analytics Services

Analytics services provide insight to support decision-making for organizations, policy, programs, or other defined populations. Aggregating demographic, clinical, and claims data is foundational to evaluate population health statistics and emerging value-based programs. Blueprint, OCV, and Green Mountain Care Board (GMCB) develop services to provide data-driven answers to health care challenges in Vermont and will be supported by a new clinical data repository proposed under this plan (See Data Extraction & Aggregation).

Expanding capabilities to manage or reference sensitive health information including SUD and mental health data allow an entirely new dimension to investigate and correlate with existing data sources. Numerous dependencies for analytics include mastering patient/provider data and the quality, sources, and amount of the data which are all addressed within this Roadmap. Accuracy, efficiency, confidence, and flexibility in analytics services depends on the following:

- Data Extraction & Aggregation (which includes a shared health information repository)
- Data Quality
- Identity Management
- Provider Directory
- Patient Attribution
- Security

2019 Roadmap recommendations for analytics relate to the expanded use of the Vermont Health Care Uniform Reporting and Evaluation System (VHCURES), Vermont's all-payer claims database. At present, participation by private payers is limited and could be incentivized by changes in policy and in practice that would expand access to VHCURES and open the potential to link claims and clinical data.

3.2.1.4 Electronic Health Record Integration

EHR Integration encompasses reducing burden on providers to share information by reducing friction to send and receive EHR data and optimize workflow. The actions described here support these Key Objectives:

- Augmenting Use of Public Health Registries
- Automating Quality Reporting And rely on these services:

- Interoperability
- Data Extraction & Aggregation
- Identity Management
- Data Quality
- Provider Directory
- Patient Attribution ***Requirements stage:***

1. **Investigate eClinicalWorks exchange solutions**: Investigate cost-effective data exchange solutions with eClinicalWorks, including FHIR, and map solutions to current eClinicalWorks implementations/instances/versions across Vermont. Ensure all avenues under settlement explored.

Planning stage:

1. **Evaluate workflow and data access preferences**: Evaluate optimal workflow and data access preferences for participants in data sharing use case and align with access and/or transport options.
2. **Maintain/expand use of pharmacy claims:** Integrate query of the pharmacy benefit manager (PBM) medication history with the Vermont Prescription Monitoring Service (VPMS). Consider feasibility of reconciliation across databases. Where feasible, leverage open API solutions such as RxCheck.

Execution stage:

1. **Implement VITLAccess SSO using standards:** Implement single sign on (SSO) to VITLAccess from EHR systems using cross community access (XCA direct query and retrieve) in accordance with the State's prioritized list.

3.2.1.5 Consumer Tools

All tactics described here support the objective of providing consumer access. They are dependent on the Exchange and Foundational Services.

Requirements stage:

1. **Review current research on consumer access:** Review published sources examining consumer requirements and, where accessible, findings on the impact of providing extensive access to clinical and administrative records. (See Appendix A.)
2. **Define principles of data access for consumer tools:** Establish minimal expectations against which any/all consumer access tools can be evaluated (e.g., uses standard API).
3. **Track progress of open APIs (FHIR):** Federal rules encouraging extensive expansion of access to information through open APIs should be evident over the next 12-18 months.
4. **Evaluate third-party applications:** Evaluate against requirements for successful aggregation and curation of person-centered care records.

3.2.1.6 Care Coordination Tools

There are multiple care coordination tools in use. The primary tool for Accountable Care Organization (ACO)-based care coordination today is the CareNavigator application. Issues identified include inconsistent adoption, the burden of duplicate entry across the tool and local EHRs, and lack of support for care plans. The near-term tactics recommended here should result in an expanded use of the tool or adoption of one or more tools with baseline support for interoperability and integration into a mixed care coordination tool environment. This work should be prioritized and depends on convening a Care Coordinator Task Force ready to assess requirements and report to the HIE SC.

These tactics support the objective of Delivering Information at the Point of Care and are dependent on all the Exchange and Foundational Services.

Requirements stage:

1. **Define care coordination tool requirements:** Key requirements should reflect issues identified prohibiting widespread adoption and effective use of care coordination applications, critically, integration between OCV, Bi-State Primary Care Association ("Bi-State"), and related providers.

2. **Assess care coordination tools against requirements:** Determine whether CareNavigator or alternate applications can address key requirements.
3. **Expand care coordination tool adoption:** Proceed on the basis of the previous two steps to move forward with care coordination tools that meet requirements that address current concerns.

3.2.1.7 Patient Attribution

Patient attribution identifies a patient's care team including traditional relationships with providers and health plans and others who support a patient including social services and family members. It supports all current and future use cases that share data at a patient level with Care Team members and functions in conjunction with the Provider Directory to support care team attribution.

The actions described here support these current Key Objectives:

- Augmenting Use of Public Health Registries
- Automating Quality Reporting
- Delivering Information at the Point of Care And rely on these Foundational Services:

- Identity Management
- Provider Directory

Accurately defining a patient's care team offers greater transparency into who is actively caring for a patient and who needs to be kept informed when something important happens that might place the patient at risk if the information is not shared in a timely fashion. Enabling providers, health plans, and state agencies to define active care relationships with patients, and enabling patients to validate and add family member relationships, allow important events for that patient to be shared in a highly reusable, secure, yet automated fashion for both clinical and administrative benefits related to treatment, payment, and healthcare operations.

Developing a definition for "Active" for each type of relationship (e.g., doctor, hospital, ACO, health plan, pharmacy, social service, family member) is a critical step in defining data governance and rules for sharing patient information appropriately. In addition, refreshing this information for each relationship frequently is equally important. Integrating with a statewide provider directory enables the identification of how each care team member would like information delivered as well as routing preference for efficient harmonization with existing workflows and systems including EHRs.

Right now, patient attribution is roster-based. "Care team" information is reliant on what is in messages. Before care team attribution becomes functional, a full use case should be developed that describes the information life cycle, workflow, and supporting technical requirements (refer to Section 4.1 The Nontechnical Plan.)

Requirements stage:

1. **Validate care team attribution service capabilities:** Today, VITL uses Health Catalyst Interoperability (HCI)[14] for care team attribution. VITL should validate that the service can

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[14] The product was known as "Medicity" until acquired by Health Catalyst in 2018.

expand to an encompassing definition to include home health, alternative medicine, social services, family, and other care givers.

2. **Develop a care team attribution use case:** Explore current and evolving definitions of a patient's care team with a diverse set of stakeholders to define functional and business requirements (including integration with VHIE provider directory functionality), technical considerations, value propositions, and sponsors for a flexible, scalable attribution service.

3.2.2 Exchange Services

3.2.2.1 Data Extraction & Aggregation

The primary objectives for data extraction and aggregation are to:

- Explore solutions for distributed access to clinical documents
- Implement a shared repository supporting data analytics and information mining
- Increase the sources and amount of information collected and shared with VHIE (central or federated)

It is a truism in computer networks that their value increases exponentially with the number of nodes and the information available at each node. The value returned to the State will increase with the addition of new types of data and new contributors. Over time, the VHIE will expand and diversify to include clinical, administrative, public health, quality measurement, social determinant, and highly sensitive data. Some stakeholders will design their data management around the aggregate data in the VHIE; others will rely on VHIE to populate their local repositories where they can manage the data according to their local needs.

One key source of data to explore is the wealth of health-related information in state databases, today, particularly information related to SDOH in VDH. Starting to consolidate and exchange data between different departments within the state of Vermont will bring additional value to the VHIE.

Today, several reasons contribute to low data volume. Relying on individual sites to stand up and maintain an interface through successive software updates puts a burden on providers that may not be offset with incentives or equivalent value or may simply not be affordable under budget constraints. Other components of this plan focus on services that reduce the number of interfaces required by each contributing stakeholder by expanding services in quality, public health reporting, and care coordination.

A near-term need is to replace the Vermont Clinical Registry (VCR), increasing the capacity to collect and manage clinical information for analysis by Blueprint and by OCV. The requirements gathering for the repository should start there and ensure that the repository is extensible to new information flows from public health and state agencies with health information related to social determinants and other aspects of care management. The repository should support the data types and data models required for standards-based quality measurement and reporting. Other requirements should ensure that the repository supports data access through its own standards-based open API.

To meet the goal of a comprehensive, longitudinal record and to support the full range of health-related services in that record, the registry must be supplemented by a full-function document management system. Few records today are fully normalized and coded to the extent that all information retains context within a registry or database. Institutions that have been successful in representing a comprehensive record and sharing that record across institutional boundaries supplement full structured resources with document management, a practice in use across all industries, including those with less demanding domains than healthcare. For over a decade, the Veterans Administration and Military Health System, the nation's largest provider of health services, share service member health records through Health Artifact and Image Management Solution (HAIMS) which provides a central index and distributed access to documents and images.[15] At last report, the HAIMS system was slated to remain an integral component during the transition from the current generation to the new generation VA and DoD EHRs.

Data extraction and aggregation are increasingly challenging as the VHIE expands and diversifies to include clinical, administrative, public health, quality measurement, social determinant, and highly sensitive data. The following supports this expansion and diversification:

- Providing a Shared Health Information Repository
- Data Extraction & Aggregation
- Leveraging Social Determinants of Health Information
- Investigate Document Management Services

And is dependent on:

- Augmenting Use of Public Health Registries
- Managing Sensitive Health Information
- Identity Management
- Managing Consent
- Provider Directory
- Data Quality

Requirements stage:

1. **Document requirements for statewide repository**: Identify requirements based on current needs and future vision from organizations with existing repositories and others interested in contributing to selecting and using a statewide repository.
2. **Identify what SDOH will be beneficial *Planning stage:***

   1. **Review state data on SDOH**: Review state data repositories (from AHS, Agency of Education, others) to determine potential reuse as SDOH.

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[15] https://health.mil/Military-Health-Topics/Technology/Military-Electronic-Health-Record/DoD-and-VAInformation-Exchange/Viewing-Artifacts-and-Images

2. **Review VHIE SDOH data**: Review and identify where SDOH information is captured in the VHIE today.
3. **Align VHIE SDOH with national standards**: Assess the alignment of VHIE SDOH information with emerging standards including an HL7 FHIR SDOH implementation guide and the ICD-10 Z-codes.
4. **Map and align state agency data to data standards**: Explore mapping state agency data to healthcare standards and promoting alignment where mapping is problematic.
5. **Monitor standards for capture of SDOH at point of care**: Stay current with studies/pilot on capture of SDOH at point of care.
6. **Pilot integration of AHS data into EHRs**: Design pilot to study impact of integration of state repository data into providers' EHRs.
7. **Explore document management services**: Explore options and value propositions for increasing access to provider-generated notes, including existing capabilities to share, store and reference documents.
8. **Develop Request for Proposal (RFP) for statewide clinical repository**: Work with engaged repository stakeholders to develop an RFP targeting statewide repository solutions.

Execution stage:

9. **Select and implement statewide clinical repository solution**: Leaning on value proposition for participating organizations that will drive sustainability of the repository, select, and implement solution that aligns with existing requirements and long-term vision.

Terminology Services

Terminology services normalize concepts, mapping them to standard code sets and supporting consistent information management and analysis. The primary near-term objective for terminology services is to support the management of sensitive health information. Additional applications will support data quality and reporting services as these needs are refined and data governance is applied.

Terminology services will be provided by the TermAtlas application under a new contract between VITL and HealthInfoNet (HIN) of Maine. The initial focus of the application will be to identify and consistently categorize sensitive information flowing into the VHIE.

Flagging sensitive information will be managed by Rhapsody and TermAtlas. Initially, it will occur both at the highest meta-data level (document or security header). In the future, individual data elements may be identified as well. Over time, additional applications for Terminology Services will emerge from the work on Data Quality and will support Analytics and Reporting.

Required pre-condition:

- Implementing a policy for management of sensitive data will require consideration of state and federal law, the needs of health information managers and analysts and the public's right to privacy, and communication of that policy to those managing or potentially managing sensitive data.
- Data Governance establishes and publishes a list of sensitive data.

Execution stage:

1. **Flag and categorize sensitive data per Data Governance recommendations:** Implement flagging of sensitive terminologies according to Data Governance findings, in alignment with national standards and as appropriate for Vermont.
2. **Normalize coded data to standards:** Manage variability and normalize coded data using terminology services. Map local code compendiums to standard clinical terminologies such as LOINC, ICD-9/10, CPT-4, SNOMED, RxNorm.

3.2.2.2 Interoperability

Objective: Increase utilization of federated approach for sharing transactional data and supporting analytic programs.

Objective: Provide multiple options for sharing information, including query, push, and view.

Technical support of interoperability reduces the burden on participants by supporting industrystandards for data sharing that integrate into workflows for each service (e.g., APIs, Direct Secure Messaging, FHIR). Existing options must scale, and new options must be implemented to meet market demand as use cases and standards evolve.

Requirements stage:

1. **Evaluate federal regulations/rules**: Evaluate how VHIE will need to change to support new interoperability requirements for patients, providers and health plans cited in federal regulations and proposed rulings (e.g., TEFCA, CMS, ONC).
    a. APIs for sharing claims data
    b. APIs for sharing clinical data
    c. Participation in data sharing networks
2. **Evaluate federated exchange solutions:** Evaluate existing and emerging standards and solutions for federated exchange and application across Vermont health data sharing landscape.
3. **Explore expanding FHIR and query-based capabilities:** Explore opportunities to compliment and expand existing FHIR and query-based (e.g., Carequality, CommonWell) capabilities across Vermont with key stakeholders.

Planning stage:

1. **Identify and initiate FHIR and query-based use case pilot:** Work with partners such as Blueprint, Bi-State, OCV, GMCB in identifying FHIR and query-based functionality to optimize real-time data sharing and analytics support including VCR, VHCURES, Qlik Sense, Care Navigator and AllPayer Model evaluation. Pilot FHIR through identification and prioritization of potential FHIR use cases and implementation of (test) standard FHIR server (HAPI) and REST APIs to facilitate FHIR resource exchange. Create FHIR implementation strategy for smooth transition integrating existing infrastructure and leveraging FHIR for where there is not a legacy interface in place.

Execution stage:

1. **Support standards for existing use cases:** Support participant preferences for secure, industrystandard methods for sharing data for existing use cases.
2. **Ensure data alignment with USCDI:** Identify where standards are defined for structured information exchange and ensure that data align with US Core Data for Interoperability (USCDI)

specified in TEFCA. Create a transition path for data aligned with earlier national standards (C32, etc.).

3. **Provide education regarding all available services, including VHIE Direct Secure Messaging (DSM) service:** Educate VHIE end users on the availability of VHIE services, including the VITLDirect secure, point to point DSM service based on customer needs to share Protected Health Information (PHI), focusing on providers seeking HIPAA-compliant options to fax and phone.

3.2.2.3 Data Quality

Objective: Improve quality of data shared across VHIE.

The quality of shared data refers to its adherence to national and state requirements for consistent, unambiguous structure and semantics, typically defined by data standards designed for the exchange of health information and refined or constrained to meet locally defined requirements. The most efficient and effective way to ensure the quality of shared data is to do so at the source, and there are tools and techniques available to encourage that practice. Where data is submitted that fails to meet quality standards, a limited number of tools and techniques applied centrally may improve quality.

The VHIE has choices in how it manages substandard data and can work with data providers to raise their level of awareness of quality issues and to address them. The VHIE may, in some instances, use terminology mapping tools to compensate for lack of standard coding. As a consistent strategy, however, data mapping itself is error prone and requires continual updating and maintenance.

The VHIE Connectivity Criteria point to standard terminologies rather to value sets or codes within those terminologies. That level of guidance allow variability in submitted data that may impair downstream analysis. Implementations supporting collaborative services and use cases, as under the VHIE Plan, may require stricter conformance requirements. Specifications that cite only the terminology system are rarely sufficient to meet local use cases and should assert tighter constraints.[31]

Current VHIE programs allow for 4 code systems (SNOMED, CPT, HCPC, LOINC) without specifying when to apply each code system or defining value sets within the code system. For example, a screening colonoscopy procedure may differ depending on the code system mapping applied. In SNOMED, code 444783004 represents a screening colonoscopy procedure. In LOINC, colonoscopies are represented as an observation or a report (18745-9 Colonoscopy Study Observation/18746-8 Colonoscopy Study report). Specifying that procedures should be represented in SNOMED, observations using LOINC 18745-9 and full colonoscopy reports should be classified as LOINC 18746-8 will support appropriate management and analysis by receiving systems.

Similarly, current guidance would allow reporting ambulatory functional status using either SNOMED 165251008 which means "Walking aid use" or LOINC 54756-2 which means "Cane/Crutch normally used in last 7 days". Removing ambiguity by specify a code system for use for functional status will improve the consistency of the data submitted.

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[31] https://www.healthit.gov/sites/default/files/standards-certification/HITSC_CQMWG_VTF_Transmit_090911.pdf

All participants in information exchange share responsibility for data quality. The approach in this iteration of the Roadmap is to explore areas where processes and tools can support these efforts and where enforcing minimum quality levels and incentivizing higher value levels can enhance the use and reuse of information across the network.

The actions described here support these Key Objectives

- Augmenting Use of Public Health Registries
- Automating Quality Reporting ***Required pre-condition:***

- Establishment of a Quality Leadership Task Force to review requirements and set policy for data quality across the VHIE.

Requirements stage:

1. **Develop data quality work queue and process:** Develop a formal process for stakeholders to document data quality issues, submit to a VHIE data quality work queue, and collaboratively select a solution strategy and remediation plan. Queue should be managed via data governance authority. VHIE data quality work queue needs to follow a formal documentation format and process, beyond weekly/monthly discussions with stakeholders.
2. **Define rejection threshold:** Define threshold for rejecting submissions to the VHIE and develop informative error messages for run-time data and processes to support remediation.
3. **Consider constraining Connectivity Criteria:** Review the potential to constrain the variability of documents and messages allowed under the Connectivity Criteria, specifically Tiers 2 and 3. This should be done in conjunction with the efforts to reduce the burden of Quality and Public Health Reporting.

Planning stage:

1. **Consider tools and methods for local validation:** Consider how education and provision of tools for local validation against standards can improve adherence and data quality.
2. **Expand Connectivity Criteria template:** Expand the Connectivity Criteria workplan template to constrain data formats sufficiently. Fully specify and map criteria to standard data elements.

3.2.2.4 Data Governance

Data governance, in the VHIE context, ensures that what is exchanged, goes over the wire, retains the original meaning and is fully interpretable by exchange partners. Thus, data governance in this Roadmap applies only indirectly to the management and structure of data in local systems. If they can provide and accept data as governed by the VHIE, local management is not affected. In this respect, it differs in some aspects from data governance of state and local systems.

In the exchange context, data governance is implemented locally, operational oversight is provided by the HIE SC and its subcommittees, and overall direction is guided by state data governance policies and principles.

In the near term, there are several areas requiring a startup of VHIE data governance activities, most urgently, management of sensitive information requires an initial definition of “sensitive” and coordination with terminology services. The review should consider codes from one of the Substance Abuse and Mental Health Services Administration (SAMHSA) Consent2Share sensitive value sets for mental health, human immunodeficiency virus (HIV), or substance use in Value Set Authority Center (VSAC) as well as all electronic health information pertaining to patients considered minors should be considered sensitive as defined by TEFCA. Because of the policy implications of this review, we have placed it as a recommendation outside the Technical portion of the Plan.

Data Governance supports all objectives; the actions spelled out here focus on:

- Key Objective 3: Managing Sensitive Health Information **Required *pre-***

condition:

- **Define sensitive data**: Develop and publish a list of sensitive data sources and data elements connected to VHIE following national best practices. (See Section 4, non-technical aspects of Plan.). The Data Governance committee should identify sensitive data according to the confidentiality code set referenced in HL7 v3 Data Segmentation for Privacy (DS4P), Release 1, Part 1 CDA R2 and Privacy Metadata (TEFCA) and compared against TermAtlas algorithm/data dictionary ***Execution stage:***

1. **Map sensitive data to standards**: Map to coded terminology; compare against TermAtlas algorithms/data dictionary.

3.2.3 Foundational Services

3.2.3.1 Identity Management

Objective: Enhance patient matching through adoption of advanced tools and extend value to additional data sources.

Reliably matching patients to all their records (and only their records) is a fundamental requirement for information exchange and underlies all goals and objectives for the VHIE. In early 2019, DVHA committed to a substantial upgrade in patient matching technology and has supported acquisition of the Verato Universal Master Patient Index (UMPI) by VITL. The tactics described here support the rollout and establishment of the UMPI and include establishment of initial workflows within VITL, implementation of communication and workflow for remediation of mismatched identities, linking of the UMPI to VHIE stakeholders within VITL systems, and special consideration on management of identifiers associated with organizations whose identity establishes or implies presence of sensitive data within a patient record.

The Verato application will be fed patient demographics from information flowing into the VHIE and from reference applications. On receipt, it searches for matches within its database of over 300 million identities developer for the US population over a 30-year period. When a match is achieved, it returns a unique identifier (key) to VITL which will store the value in HCI. The unique identifier is under a single branch of a globally unique root value registered to VITL.[32] This identifier or key becomes the basis for disambiguating (merging or unlinking) the records relating to a single person within VITL.

When Verato matches demographics from messages/documents to a single identity that exists across multiple unique patient records within HCI, VITL will be responsible for updating discrepant records/identities within HCI to reflect their shared UMPI. Under the new identity reconciliation/merge workflow, an end-user's search for a person in VITLAccess should return a single merged identity based on a unique UMPI – note, due to contractual obligations, the raw UMPI key itself cannot be broadly disseminated beyond VITL; VITL will be responsible for the reconciliation of identities and returning identifiers to end users that are based on the UMPI without sharing the UMPI (raw) key.

Turnkey solutions such as FEI System's Consent2Share offers an identity management solution with a built-in granular consent user portal. Alternatively, VHIE may decide to design and build a homegrown solution. Regardless of which solution design is selected, it should use standards-based identity management transactions where possible.

This Verato globally unique identifier will have value for some VHIE stakeholders for internal management of patient identities and for collaboration among VHIE stakeholders who share the care of a common patient population. The determination of policies surrounding exchange of unique identifiers will rest with the HIE SC as consistent with VHIE policy and Verato contractual agreements.

Required pre-conditions:

- VITL implementation with Verato is complete; UMPI value is returned to VITL for a given set of demographics and identifiers.
- **Develop UMPI policy as part of VHIE sustainability:** The HIE SC should develop a strategy for maximizing the value of the UMPI with additional stakeholders within the state while adhering to a (financially) sustainable model.

Requirements stage:

1. **Investigate how to support identity management associated with sensitive data exchange**: As HCI does not support granular consent and, therefore, the appropriate exchange of 42 CFR data, VITL will need to investigate how identity management tools protect appropriate access to sensitive data.

Planning stage:

1. **VHIE to provide mechanisms for stakeholders to use UMPI matching**: As the UMPI key itself cannot be shared directly with stakeholders, allowable mechanisms relying on VITL linking of identifiers to realize the UMPI value should be defined and disseminated to VITL and stakeholders in order to describe anticipated impact of the UMPI.
2. **Define UMPI value derivation processes**: Determine how UMPI will deliver value to stakeholders/data sources including communication regarding discrepancies in demographics.

Execution stage:

1. **Reconcile individuals associated with clinical VHIE information using UMPI in HCI:** Once a UMPI has been assigned, VITL will determine how that patient is uniquely identified within HCI.

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[32] An OID registered under the HL7 root.

2. **Provide UMPI-matched identities to initial stakeholders:** Provision will be based on what stakeholders can support, including rosters, HL7 messages, or the emerging FHIR API.
3. **Test reconciliation process:** Implement the feedback process with initial stakeholders/data sources, looking at discrepancies found by VITL and by stakeholders.

3.2.3.2 Security

Network security is invisible to users unless and until it fails. Adhering to standards from the National Institute for Standards and Technology and collaborating with in-state security resources can mitigate the risk that issues arise jeopardizing trust in the network.

An objective defined in the 2018 Roadmap was to "Decrease infrastructure maintenance requirements while adhering to security standards." Several tactics were specified. All steps are in place and on-going or executed on schedule by VITL and, therefore, do not appear here.

3.2.3.3 Consent Policy & Management

> Objective: Automate opt-out processing in alignment with legislation and stakeholder engagement efforts to support Vermonters' information exchange preferences.

In June 2019, Vermont legislature passed Act 53to become an opt-out state where the default is to participation in VHIE under the constraints of federal regulation (HIPAA, 42 CFR Part 2) unless they choose to opt out exchange activities. Accurate and timely honoring of patients' consent choices requires efficient management according to a consent policy and management processes that support appropriate sharing of data.

When a patient opts out, the patient's health record remains in the VHIE, but cannot be accessed. Automation of consent processing must support these principles and result in improved timeliness and accuracy of managing consumer preferences.

In the near term, consent management will be "basic" meaning that access to granted to all or none of the record, in accordance with the constraints of federal regulation. In future, "granular" consent will be developed that allows/prohibits access to defined types of health information. The difficulties inherent in granular consent are non-trivial, particularly where information is in narrative form, requiring sophisticated text processing before rules can be applied to allow/deny access. In time, granular consent does give the promise of segregating selected SUD, mental health, sexual health, and reproductive health information while allowing access to the balance of a record.

The concurrent stakeholder engagement will provide insight into areas where granular consent may be feasible and prioritized as well as challenges to its implementation.

In the interim, automation of basic opt-out processing will mitigate multiple potential points of failure and delay in successfully updating patients' basic consent.

Steps described here start with baseline Opt-out implementation and move to requirements gathering for higher level automation. The first stage focuses on reducing administrative burden; the second on increasing the degree to which information can be shared while still protecting those aspects that are deemed sensitive information.

Much progress can be made automating a basic level of consent solution while evaluating and developing requirements for more granular levels of consent.

Execution stage: Baseline Implementation

1. **Implement approved consent policy:** Update opt-out mechanisms and policy in order to meet March 1, 2020 go-live.

Requirements stage: Future Use

1. **Investigate standards-based basic consent management:** Based on VHIE's basic consent implementation, VITL to evaluate an independent basic consent management database that supports external application use cases.
2. **Evaluate and pilot granular consent management:** Evaluate, select, and implement a granular consent management solution to support efficient patient-managed consent of sensitive information exchange, such as Consent2Share (published by FEI Systems). Pilot the solution.
    a. Granular consent forms need to uniquely identify the patient, the individual provider(s) granted permission to access sensitive information based on source organization and data category, and the categories of information the identified providers have permission to access, and an expiration date for this consent.
    b. Granular consent needs to be managed independently of HCI basic consent (opt-in/out) platform.

3.2.3.4 Provider Directory

Objective: Support provider directory services including organizational affiliation, patient attribution, direct messaging, and federation with external provider directories.

New models of care require health professionals to send, receive, find, and use health information electronically and securely. A Provider Directory alleviates some of this data work by collecting information on physicians and attributed patients in a fast and accessible database. Many organizations across Vermont have a provider directory that meets their individual organization's requirements. A statewide provider directory is a foundational source to store and reference provider information including the myriad of relationships and affiliations that exist between providers and other healthcare organizations.

Traditionally, there has been no standard way to manage and find information on health professionals such as name, address, specialty, contact information, organization affiliations, national provider identifier, specific credentialing information, and electronic addresses for exchanging health information. This has hindered the promise of electronic health records to improve the efficiency and quality of patient care. The Directory includes the electronic service information required to know how and where health information is to be delivered electronically for each provider.

A Provider Directory can contain data from multiple sources, including provider data directly from physician offices, provider data from commercial payers, state and federal provider data, provider data from the Vermont Health Information Exchange, and other data sources. The costs, benefits, and shortcomings of national provider data sources (e.g., National Plan and Provider Enumeration System [NPPES], Council for Affordable Quality Healthcare [CAQH]) must be considered to realize the provider directory's potential.

Maintaining the definition of each provider's preference for accurately and securely receiving health information and making those preferences available through APIs to applications distributing messages, including VITL's HCI, is central to health information exchange across the state. Flexibility to enhance the directory's functionality and underlying data model are required to satisfy emerging industry standards and reporting requirements.

Identifying provider directory functionality to support all statewide stakeholders starts with an evaluation of capabilities and directory resources across Vermont stakeholders. In addition, requirements should review FHIR directory designs in prototype/test and possible pilots and use cases developed under national initiatives. The provider directories of healthcare payers including CMS and commercial insurers, the National Provider Identifier (NPI) registry, should be evaluated as inputs and sources of truth for VHIE's provider directory functionality. Aligning an evaluation, pilot, and implementation process with Medicaid's existing investment in the Medicaid Management Information System (MMIS) Provider Management Module affords the opportunity to fund these efforts through the Implementation Advanced Planning Document (IAPD) process. CMS identified Provider Directory as one of the foundational components they will continue to fund under the MMIS IAPD process when the HIE IAPD program ends on 9/30/21.

Planning stage:

1. **Evaluate existing provider directory capabilities:** Evaluate existing provider directory capabilities, data sources, and requirements across Vermont (e.g., VHIE, VHCURES, plans, providers), including MMIS Provider Management Module.
2. **Request IAPD funds for integrating with provider directory:** Request IAPD funds for integrating VHIE with existing MMIS Provider Management Module, and any additional functionality required to support Medicaid population, to fund maintenance through MMIS after HIE program is sunset.
3. **Develop Provider Directory VHIE Integration project plan:** Develop project plan for Provider Directory Integration to support Medicaid population based on existing and future requirements identified by all stakeholders.
4. **Seek annual MMIS IAPD funding** Include maintenance and operation funding for expanded (integrated) Provider Directory functionality as part of the annual MMIS IAPD funding request.

Execution stage:

1. **Pilot Provider Directory interoperability:** Identify participants and conduct a pilot exchange between VHIE's expanded functionality and MMIS Provider Management Module.
2. **Fully Deploy expanded Provider Directory functionality:** Apply lessons from the pilot to generally available release of VHIE's expanded Provider Directory, including integration with MMIS's Provider Management Module, and implement across targeted organizations.

4 Items to be Incorporated into the 2019 HIE Plan

4.1 The Non-Technical Plan

Several areas of the Technical Roadmap require support from non-technical subject matter experts and health care professionals. The areas that require near-term attention based on the Technical Roadmap are:

- Data Governance

- Quality Reporting
- Care Coordination
- Use Case Development
- Sustainability

Note that the Technical Roadmap identifies all tactics under Consumer Access as being in the requirements gathering stage. The HIE SC may wish to pull those out of the Technical Roadmap and/or establish a subgroup to address and report up to the full Committee.

Data Governance: To support Data Governance, the HIE SC should identify or stand up a VHIE Data Governance Authority (DGA). The DGA will draft policy on data sharing requirements, identify and define data sets for specified use cases, and address data quality issues at the policy level. In doing so, the HIE SC should work with the GMCB Data Governance Council to clarify roles—where each group sets policy and how they coordinate over VHIE-specific data questions.

An immediate charge to that group will be to convene experts to focus on requirements for management of sensitive data. The group will design and implement a "Sharing Sensitive Data" policy that defines requirements for sensitive data to be securely transmitted to VHIE, handled, flagged and stored independently from non-sensitive data where appropriate, and how appropriate access of sensitive data will be managed and operationalized. The group will review national data standards for identifying sensitive data and recommend appropriate application of these standards to be implemented across the VHIE.

The DGA should also develop a formal process that allows stakeholders to document data quality issues, submit to a "VHIE data quality work queue," and work with stakeholders, including the HIE SC and VITL, to select a solution and remediation plan.

Terminology services and transformation/normalization of raw data elements were called out as current and potential risks for reporting. One means to address this issue is at the data governance level to clarify who has access to raw and normalized data as well as who should have visibility into key auditing steps. For organizations licensed to operate in Vermont, Governance has applicability to all existing and future stakeholders and data feeds participating in VHIE.

Quality Reporting: The HIE SC should identify health plan and provider organizations to lead the initiative and stand up a Quality Leaders Task Force with the charge to investigate methods to simplify and reduce the burden of quality reporting. Methods to be reviewed include:

- Harmonization of closely related measures to reduce variability
- Standardization of reporting formats
- Reduction of the overall number of measures
- Support for measure data elements with Connectivity Criteria requirements

The need for auditability, specifically within quality reporting and prescription drug monitoring program was identified as a common need for multiple stakeholders.

The Task Force may wish to start with a review of successful efforts undertaken by other state including Michigan, Maryland, Oklahoma, and others.

Care Coordinator Task Force: The Technical Roadmap actions for 2019 rely on establishment of a Care Coordinator Task Force which can define application-independent requirements for tooling. The convening of a Care Coordinator focus group under the second phase of stakeholder engagement leading to the development of this Plan indicated a strong desire for a forum in which those engaged in coordination care can share their approach, resources, and requirements. The Task Force could be chartered as an ad hoc (temporary) group, however, we anticipate that the opportunity to share experience and expertise may provide on-going benefit that transcends the immediate needs identified here.

Use Case Development: The HIE SC should support formal, on-going use case development starting with development of a Use Case Subcommittee charter and process including the following:

- Standardized, transparent methodology for defining, developing, piloting, implementing, and measuring existing and new use cases.
- Work with stakeholders to define a process for identifying new data sharing requirements including industry-standards for new use cases and evolving standards for existing use cases
- Develop and agree upon a trusted legal framework to ensure consistent rules for data sharing across state.
- Work with the DGA, Quality Leaders Task Force, and others to confirm specifications for shared information, optimal transport methods to reduce burden on participants, and value propositions based on intended use of notifications.

A common objective expressed across Vermont was the legal barriers (and perceived barriers) to appropriate data sharing. An overarching clear framework will empower data sources and data receivers to confidently share data throughout Vermont and nationwide. Communicating a shared framework that includes representations from all stakeholder groups, applicable federal, state, and jurisdictional laws as well as organizational policy will likely reduce the risk of inappropriate data exposure or consumption and will encourage appropriate data sharing.

Use cases prioritized in this Tactical Plan include notifications, patient/care team attribution, FHIR querybased extraction, and quality reporting harmonization and simplification.

Sustainability: The 2019 Plan should explore incentive models to support financial sustainability for the VHIE and the participation of its stakeholders. Areas to review stemming from the Technical Roadmap include:

- **Convergence with national priorities:** Review near and mid-term objectives and tactics for convergence with funding opportunities under CMS, CDC, SAMHSA, Health Resources and Services Administration (HRSA), and other agencies. Key opportunities include the development of a Provider Directory.
- **UMPI value to stakeholders:** The development of a universally unique key for each person with records in the VHIE is an asset that has value outside of the shared repository and VITL. The HIE SC should review how UMPIs support sustainability in other exchanges and determine where it can contribute to the VHIE.

- **Enhance VHCURES:** Consider methods to incentivize participation and frequency of submission by all Vermont-based payers including access to claim history for new beneficiaries and the capacity to link claims and clinical data via unique identifiers.

4.2 Monitoring and Assessing the 2019 Plan

The Technical Roadmap should be monitored and audited quarterly, at minimum, timed such that the next update cycle can be informed by a report on status against 2019 tactics and objectives. Starting with the acceptance of this Plan, the HIE SC should establish benchmarks, quantitative wherever feasible to do so, for each tactic in the adopted Plan.

A quarterly report should be prepared addressing each benchmark, preferably in the form of a Technical Roadmap Dashboard. Where progress is less than optimal, the Committee should consider troubleshooting the process using Lean/Six Sigma methods and application of Agile processes.

The review should identify risks and mitigation strategies to ensure that the Plan stays on track and should document recommendations to be considered in Plan updates.

Appendix A - Consumer Access

Preferences and Requirements for Consumer Access to their Personal Health Record: Insights for the Vermont Health Information Exchange

Personal Health Record (PHR) Overview

A PHR is generally a collection of information about an individual's health. Electronic PHRs make one's heath information accessible anytime via web-enabled devices but have often been the subject of criticism due to concerns about incomplete information, usability, cybersecurity, and portability. A PHR tied to an EHR is called a patient portal and have been one of the key features of EHR design in the US due to MU requirements placed on these systems.

There are two types of PHR which will become important as we consider the Vermont HIE Project: Standalone PHRs in which patients can add to, amalgamate, and update their health record, and Tethered PHRs that are linked to specific information from the patient's legal medical record. When a PHR is connected to the patient's legal medical record it is protected under HIPPA regulations.

Benefits of Consumer Access to Health Record

- Emergency Care or Care While Traveling: Online PHRs can give healthcare providers valuable information on a patient in case of an emergency or if the patient requires care while traveling. • Chronic Disease Management: Patients who have one or more chronic conditions may use a PHR monitor and record symptoms and test results (such as blood pressure or blood sugar readings). PHRs can help them track lab results, which may motivate them to adhere to your treatment plan.
- Care Coordination: If a patient's PHR includes information from all or many health care providers, it can help them receive better coordinated care.
- Family Health Management: People who manage health care for family members —such as young children, elderly parents, and spouses—often find it difficult to keep track of doctor's appointments and immunizations for several people. Having a system for tracking and updating that information can help the caregiver coordinate screenings and vaccinations that prevent illness or lead to earlier diagnosis and better outcomes.
- Secure communications: Some PHRs offer a secure way for your patients to communicate with you and their other health care providers over the Internet. This can be a fast and efficient way to exchange certain types of non-urgent information—such as routine prescription requests and updates on a chronic condition.
- Ease-of-use: PHRs are designed for use by patients. PHRs can help patients take care of themselves and their family members.

Consumer Access to the Health Record – a paucity of data

Patient access to their EHRs has been considered by health organizations since the early 1990s and have been a focus of attention ever since. Those early attempts failed to gain traction for adoption because of prohibitive financial cost and the difficulty of transitioning from paper-based records. With the advancements of EHR technology, patient access to the health record should be technologically easier yet widespread use of these application has not yet been seen in modern medicine.

One potential reason is that research has still not resolved whether patients want to access their medical records, what elements of their medical record patients would like to have access to, would they understand its contents, and what downstream direct benefit patients would realize by having access these data. There is also little evidence on the impact of patient access on health care providers and the delivery of health care by the health system. Furthermore, very little data have been published regarding the impact of changes in information supply—whether qualitative or quantitative—on patients' psychological status, for example, their anxiety about their health.

Patient Access to the Electronic Health Record

A seminal research letter was published in 2015 by Pell et al. detailing the results of a study at the University of Colorado Medical Center in Aurora, CO, evaluating the experiences of patients, clinicians (including physicians and advanced practice providers), and nurses with immediate (real-time) release of test results and other EHR information through a patient portal.

Patients were obtained via non-random convenience sampling and used a provided electronic device to directly access parts of their legal medical record including notes, medication schedule and test results. Pre- and post-test surveys were used to assess the domains of caregiver workload, patient confusion and worry, patient empowerment, errors detected, and discharge planning. Fifty patients, 30 clinicians and 16 nurses were included in the study. All participants completed of the pre- and post- intervention surveys (100% participation rate) and the results are detailed in the following figure.

Figure 3: Colorado Study Results on Access to Electronic Health Record (Pell et al., 2005)

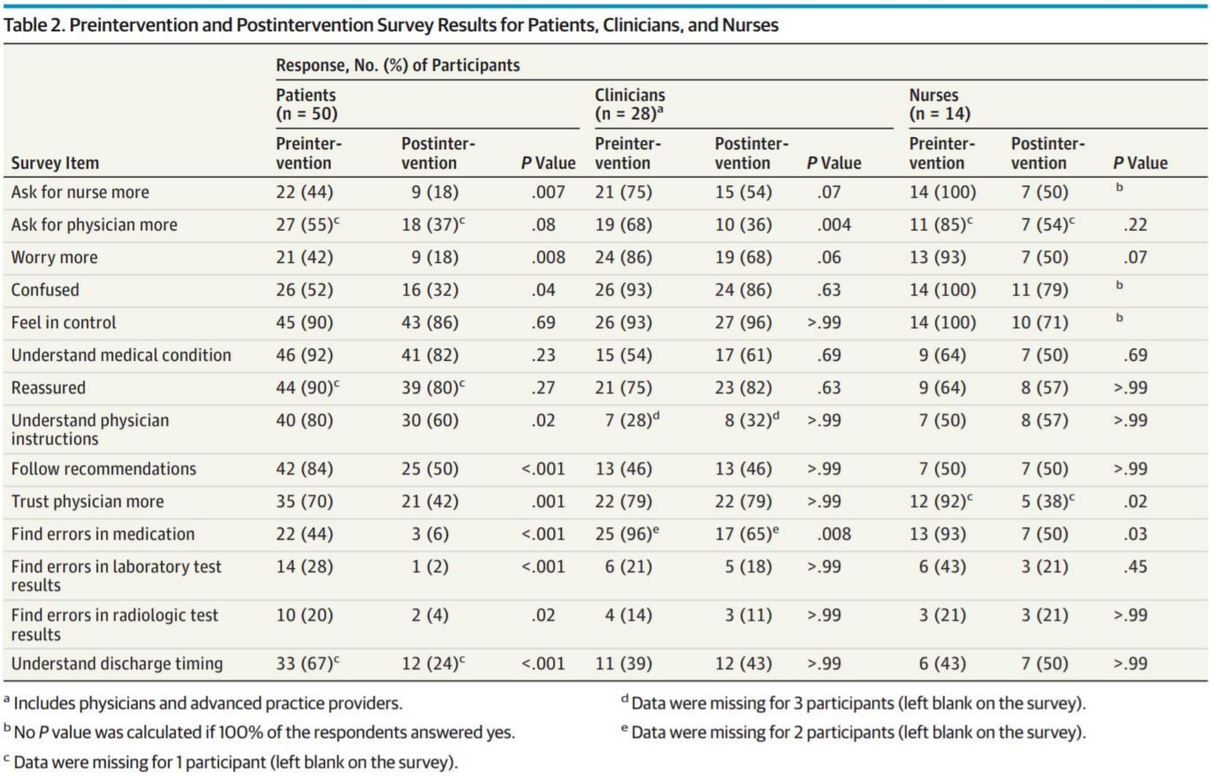

Table 2. Preintervention and Postintervention Survey Results for Patients, Clinicians, and Nurses

	Response, No. (%) of Participants								
	Patients (n = 50)			Clinicians (n = 28)[a]			Nurses (n = 14)		
Survey Item	Preintervention	Postintervention	P Value	Preintervention	Postintervention	P Value	Preintervention	Postintervention	P Value
Ask for nurse more	22 (44)	9 (18)	.007	21 (75)	15 (54)	.07	14 (100)	7 (50)	[b]
Ask for physician more	27 (55)[c]	18 (37)[c]	.08	19 (68)	10 (36)	.004	11 (85)[c]	7 (54)[c]	.22
Worry more	21 (42)	9 (18)	.008	24 (86)	19 (68)	.06	13 (93)	7 (50)	.07
Confused	26 (52)	16 (32)	.04	26 (93)	24 (86)	.63	14 (100)	11 (79)	[b]
Feel in control	45 (90)	43 (86)	.69	26 (93)	27 (96)	>.99	14 (100)	10 (71)	[b]
Understand medical condition	46 (92)	41 (82)	.23	15 (54)	17 (61)	.69	9 (64)	7 (50)	.69
Reassured	44 (90)[c]	39 (80)[c]	.27	21 (75)	23 (82)	.63	9 (64)	8 (57)	>.99
Understand physician instructions	40 (80)	30 (60)	.02	7 (28)[d]	8 (32)[d]	>.99	7 (50)	8 (57)	>.99
Follow recommendations	42 (84)	25 (50)	<.001	13 (46)	13 (46)	>.99	7 (50)	7 (50)	>.99
Trust physician more	35 (70)	21 (42)	.001	22 (79)	22 (79)	>.99	12 (92)[c]	5 (38)[c]	.02
Find errors in medication	22 (44)	3 (6)	<.001	25 (96)[e]	17 (65)[e]	.008	13 (93)	7 (50)	.03
Find errors in laboratory test results	14 (28)	1 (2)	<.001	6 (21)	5 (18)	>.99	6 (43)	3 (21)	.45
Find errors in radiologic test results	10 (20)	2 (4)	.02	4 (14)	3 (11)	>.99	3 (21)	3 (21)	>.99
Understand discharge timing	33 (67)[c]	12 (24)[c]	<.001	11 (39)	12 (43)	>.99	6 (43)	7 (50)	>.99

[a] Includes physicians and advanced practice providers.

[b] No P value was calculated if 100% of the respondents answered yes.

[c] Data were missing for 1 participant (left blank on the survey).

[d] Data were missing for 3 participants (left blank on the survey).

[e] Data were missing for 2 participants (left blank on the survey).

The suspected risks of giving inpatients direct access to their EHR did not bear out, with no increase in workload reported by the nurses or the clinicians and no increase in confusion or worry reported by the patients. Consistent with patients answered more positively to empowerment questions after being given EHR access. Despite supporting patient empowerment, the promise of patients finding errors in their medications or knowing when they were being discharged never materialized. This was the first published evaluation of the experience of a large sample of inpatients and their frontline health care practitioners with real-time inpatient EHR access.

However, a recent study into the same topic by Dumitrascu et al. found that the use of the patient portal in the inpatient setting may not improve hospital outcomes. They did note that future research should examine the association of portal use with more immediate inpatient health outcomes such as patient experience, patient engagement, medication reconciliation, and prevention of adverse events.

Subsequent Studies into Patient Access to the Electronic Health Record

A 2015 study by Jilka et al., posits that patient accessible EHRs enable patients to access and manage personal clinical information that is made available to them by their health care providers and is thought that the shared management nature of medical record access improves patient outcomes and improves patient satisfaction. This access improves self-efficacy which involves various aspects that encompass a patient's beliefs about how they feel, including patient involvement, communication, and patient empowerment.

- Overall, they found 67% (31/46) of positive changes as a result of patient access to the EHR across all self-efficacy domains, as made up by patient involvement (67%, 10/15), patient empowerment (78%, 18/23), and patient communication (38%, 3/8).
- The most common reasons that patients wanted to look at their medical records were to see what their physician said about them (74%), to be more involved in their health care (74%), and to understand their condition better (72%).

Another study by van Mens et al., sought to review the determinants and outcomes of patient access to medical records. Some of their principal findings on why patients access their health record:

- Parents with chronically ill children enrolled in a large health organization most frequently used immunization records, secured messaging, and appointment scheduling.
- Portal users also noted greater medication adherence, particularly for those individuals with chronic illnesses like diabetes.
- Patients, after reading their medical file, gained a better understanding and recollection of their health status and physician instructions.

What do patients want?

There is a lack of systematic data on patient preferences and requirements for access to their health record. In a 2019 systematic review by Wahbeh et al, the authors attempted to codify these requirements. They discovered a total of 682 features that were then grouped into the following key domains:

1. Integration with health apps
2. Security
3. Communication with health providers
4. Reminders

5. View upcoming appointments and (re)schedule appointments
6. Access medical records – test results, medications, prescription refills, immunizations 7. Ease of use

Application for the Vermont HIE

The current research clearly shows that consumer access to their medical record is a process still in discovery. Successful approaches are those that empower patients to make actionable use of their health data such as integration into a user-centered health app or the ability for consumers to communicate with their health care providers. It is clear that medical data is only useful if contextualized in a way that the patient can make some secondary use from the data – and this position is further emphasized when looking at patients' preference for the ability to communicate/schedule/request refills/etc. rather than have access to a static picture of their medical history. One should not overlook the fact that patient access to medical data has not shown any significant outcome benefits and this should be kept in mind when setting expectations for the usefulness of a State HIE. That said, improvements in patient empowerment, understanding their health history, patient satisfaction and communication between health care providers stand to benefit significantly from consumer access to their health record.

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Appendix B - Reference Graphics

Figure 4: The 2018 VHIE Three-Level Architecture

End-User Services

Reporting Services	Notification Services
Analytics Services	Consumer Tools
Care Coordination Tools	Patient Attribution & Dashboards

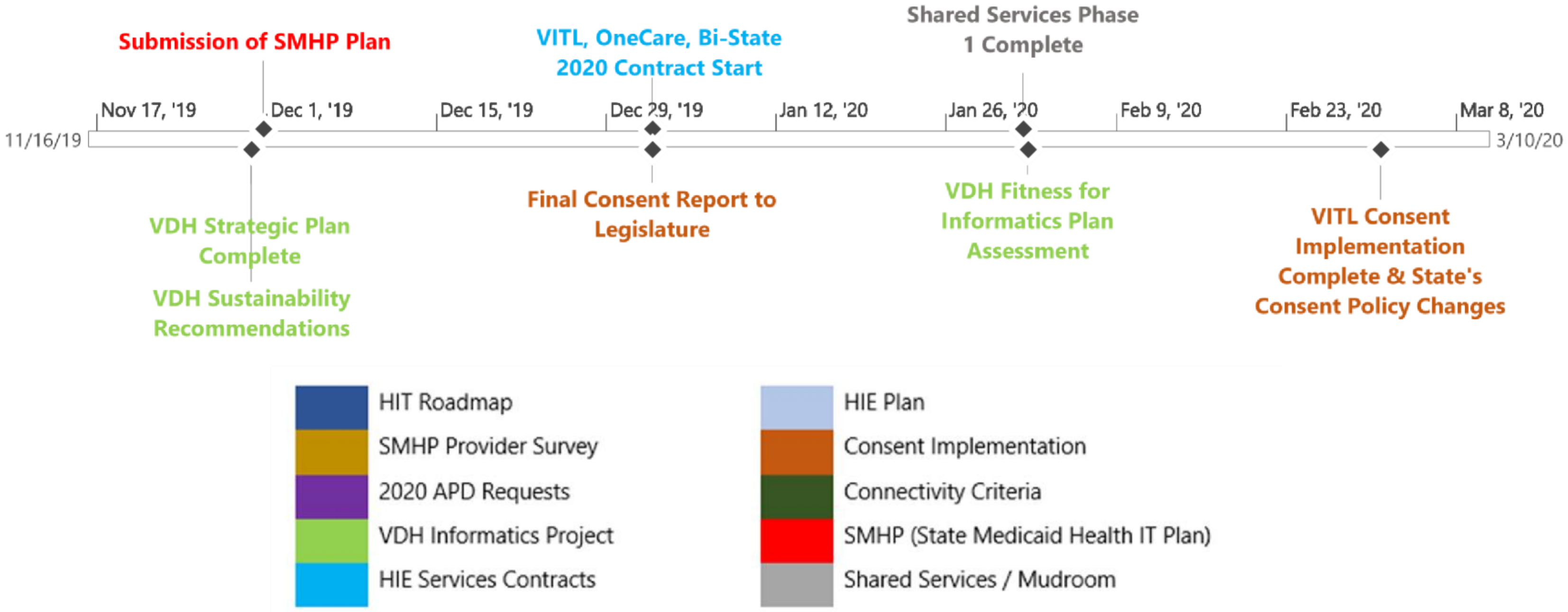
Exchange Services

Data Extraction & Aggregation		Data Access
Interoperability	Data Quality	Data Governance

Foundational Services

Identity Management	Consent Policy & Management
Security	Provider Directories

Figure 5: Integrated Timeline



Appendix C - Stakeholder Engagement

The 2019 Technical Roadmap benefited from extensive stakeholder engagement. The list of individuals participating in discussions follows here and the subsequent sections summarize key findings from those conversations.

Overall, 44 individuals representing 16 agencies and organizations participated in the discussions which were held in two phases: Phase 1 consisted engaged stakeholder organizations individually to determine their current use and desired use of the VHIE and Phase 2 engaged stakeholders in a series of six focus groups held over a period of two days. Some individuals and organizations/agencies participated in both phases.

Table 3: Stakeholders Engaged by Phase

Individual	Organization	Role/Title	Phase Interviewed
Andrew Laing	Agency of Digital Services	Chief Data Officer	1, 2
Dr. Anje Van Berckelaer	Battenkill Valley Health Center	Co-Executive Director | Clinical Director	2
Dr. Joshua Plavin	Blue Cross Blue Shield - VT	Vice President and Chief Medical Officer	1
Vicki Hildebrand	Blue Cross Blue Shield - VT	Vice President and Chief Information Officer	1
Jimmy Mauro	Blue Cross Blue Shield - VT	Director, Reimbursement and Analytics	1, 2
Kelly Lange	Blue Cross Blue Shield - VT	Director of Healthcare Reform	1
Georgia Maheras	Bi-State	Vice President, Policy and Programs. Primary Care Representative	1
Heather Skeels	Bi-State	Technical Representative	1, 2
Jennifer Ertel-Hickory	Bi-State/The Health Center	Care Coordinator	2
Kathleen Blindow	Bi-State/Island Pond Health & Dental Center	Care Coordinator	2
Ester Seibold	Bi-State/Island Pond Health & Dental Center	Care Coordinator	2
Beth Tanzman	Blueprint	Practice Innovation Lead	1
Tim Tremblay	Blueprint	Data analytics and information Administrator	1, 2
Mary Beth Eldridge	Dartmouth Hitchcock Medical Center	Director, Regional Information Systems	1

Sarah Lindberg	Green Mountain Care Board	Health Services Researcher	1
Kelly Gordon	Medicaid	Project & Operations Director	2
Joseph Liscinsky	Medicaid	Health Reform Enterprise Director II	2
Michael Hall	Medicaid	Associate CIO for Healthcare	2
Dr. Ryan Sexton	Northeastern Vermont Region Hospital	Emergency Department Medical Director	1
Carl Zigrovsky	OneCare Vermont	Data Architect	1
Amy Hoffman	OneCare Vermont	Analytics Coordinator	1
Katie Muir	OneCare Vermont	Technical Representative	1, 2
Pennilee Shortsleeve	OneCare Vermont	Programmer Analyst	1
Donna Burkett	Planned Parenthood of New England	Medical director	1
Wendy Campbell	Planned Parenthood of New England	Director of Centralized operations	1
Emma Harrigan	Vermont Association of Hospitals and Health Systems	Director of Policy, Analysis and Development. Hospital Care Representative	1, 2
Simone Rueschemeyer	Vermont Care Partners	Executive Director, Mental Health & Substance Use Representative	1
Ken Gingras	Vermont Care Partners	Technical Representative	1
Tracy Dolan	Vermont Department of Health	Deputy Commissioner of Public Health	1
Karen Clark	Vermont Department of Health	IT Director	1
Jessie Hammond	Vermont Department of Health	Public Health Statistics Chief	1
Mary Kate Mohlman	Department of Vermont Health Access, Blueprint	Health Services Researcher	1, 2
Murali Athuluri	Vermont Department of Health - Mass eHealth Collaborative	Managing Consultant	1, 2
David Delano	Vermont Department of Health - Mass eHealth Collaborative	Senior Project Director	1
Mike Smith	Vermont Information Technology Leaders	Interim President & CEO	1, 2
Frank Harris	Vermont Information Technology Leaders	Strategic Technical Advisor	1
Carolyn Stone	Vermont Information Technology Leaders	Director of Operations	1

Andrea De La Bruere	Vermont Information Technology Leaders	Director of Client Services	1
Christopher Shenk	Vermont Information Technology Leaders	Director of Technology	1, 2
Jill Olsen	VNAs of Vermont	Executive Director	1, 2
Bobby-Joe Salls	Vermont Education Health Initiative	Program Manager and Trust Administrator	2
Leah Fullem	The University of Vermont Health Network	Vice President, Enterprise Information Management & Analytics	1
John McConnell	The University of Vermont Health Network	Supervision – Solutions Architect and Development	2
Lindsay Morse	The University of Vermont Health Network	Director of Care Coordination and Patient Transitions	2

C.1 Phase 1 Discussion Summaries

C.1.1 Agency of Digital Services (ADS)

Stakeholders Engaged: Andrew Laing – Chief Data Officer

Goals and Needs: As the central IT agency for the state of Vermont one of their main goals is to centralize a streaming data platform for the state and to build a culture of data governance that is based on best practices. There has also been a big effort to standardize technologies that are used within the state in order to get away from duplicative analytics between agencies. For example, multiple agencies are paying for similar data warehousing and analytics. They would also like for the state to capitalize on reusable technology platforms that would allow future growth. They would like to see a rule-based security access to healthcare data, clear data ownership rules, and a robust identity management platform at the state level relying on directory services from the state.

Potential challenges: They recognize that data silos are a large barrier to interoperable and reusable data. The increased need for security may also contribute to decreasing the ability to effectively share data. From a data governance point of view, there is a lack of agility in terms of changing course when a non-optimal technology platform is in use.

C.1.2 Blue Cross Blue Shield of Vermont (BCBSVT)

Stakeholders Engaged: Joshua Plavin, MD – Vice President and Chief Medical Officer, Vicki Hildebrand – Vice President and Chief Information Officer, Jimmy Mauro – Director, Reimbursement and Analytics, Kelly Lange – Director of Healthcare Reform

Goals and Needs: As the premier nonprofit health insurance company, serving over 200,000 members and approximately 66% of commercial market, their vision is to transform healthcare for all Vermonters. BCBSVT is Third-Party Administrator (TPA) for employer groups, which bring in approximately 50% of all members and it has been noted that the trend toward employer-based health insurance is increasing. They support various State initiatives, such as, an All Payer Model and ACO (OCV), Blueprint, evolution of value-based care, and Quality Improvement and Safety initiatives. BCBSVT are currently using claims data for much of their data analytics and this has "got them a long way" but clinical data will get them much further in terms of obtaining useful business intelligence and population health metrics from the current health care data.

The overarching goal would be to leverage a single point for sharing clinical data, managing the technical infrastructure, and providing connectivity with other providers in the State. This would also improve the quality of provider data and reduce the burden to providers of maintaining static clinical data on their patients. There also needs to be a remediation plan at the HIE level to resolve missing and poor-quality data. They would also like the ability to access transition of care messages such as ADT transmissions in order to support care management activities and better track their patients. A robust platform to exchange clinical data in real-time would be useful for automated quality reporting and would reduce the manual effort involved in collecting quality measures data. They would like to see an increased use of real-time data exchange and I move away from batch-oriented data processing. The VHIE would also be useful in resolving data quality issues and inconsistencies that would enable automated analytics. By resolving these data quality issues, the hope is that they would be able to revitalize joint payor projects such as the Gap-In-Care list. This process should also include clear oversight and inclusive governance structures over the HIE.

Potential challenges: There needs to be a clear process for consent for participation in the HIE and to increase sharing of clinical data within the state. As the amount of clinical data shared increases, there will be a similarly higher cost to identify and remediate data quality issues in this problem would best be handled upstream.

C.1.3 Bi-State Primary Care Association

Stakeholders Engaged: Georgia Maheras – Vice President, Policy and Programs. Primary Care Representative, Heather Skeels – Technical Representative

Goals and Needs: The Association's goal is to promote access to quality, affordable primary health care with an emphasis on reaching underserved populations through a cooperative agreement with the HRSA Bureau of Primary Health Care (BPHC) to provide training and technical assistance to safety-net providers. They currently receive a flat file from members with procedures, demographics, observations, meds, allergies, problem list, SUD data; but do not receive the full clinical encounter documentation. They would like to focus their business model on "high touch" activities such as the successful data literacy program and leave the technical work to their VHIE.

They noted that the value proposition for the HIE rests in usability of the data of the point-of-care and in aggregating information. The VHIE should not focus on a simple aggregation of claims data yet but rather should focus on building a good platform for sharing clinical data first. Bi-State would like to get out of the interfaces work that they are currently doing and have VITL manage all the data connectivity and interoperability. With this in place they would receive data from the VHIE and provide analytics services that their members request. This would allow them to support their members in successful reporting and clinical quality measurement while reducing provider burden and increasing patient engagement and patient access. By doing this, care coordination would be greatly improved by providing a communication channel between everyone who has contact with a patient including the clinical, financial, housing/social work personnel.

There needs to be a transparent governance process with clear lines of funding and reporting structures. This governance structure should also provide clarity on when and if it is appropriate to monetize data derived from the VHIE. Ideally, the financing of the project would be woven into something that clients are already paying for and accruing a benefit from. They would also like to align data needs and uses with the available data sources as this would reduce unnecessary data collection. This process would entail asking organizations why and where they collect the data in order to ensure that data collected are useful and actionable and that data sources are not conflicted.

Potential Challenges: They cite the high cost of fully interoperable electronic medical record systems and the lack of technical human capacity as limiting factors to achieve their goals above. Currently there are lots of redundancies in data processing and reporting that needs to be harmonized. Access to commercial claims data is also very limited and the VHIE could bridge this gap.

C.1.4 Vermont Blueprint for Health

Stakeholders Engaged: Beth Tanzman – Practice Innovation Lead, Tim Tremblay – Data analytics and information Administrator.

Goals and Needs: Blueprint is one of three major customers for VITL along with OCV and VDH. They are interested in seeing the Mudroom as a breakthrough project that could help catalyze improvement within the VHIE. The main goal is to strengthen the use of clinical data for analytics by primary care providers, and help these providers improve their return for payments from CMS and other payers. Their future goal is to use the clinical data sourced directly from the VHIE instead of managing their own registries which would help them focus on improving quality metrics for their primary care constituents and programs.

They note that it is important to build cooperation and trust among stakeholders which would be important for the long-term success of the VHIE. A clear governance system should be in place to allow and manage access to sensitive patient data that is crucial to support their program and mission. They would also like to explore the HL7 FHIR standard to improve the landscape of interoperability and reduce interface development effort. In this paradigm, the VHIE would be the central hub for interface maintenance.

Potential Challenges: Consent and security checkpoints are required for the HIE to handle sensitive patient data and safely provided to stakeholders will require that data for their programs and mission. Maintenance of interfaces has also been a primary challenge because they become obsolete quickly when clinics/providers upgrade their systems.

C.1.5 Northeast Vermont Regional Hospital (NVRH)

Stakeholders Engaged: Dr. Ryan Sexton, MD – Emergency Department Medical Director, NVRH/critical access hospital.

Goals and Needs: NVRH is a is a community, not for profit, acute care, critical access hospital that provides primary and preventive care, surgical and specialty services, inpatient and outpatient care and 24-hour emergency services. They currently use the Meditech EHR but are unable to fully integrate it with VITLAccess. Thus, the typical workflow for new patients in the emergency department involves looking up the patient's existing record from a previous encounter or obtaining past medical history from the patient's verbal account without the ability to double check or enrich the data from previously obtained clinical history at other facilities. In addition, the majority of their reporting over the last 4 years is done by manual abstraction. It would be extremely valuable for this critical access hospital to have the ability to pull patient histories and therapies from neighboring facilities which would improve accuracy and free resources for direct patient care. It would also be extremely valuable to integrate emergency medical services in the care process such that data collected in the field is available at the hospital. When coordinating transfers of critically ill patients from the emergency department, having real-time information on the bed capacity and available resources of nearby facilities would be crucial. For the long-term care of these patients seen at the emergency department, it would also be beneficial to have a system that effectively notifies the primary care physician of care delivered in that acute/emergency setting.

Potential Challenges: It has been very challenging to integrate their EHR with VITLAccess in the past and the facility has failed to find adequate solutions that would bridge this gap. It is their hope that the VHIE would provide an interface that could achieve this. As a small critical access hospital, they are always stretched thin in terms of resources and any large technological roll out may not be within their capacity.

C.1.6 OneCare Vermont (OCV)

Stakeholders Engaged: Katie Muir – Technical Representative, Pennilee Shortsleeve – Programmer Analyst, Carl Zigrovsky – Data Architect, Amy Hoffman – Analytics Coordinator.

Goals and Needs: As an ACO joint venture, OCV's overarching goal is to work as a team to coordinate care with the aim of providing high-quality, patient-centered care and reducing costs. Access to timely and standardized patient data are crucial to achieving this goal. They would like to see and alignment of goals and metrics that payors use for quality reporting rather than having unrelated quality measures that do not allow for data reuse. It is also important to reduce the burden for members to submit data to the ACO. Having a granular consent model may help the ACO receive sensitive patient data such as substance use data. Data completion and accuracy is also important, and the stakeholders noted that they would rather receive a data set with 20 complete data elements than 80 elements with missing data.

Potential Challenges: Substance Use Data and Mental Health Data are required for the All Payer Model quality measures, however, payors suppress all claims where there is substance use data for privacy. This makes it difficult to fulfil those quality measures. Currently, all quality measures are manually abstracted which is time consuming and expensive and much of the data received is incorrectly formatted or has missing elements. As the major ACO in the State, they are responsible for a large catchment area but the ACO only gets data when both patient and provider are in the ACO network leading to a lot of missing data and difficulty in patient matching since some care encounters are not reported up to the ACO.

C.1.7 Planned Parenthood of Northern New England (PPNNE)

Stakeholders Engaged: Donna Burkett – Medical director of PPNNE, Wendy Campbell – Director of Centralized operations

Goals and Needs: PPNNE has 21 center affiliates across 3 states and 12 affiliates in Vermont serving 12,000 patients in Vermont. They use the Nextgen EMR system and are currently unable to connect meaningfully with other systems in the State. They are, however, able to transfer immunization records to the State. They would like to see the ability to exchange sensitive patient information safely and effectively educate patients on what exchanging their data means. As such, datatypes such as cervical cancer screening, immunization history, sexually transmitted infection (STI) testing, and previous reproductive services would be useful for them as they care for their patients. These are extremely sensitive data however, and they are alert to the fact that patient's may lose trust in PPNNE if their data is shared to entities outside PPNNE. Towards this end, they would like to see a plain English website for patients to learn about data security, consent, and their rights. They would also like to better understand the State's role and responsibility around protecting the exchange of these sensitive data by having a clear statewide policy on substance use and mental health data.

Potential Challenges: As a non-profit agency finding resources to build interfaces and to meaningfully share data is difficult. PPNNE understand that from a clinical perspective, it is important to share data (such as a positive STI test), however barriers exist such as the lack of centralized automated reporting systems that "plug into" their system (technological barrier) and culture/patient education (social barriers).

C.1.8 Vermont Association of Hospitals and Health Systems (VAHHS)

Stakeholders Engaged: Emma Harrigan – Director of Policy, Analysis and Development. Hospital Care Representative.

Goals and Needs: VAHHS is a trade association and lobbying organization of 14 member hospitals including University of Vermont Medical Center (UVMMC). As such, most member hospitals are on Epic or Cerner which allow for multiple vendor specific integration, reporting and care coordination options. There needs to be a clear value proposition and connecting to the VHIE. They would like to see a system to manage two key sources of data: clinical/encounter of care data and admission/discharge data both of which are important for reporting to multiple entities such as VDH and GMCB and for coordination of patient transfers, e.g., to psychiatric units. There also needs to be clarity on roles of different organizations to avoid overlapping initiatives. Healthcare consolidation is an opportunity for smaller hospitals to be brought on board with the technology infrastructure and connectivity that they need to adequately take part in the VHIE. The stakeholders also noted the importance of adopting inter-state integration.

Potential Challenges: There needs to be an agile process for developing and connecting stakeholders to the HIE in order to avoid lengthy project rollouts that need to be able to adapt quickly to different requirements. Currently, hospitals are unable to get mental health care data, there is a gross lack of interoperability between systems, and an inability to timely legal data to claims data, all of which could be improved through the HIE. Some initiatives related to quality improvement are tied to higher reimbursement, but these are not picked up because the burden for small critical access hospitals far exceeds the payment difference.

C.1.9 Vermont Care Partners (VCP)

Stakeholders Engaged: Simone Rueschemeyer – Executive Director, Mental Health & Substance Use Representative, Ken Gingras – Technical Representative

Goals and Needs: VCP represent 16 state designated entities including mental health services, substance use services, and intellectual and developmental disability services, serving over 50,000 clients in VT. They provide over 2 million services per year: 50% are provided in the community (not in provider office); 85-90% covered by Medicaid; 10% covered by Medicare and private insurance. Their goal is to keep people/patients in the home community because it leads to better recovery and support for mental health issues. Their technology platform is fragmented, and by 2020 they will have 3 EMRs: Credible EMR, NetSmart, Qualifax. Currently, they receive data as flat text files which are then manually analyzed and via a custom ETL (extract, transform, load) which generates custom analytics. The data from these analytics are then re-packaged and sent to a data repository (managed by NORC) from which reporting may be done.

VCP would like to reduce the burden of data analytics and make the case that centralized reporting would be more efficient. They would like to keep their focus on quality improvement for VCP members through the VCP Center of Excellence (COE) Certification. They would also like to engage with the HIE on how to better share data for the benefit of the patients. This would require a granular consent model so that VCP could share Mental Health and Substance Use Data.

Potential Challenges: One of their major technological challenges is the fragmentation of EMR systems that their members use. They would also like to see a policy around granular consent. Once the state HIE is running and providing the main source of connectivity, the current NORC data repository will be the only source of historical data that is currently being collected in these data will have to be made available in the HIE. They also expressed challenges like other stakeholders such as the need for strong data governance and aligning outcome measures among payor entities in order to avoid duplicative reporting.

C.1.10 Vermont Department of Health (VDH)

Stakeholders Engaged: Tracy Dolan, Karen Clark, Jessie Hammond, Murali Athuluri (Mass eHealth), David Delano (Mass eHealth).

Goals and Needs: One of their main goals is to effect a gradual shift towards electronic data submission for registries, for example, the Cancer Registry only has approximately 3% of data received through electronic submission whereas the CDC requires that the Cancer Registry receive all data from electronic medical records. Thus, they would like to make it easy for providers and facilities to report their data using electronic submission systems and electronic document standards where those capabilities exist. This would also allow for easier electronic querying of the registries which would allow for bidirectional data sharing.

Potential Challenges: VDH has a home-grown MPI (Master Patient Index) system that will need to work with the HIE's MPI. Although they have the software to accept electronic documents (e.g., HL7 Clinical Document Architecture format) from EMR systems, there is anecdotal data that many entities are unable to send this data. They also need to be robust validation tools in place before data is populated into these registries and used for analytics or reporting.

C.1.11 Vermont Information Technology Leaders, Inc. (VITL)

Stakeholders Engaged: Mike Smith – Interim President & CEO, Frank Harris – Strategic Technical Advisor, Carolyn Stone – Director of Operations, Andrea De La Bruere – Director of Client Services, Christopher Shenk – Director of Technology.

Goals and Needs: In the past 12 to 18 months VITL focused on stabilizing operations, evaluating current architecture, engaging stakeholders, and working with customers to align priorities. Immediate goals include:

- Developing and implementing shared services (aka Mudroom) to provide standardized processing available to Vermont stakeholders including the following functionality:
  ○ Identity Management (Master Person Index)
  ○ Data Quality Monitoring ○ Integration Engine
  (HIN hosting Rhapsody) ○ Terminology Services
  (HIN hosting)
- Improving data quality through Data Quality Sprints with sources of data which will lead to increased usability of information for recipients.
- Increasing adoption of existing channels to access information through VHIE: VITLAccess via web-based provider portal, VITLAccess via Single-Sign On through provider EHR, CrossCommunity Access via EHR, Results delivery (lab, radiology, transcribed reports).
- Increasing frequency, accuracy, and ability to matching information from sources of data
- Continuous improvement in security and privacy in collaboration with recently established Security Oversight Group with representatives from ADS, DVHA, and VITL
- Piloting patient-to-provider attribution and increased frequency of exchanging provider rosters with OCV

They will continue to support the implementation of Shared Services in the future and identify new use cases to leverage Shared Services. There is also an effort to pursue other revenue-generating opportunities through value-add services from organizations including health plans, pharmacies, and other State agencies. Modifying consent laws from "opt-in" will improve amount of information available and value of VHIE services: currently 92% of Vermonters have patient information in VHIE, 39% of Vermonters have chosen to opt-in, ~50% of Vermonters have not been asked to provide consent.

C.1.12 Dartmouth-Hitchcock Medical Center (DHMC)

Stakeholders Engaged: Mary Beth Eldridge, MHA, MHCDS, Director, Regional Information Systems at Dartmouth Hitchcock

Goals and Needs: DHMC is the second largest provider of healthcare services in Vermont, is a member of OCV and has been engaged with VITL since its inception. Their technology stack includes Epic, Surescripts and Care Quality. They use Health Catalyst for data analytics (managed by DHMC's in-house health data warehouse team). Currently, DHMC only sends VITL their Lab, Immunization and ADT data. They do not send any clinical data, discharge summaries, radiology reports, etc. DHMC do not have a system in place for granular consent and feel that granular consent is not implementable. DHMC and UVMMC share similar perspectives as both are large, multi-site, Epic users. They would like to see Behavior Health and Substance Use data integration into the EHR facilitated by connectivity to the VHIE. Care coordination and event notification would be also be very useful services to come out of the VHIE

Potential Challenges: VHIE utilization is low, thus there is not much incentive to send data to the HIE. Additionally, there is too much risk in only sending out data to the HIE thus it is not a big draw for "large" players such as DHMC. The data is also difficult to keep clean. Behavior Health and Substance Use data are still not integrated into the EHR.

C.1.13 University of Vermont (UVM) Health Network

Stakeholders Engaged: Leah Fullhem - Vice President, Enterprise Information Management & Analytics at The University of Vermont Health Network.

Needs and Goals: UVM is a six-hospital and home health and hospice system with centralized service lines. The health system spans Vermont and northern New York. Most of their external data currently comes from Epic's Care Everywhere and not from VITL. As such, their current priorities include implementation and upgrade of Epic's population health and ambulatory systems, respectively. Care coordination is handled within Epic and they do not use Patient Ping. Much of the care for complex patients occurs within the community (at community agencies and mental health facilities) and these data are under-represented within their system. SUD data is stored within Epic which has functionality to lock down fields such that the use must have explicit consent given to view fields. Sharing such data is restricted to direct access and facsimile.

They currently have over 100 contracts with public and private payers around quality reporting measures and the goal is to optimize key data that support these contracts across all contracts. Their core measure reporting is through Vizient and use home-grown systems/tools and analysts to produce and QA quality measures.

Their vision would be a HIE that provides a single experience and single set of information across networks. This would provide a link with community-based organizations, such as community agencies and mental health facilities thus ensuring that providers have access to a network of networks (beyond VT) with consistent patient matching. It is important to ensure that data from the HIE is accurate and reliable for downstream reporting, research, and analytics.

Potential Challenges: The regulatory system allows for better quality reporting at their New York facilities than those in Vermont and they would like to see a more conducive reporting regulatory environment. The change to an opt-out consent model would not be a concern. It will require a change to their current workflows to ensure patients are informed and will mainly involve education to providers as well as patients. There is still progress to be made in aligning value-based quality measures towards standard metrics and an all-payer model would be an important step. It would be helpful to have a standard model that allows reporting to all payers e.g., Quality Reporting Document Architecture (QRDA) model.

C.2 Phase 2 Focus Group Summaries

C.2.1 Care Coordinators

Attendees:

- Kathy Blendoe – Bi-State / Island Pond Health & Dental Center
- Dillon Burns – VCP
- Jennifer Ertel-Hickory – Bi-State / The Health Center
- Emma Harrigan – VAHHS
- Lindsay Morse - UVM
- Jill Olson – VNAs of VT
- Ester Seibold – Northern Counties & Concord Health Center

Information that would improve care coordination:

1. Medication reconciliation
    a. Home health collects high quality medication information looking directly at the medicine cabinet with the patient
    b. What other resources are available – are they enrolled in 3 squares VT? State knows who they are paying for, not always who is eligible; issues extracting data from that system
2. List of patient's care team within a defined period including contact information
    a. Patient's care team extends beyond licensed providers to social services, guardians, and family members (e.g., adult children caring for parents)
    b. Requires ability for patients to enter a confirm information
    c. Beyond medical to community (family/social supports, Community Health Needs Assessment – whoever is at the table is the community, "your people"). MH religious support, school system, could be a disability group, paid support, non-profit (council on aging, Headrest, Haven)
    d. Dependent on self-reported information, system match, and claims
3. "Stable" / "Unstable" flag to determine patient risk
    a. Challenge with consistency in definitions between OCV algorithm criteria vs. PCMH "real-time" criteria
4. Advance directives – supposed to send to state, but no linkage
    a. Ability to search from EHR to determine find patient's Advance Directive
    b. State repository can be searched and printed – must look through state portal; good to know something exists
    c. In some cases required, but no compliance monitoring; required from hospital 5. Where is the PR piece? How do people know what is available as resources?

    a. Even the coordinators need to know. 211 – referrals, coordinators use their online system (e.g., Barre food banks?).

6. Patients who pose risk to staff—gaps in communicating red flags (done by phone)
    a. FQHC, home health must take the patient
    b. What can be documented and what cannot, does not go into the record (liability)
    c. Flag on record for staff who will be engaging with patient in future
    d. Risk flag can be a barrier to care

7. Hospitals are interested in ability to share patient information captured to avoid duplication for patients
    a. SDOH and screenings are provided and not able to share and variability to share
    b. Incorporate SDOH with medical for true risk – financial impact on med compliance, can't qualify for support when SDOH not factored in
        i. OCV uses Hopkins; everyone trying to find out how to incorporate SDOH for true risk stratification (No Caro, MI may be more advanced); or is risk really risk of overutilization?

Current environment:

1. Care Coordinators are documenting into multiple systems for three primary purposes: 1) care coordination, 2) payment, and 3) quality reporting. Any single system supports two of the three, and often it is payment and quality reporting.
2. CareNavigator
    a. Little overlap between high-ris PCMH program (EHR data) and OCV CareNavigator (CN) data requirements. Duplication of effort, not integrated electronically and cannot copy / paste from EHR to CN
    b. Coordination of OCV / CN population and PCMH-identified lives, for example 20 of 600 for VCP Case Managers
    c. Low adoption – number of patients and participating providers
3. Integration challenges
    a. Inflexible definition of patient non-compliance masking root cause (e.g., non-compliance triggers defiance)
    b. Each agency has requirements to document to get paid which may be in separate systems
        i. For LTC at home document into SAM
        ii. OASIS is underutilized resource with several hours spent to document for Medicare payment iii. For state waiver document into SAM – Department of Disabilities and Aging iv. For children document into CIS
        v. OCV population – document into CareNavigator
    c. Homeless system is a barrier for UVM and others
        i. Social – homelessness: "housing is healthcare" – where, how to integrate? Patient-reported info; "coordinated entry" – access to the – Homeless Management system, from the US Department of Housing and Urban Development (HUD), enter info on person, status, do they have a voucher (a roster of who has applied, where they are/status (don't have access or know how to use it. Phone calls.
4. Variability with VHIE data is a challenge
    a. Enforcing consistent requirements for data collection and data quality down to field level content

5. ED utilization: have SUD, MH – blended together; where recurrent; giving agency to the individual, hard because of distrust of system can be mitigated
6. Continuing to evaluate value proposition for adding new applications in the workflow, including PatientPing. Ideal scenario is to integrate information into primary application for each Care Coordinator.
7. Personal communication still works best for sharing information about a shared patient and strong regional relationships improve electronic communication

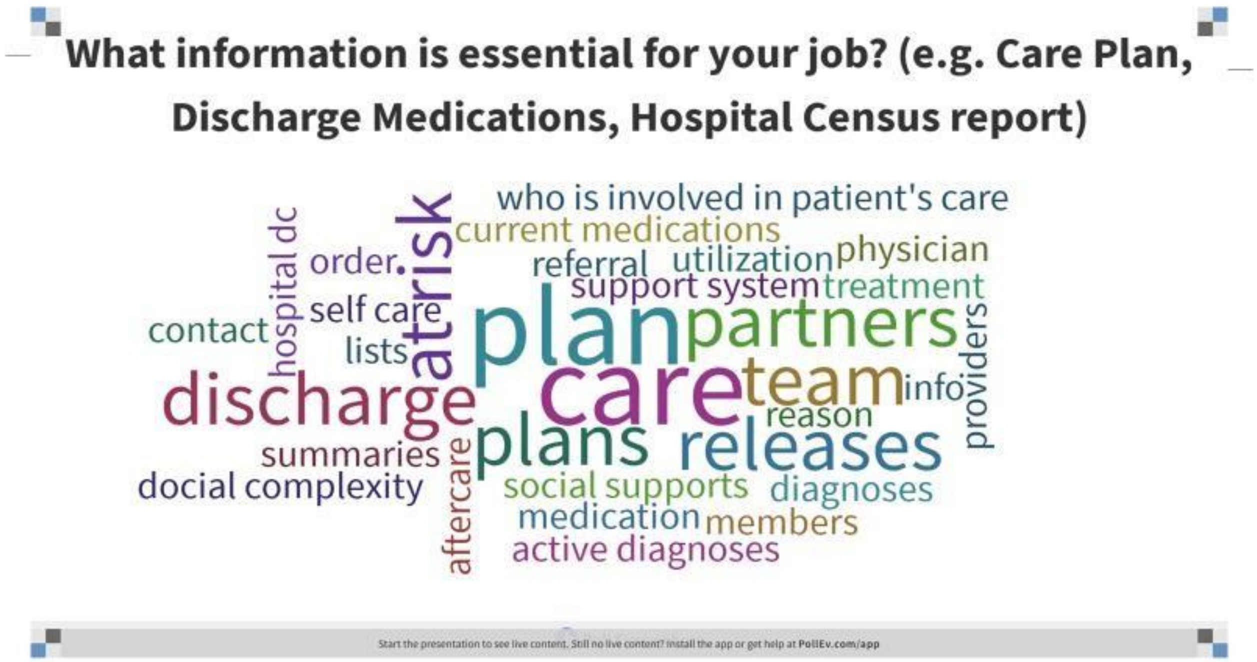
How to improve current environment:

1. Trusted legal framework to share information and help address challenges including below:
    a. Conversation about opt-out and how to engage patients
    b. What information can be shared
2. Shared Care Plan accessible by entire Care Team including Care Coordinators
3. Leverage existing templates and processes that work by integrating into CareNavigator and other applications
4. SUD is restricted and bleeds over to mental health
    a. Clearly define details for what information can be shared in each direction with SUD and mental health providers
    b. Confirm technical requirements for storing and sharing sensitive data aligned with 42 CFR Part 2
5. Increase ability to integrate Public Health information into EHRs (e.g., Immunizations - can't rely on patient memory)
6. Have medical record systems work for us, not working for our medical records - for practitioner, patient, leader. Single Sign-On will reduce hours of work around on systems including cut and paste between applications
7. Patient access to CareNavigator: Patient wants to know what to do, who to see; or may want to see the full record, we need to convene team to confirm who is the audience, what is the appropriate amount of information, etc.
8. Ideal scenario is efficient capture, consent, right amount, and always complements person to person communication ○ Patient encounter/engagement: referral, did they show up? ○ Med rec: bring pharmacy into it, have info and expertise ○ Understand family support/disfunction ○ Safety/crisis plan, that might already be in place ○ Barriers (SDOH)

Who else should be at the table:

1. BCBSVT
2. Blueprint
3. Council on Aging
4. Community Action Group (MECA)
5. Pharmacists

Figure 6: Care Coordinators—What information is essential to your job?



What information is essential for your job? (e.g. Care Plan, Discharge Medications, Hospital Census report)

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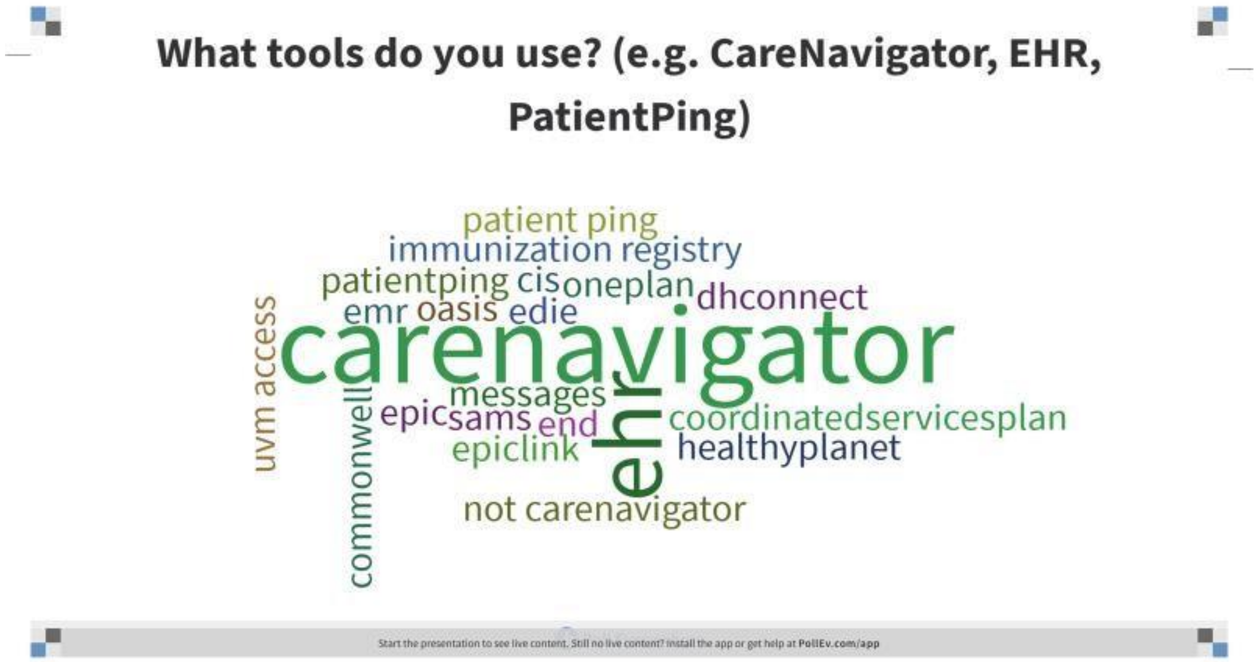
Figure 7: Care Coordinators—What tools do you use?



What tools do you use? (e.g. CareNavigator, EHR, PatientPing)

Start the presentation to see live content. Still no live content? Install the app or get help at PollEv.com/app

C.2.2 Data Analysts

Attendees:

- Emma Harrigan – VAHHS
- Katie Muir – OneCare Vermont

- Heather Skeels – Bi-State
- Tim Tremblay - Blueprint **OneCare Vermont:**

- Products ○ QlikView tools, server-based application primary ○ SQL, Health Catalyst for data warehouse with self-service ○ CareNavigator feed
- Collect claims and access to clinical (VITL) for quality reporting
- Quality reporting including provider and Care Coordinator metrics
- Quality Measure application “Quality” combines Medicare, Medicaid, BCBSVT – striving for alignment with one set of measures ○ Performance dashboards (utilization, coordination, quality, cost)
    - ○ Monthly static report to members
    - ○ Report to CMS on attributed population for providers **Blueprint:**

- Products ○ Use VHCURES as a primary data source ○ Annual reports to legislature ○ PCMH practice profiles ○ Community-level quality reporting
    ○ Support statewide initiatives including SUD-for Hub & Spoke, quality for Women’s Health Initiative, series of ad-hoc reports required by programs ○ OnPoint and Capital Health Associates (CHA) support analysis for Blueprint including Clinical Registry
- Medicaid data is received quick, multi-payer claims takes long time due to legal and technical challenges
- Relying on VITL and VCR for clinical data for some measures; limited measure with reliable data; trying to improve that data stream; increase breadth, reliability of those measures
- Challenges ○ Deidentified data in VHCURES All Payer Claims Database (APCD) ○ Limited clinical data sources
    ○ No single statewide repository to link all sources

○ Constant renegotiation for access ○ Integrating data each year **Bi-State:**

- Products ○ Qlik Sense
    - ✦ Web-based repository for data exploration
    - ✦ Combine Medicaid claims and EHR data from Health Centers
    - ✦ Park Street is vendor that helps extract data, including eClinicalWorks EHR data from five health centers
    - ✦ Attribution defined as Medicaid enrollees receiving care within the past three years in a Health Center that was paid by Medicaid

    - ○ Currently not exchanging with VHIE
    - ○ Receive monthly feed from DVHA with five-year lookback of Medicaid member claims
        - ✦ Pulled to cloud server by Globalscape, then into Qlik Sense ○ Create queries in days for population that Blueprint may take months based on Blueprint’s technology
- HRSA provides funding for health centers including Prospective Payment and other channels for reimbursement ○ Need to report all population, all measures for HRSA quality award, evaluating use of Qlik Sense to support
- Health Center needs ○ Uniform Data Sets include financial, demographic, claims, and clinical data
    - ✦ 23 measures often overlap between Blueprint, OCV, Medicaid, Medicare, HRSA ○ Must report from EMR to get HRSA credit
    - ○ Continue to develop tools to support Health Centers and Uniform Data Sets in Qlik Sense

- Future state ○ Medicaid expiration notifications
    - Improve integration with EHRs at health centers to optimize workflow and avoid separate login
    - Commercial payer data
    - Currently use claims, support for clinical, mental health, and dental information
        - Mental health requires 42 CFR Part 2 considerations **Vermont**

Association of Hospitals and Health Systems (VAHHS):

- Current state ○ Resource and control challenges
        - Locations of data
        - Warehouse – sacrifice control for data quality
        - Tradeoff on flexibility / timing ○ Reporting requirements across state agencies align with disparate funding sources
        - Challenge to pool resources
        - Culturally not data driven ○ Integration requires
- VAHHS
    - Uniform Hospital Data Set UBM4
        - Claims and discharge driven
        - Reporting based on member needs
- Market share, all-cause readmissions, case managers
        - Create a unique identifier (ID) across VT using SSN and name
        - One data, uniform hospital discharge data set, comes from them to VDH, manages on behalf; claims for every discharge; SQL/Tableau
- Future requests ○ Legal Trust Framework, Governance, clear Data Stewardship to improve integration ○ Clinical data in a useful format

Comments on FHIR polling question

- VITL mastering FHIR standard for querying is valuable
    - Mastering clinical data in general to support comprehensive reporting
    - Before repository, claims, etc. ○ Complete sets including Body Mass Index (BMI), Blood pressure ○ Adhere to Core Connectivity Criteria for top 20 sources
        - Incentives / payment based on useable data, not just interfaces ○ Continue translation into USCDI
        - Incorporate FHIR and data quality thresholds

If/when the VHIE stands up a clinical data repository, my organization will

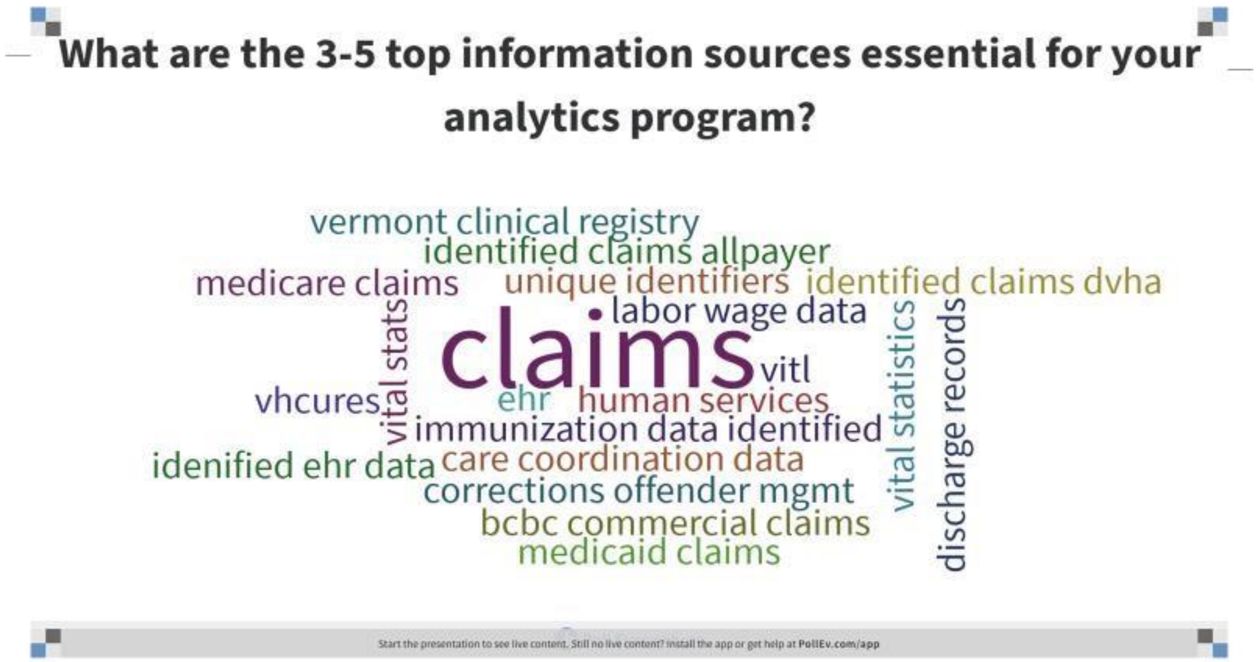
- OCV
    - Will use to support quality reporting (feed Community Care tool) ○ Real-time when new data for fields of interest for population of interest ○ Johns Hopkins (Risk) is not setup to work with clinical data
    - Similar quality indicator utilization as Bi-State and using clinical data where claims are no longer reliable (e.g., shadow claims)

  - Would increase the amount of data per patient – beyond claims for specific periods from payer perspective; ability to identify full set of diagnosis codes from clinical data to cover for limitations with claims (e.g., capped at 10 in claim);
- VAHHS
  - Will not use - would continue existing processes with hospitals
  - Customers/hospitals are not seeking additional clinical data from Vermont Association of Hospitals and Health Systems (VAHHS)
  - Data is good, matching is good, timelines are good OOSG
  - QI – 'best QI doesn't last forever' focus on issue, improve systemically, move on to next initiative
- Blueprint ○ Will use for clinical – statewide measurement / planning and policies - quality measures, health care outcomes, claims data for utilization in long-term (alternative payment systems – shadow claims without funding associated is incomplete)
  - Practices would like real-time, would likely receive from OCV or others, at least annually, ideally quarterly.
- Bi-State ○ Will use for Quality programs and policy planning – gaps in care, what to do in future, ad hoc queries (e.g., kidney disease);
  - Would like to get into predictive modeling, into ACES (adverse childhood events), and SDOH
  - Ideally weekly for QI staff, to support QI process and prioritization of patients with multiple complexities

Who should we add to the Data Analyst discussion?

- Vermont Care Partners
- DVHA including areas responsible for chart audits, reimbursement, payment reform
- Vermont Department of Health – Nicole Lucas – 1815 grants; registries and records
- Commercial insurers – led by Blue Cross Blue Shield Vermont
- Andrew Laing – Agency of Digital Services

Figure 8: Data Analysts—What information sources are essential to your work?



What are the 3-5 top information sources essential for your analytics program?

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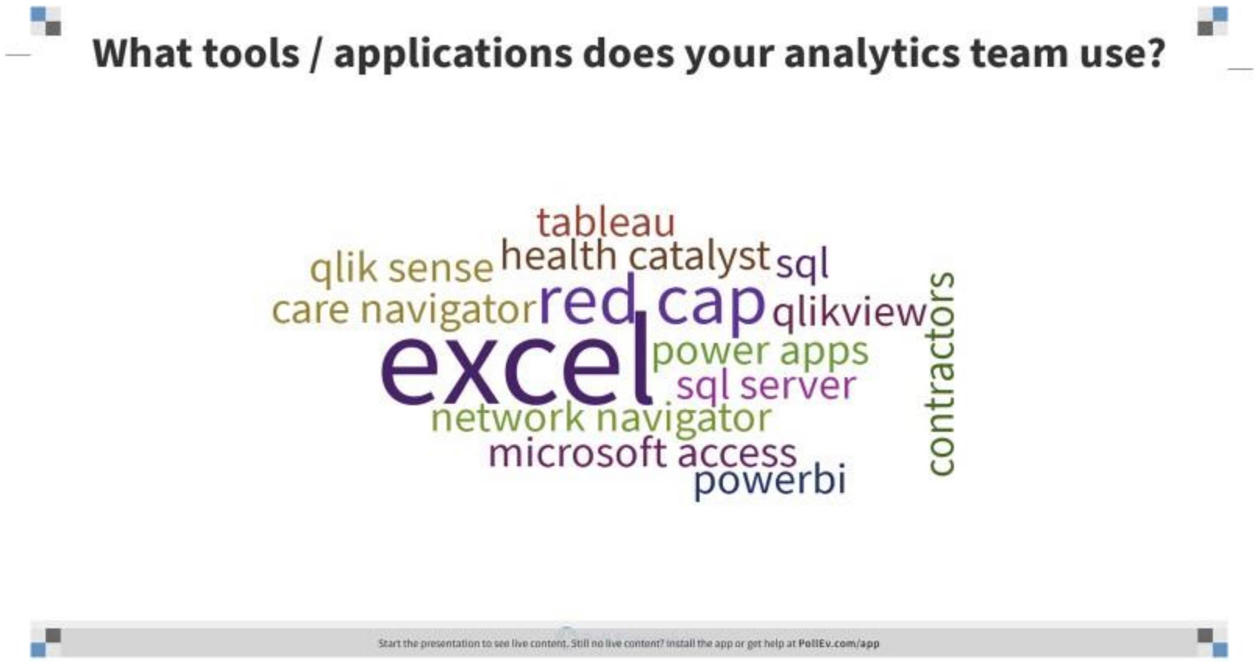
Figure 9: Data Analysts—What tools do you use?



What tools / applications does your analytics team use?

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Figure 10: Data Analysts—What is your experience with FHIR?

What is your organizations' experience with Fast Healthcare Interoperability Resources (FHIR)?

C.2.3 Technical Architects

Attendees:

- Katie Muir – OneCare Vermont (OCV)
- Andrew Laing - ADS
- John McConnel - UVM
- Chris Shenk - VITL
- Tim Tremblay – Blueprint **Master Patient Index (MPI):**

- OCV is fully dependent on VHIE for identity management today
- OCV sometimes receives patients with 2 payers (not supposed to, but it happens). In these cases, OCV treats this dual-payer person as 2 records; would want ability to tie clinical and claims data across disparate sources
- OCV is open to new attribution model with ability to associate a unique person identifier with payer IDs and provider Medical Record Numbers (MRNs)
- ADS is interested in identifying the same person across multiple organizations and agencies - including Medicaid, public safety, food stamps.
- Vermont will need governance to determine sources, data stewardship for mismatch, matching thresholds, and other master identity management challenges this will introduce
- Statewide MPI service will assist UVM challenges with out of state patients – including snowbirds and 26% from New York
- Blueprint is in transition – VHIE HCI limited and since 2015, Blueprint's clinical registry has had no functional identity management, a ton of garbage and duplicates need to be cleaned-up downstream, instead of front-end

- With OCV as a participant in MPI, using a reference to uniquely identify a person will improve OCV's quality reporting
- Artificial Intelligence should be a strategic direction for identity management, with Blockchain and FHIR strategies for MPI vendor and vendors managing identity for each organization.
- A statewide service for MPI can lead the charge and take risks to stay on forefront **Terminology Services:**

- A clear definition of terminology services will support marketing and adoption of Terminology Services across VHIE network, including how Terminology Services support analytics, point of care decision-making, and care coordination
- VITL confirmed the service will standardize local and national terms identified by different names on messages flowing through VHIE. This will assist analytics and query capabilities for VHIE network participants
- New shared service will replace existing vendor (contract expiring March 2020)
- Term mapping and recognizing sensitive data (e.g., 42 CFR Part 2), available through a webservice hosted by VITL are part of initial contract
- This service allows VITL to receive sensitive data and prevent those messages from being sent to HCI for distribution
- Suggestion to define additional business challenges focused on receiving standardized useful information and exploring new technology including machine learning to review text, take audio, and language translation
- Clinical value from standardizing unstructured data into structured data and pull from free text; Epic standardizes coding for UVM, including flow sheets, to ensure required data is entered discretely
- Other valuable functionality includes translating between two types of coding systems (e.g., LOINC to CPT) and mapping uniquely to each organization (e.g., cross-code, coding crosswalk) when exchanging data through VHIE with other providers to ensure standardization in /out for participants

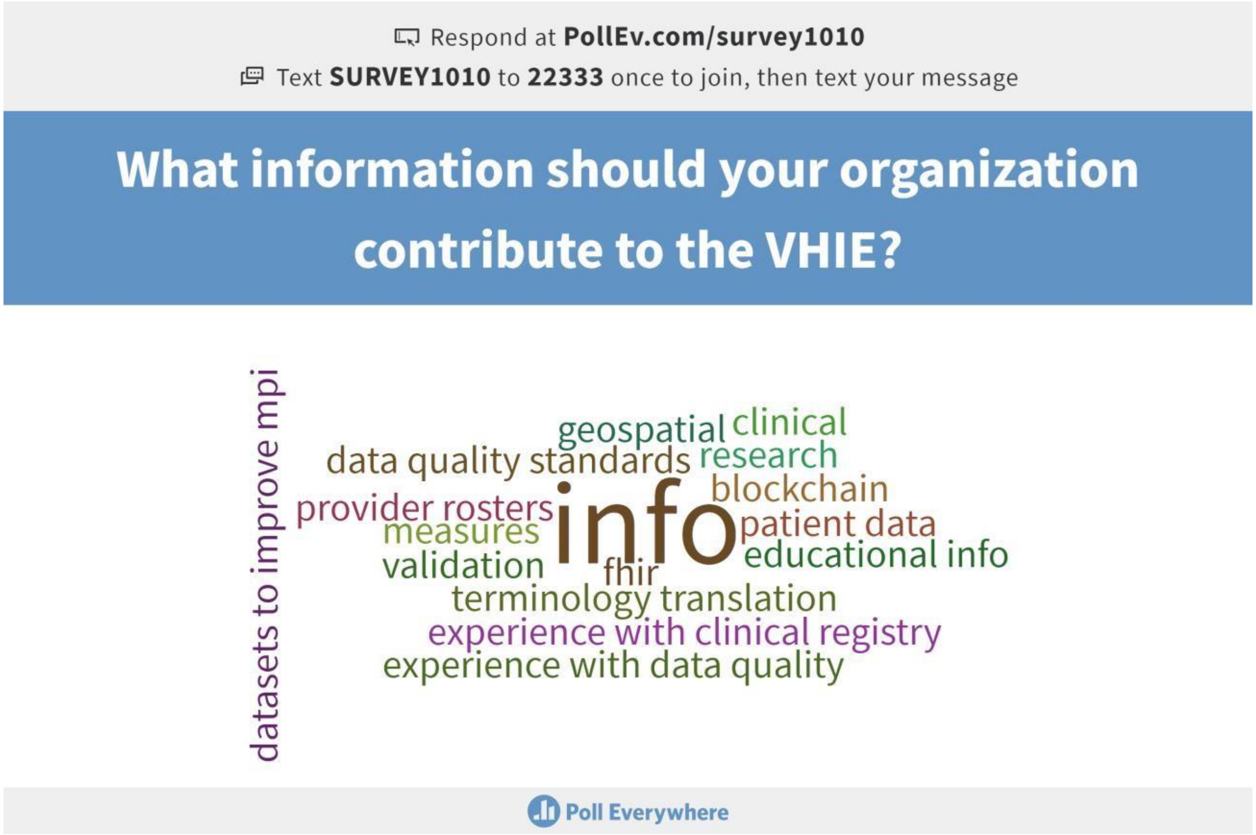
Architectural considerations:

- Future Data Platform needs to be under a single governance model, actual number and location of databases is not as important as the need to adhere to single security best practices, access control, etc.
- Worry less about schema, more about serialized format over the wire, care about data presented in open, industry-standard, data serialization technology (e.g., JSON and FHIR, could support XML)
- With over 1M records a universal schema is not possible, replaced by data lake "schema out instead of schema in" and exploring machine learning to resolve dirty data across VHIE network and within VHIE network participant applications
- Less concerned about how data is stored, concerned about standard publish and subscribed model for sending the data over the wire
- UVM treats all data as sensitive data, PII / PHI – encrypted at rest, over wire, in use; regular audits
- Example of real-time Care Coordination supported by ADT messages from PatientPing as opposed to latency of ED utilization and greater latency of claims
    - Consent management is metadata management, consent is consent to access, for whom and to what; recommend classifying metadata by laws – HIPAA, 42 CFR Part 2, etc. Identifying services and attributes to programs will assist adherence to laws ○ 42CFR Part 2 – based on history of working on consent with VITL, challenge to address a standardized consent form going forward; when shared repository is rolled-out, would not

have to separate 42 CFR Part 2 data, part of a larger registry with modern access management

- VITL’s focus shifted from consideration of replacing HCI/HDM or both to shared services
- Support for a model of data received through shared services, with single data repository (contracted out to specialists), including Part 2 with permissions and access management. Once initial data sets are mastered, include additional sets
- Full consent lifecycle management is a valuable shared service– opt-in/opt-out, and repository of pointers to completed organization-specific consent forms available for reference
- Advanced Care Directives repository of pointers to completed documents within organizations is a similar, valuable shared service

Figure 11: Technical Architects—What information should your organization contribute to the VHIE?



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What information should your organization contribute to the VHIE?

Figure 12: Technical Architects—What information does your organization want from the VHIE?

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What information does your organization want from VHIE?

C.2.4 Payers

Attendees:

- Kelly Gordon – DVHA
- Michael Hall – DVHA
- Samantha Hayley - DVHA
- Kelly Lange – Blue Cross Blue Shield Vermont (BCBSVT)
- Joe Liscinski – DVHA
- Jimmy Mauro – Blue Cross Blue Shield Vermont (BCBSVT)
- Darin Prial – DVHA **Value for Payers:**

- Immediate, high value return by aligning quality measures reported to Medicaid and BCBSVT; open to including Cigna and MVP Health Care in process
- Clinical data can reduce/eliminate need for Prior Authorization
- "consolidated EHR"
- Standard format
- One source of truth for actionable clinical data including lab results, notes, over the counter medications, care plans, referrals, encounter notes, records of wellness activities
- Ability to align with VHCURES data, currently sending data to VHCURES is a "black box", can't get data out and cannot attest to data in VHCURES
- Ability to identify Blueprint providers; need claims history
- Clinical data to support evolution of value-based payments and learning health system

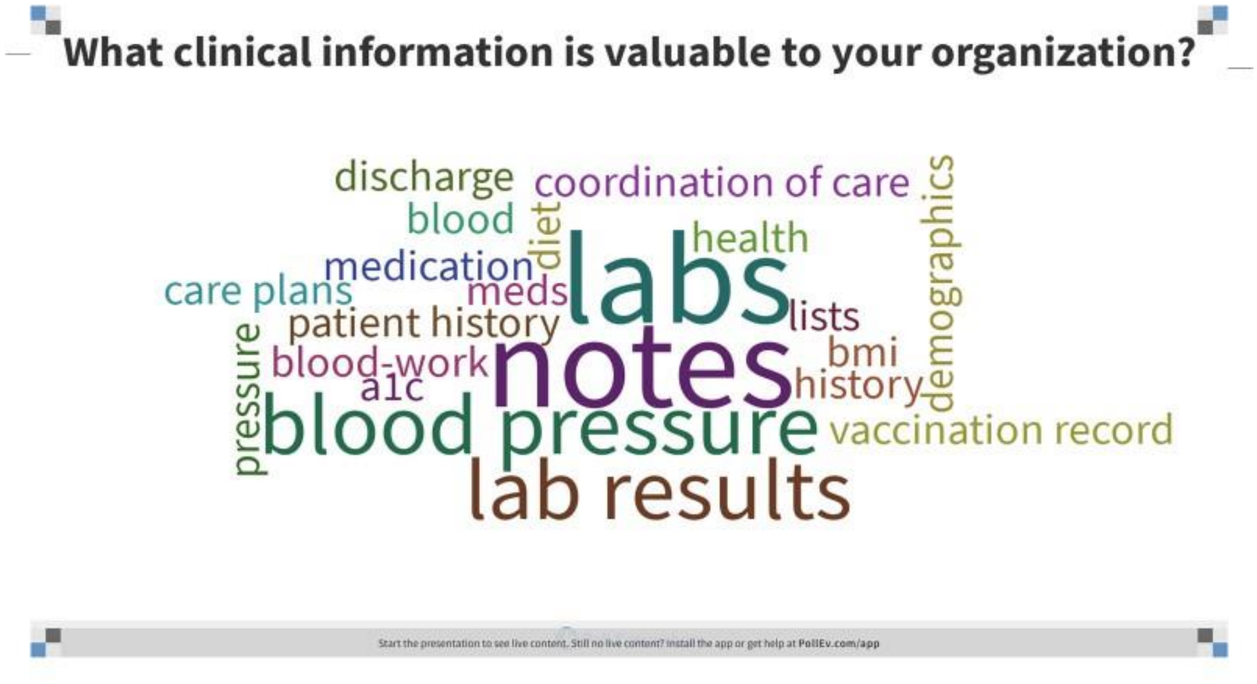
- Statewide Universal Master Person Index **What is needed to reach value:**

- Ability for plans to share data directly with VITL
- Uniform approach to trust and willingness to share data across health plans and providers
- Alignment with commercial payers, Medicaid, and employer plans for incentive programs
- Leverage OCV value-based contracts to provide incentives for providers to participate in use cases and share data that conforms to specifications
- Medicare at the table, to align data and evaluation health care reform programs
- Payers, if united, could pressure providers to submit data to the VHIE
- Alignment with CMS (IAPD) funding for interoperability supporting Medicaid
- Metrics to measure impact of ACO, which requires data that is consistent across registries – today Blueprint has one set and difficult to align with other registries
- Data normalization across disparate sources – VHIE value
- Statewide solution that provides ability to learn and test emerging standards for sharing clinical data including FHIR **Current processes:**

- Medicaid has a positive experience with VITL - care managers can get clinical data to combine with claims by sending IDs of patients and receive back matching records; get labs, ADT
- BCBSVT is currently only receiving ADT notifications, more data would be more useful
- Currently receive eligibility files
- BCBSVT member list is sent to OCV which sends it to VITL
- BCBSVT Sending different feeds to Patient Ping (through separate license) **Who should we add to the Payer discussion:**

- Medicare – to integrate requests from all payers and reduce burden on providers; leverage BCBSVT contacts through CMMI project of all-payer model as a test case for CMS programs

Figure 13: Payers—What clinical information is valuable to your organization?



What clinical information is valuable to your organization?

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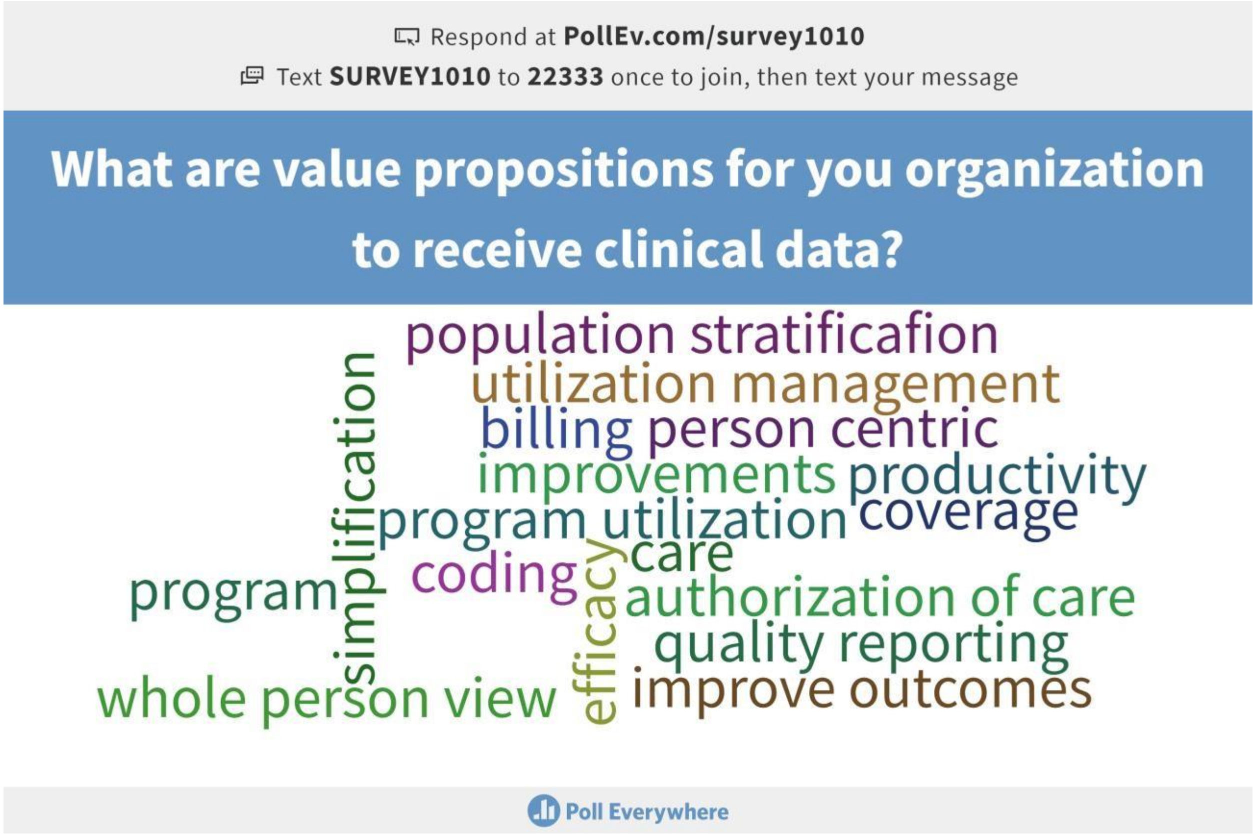
Figure 14: Payers—What are value propositions for your organization to receive clinical data?



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What are value propositions for you organization to receive clinical data?

Appendix D - Summary of Tactical Plan

This section provides a condensed view of the Tactics described in Deploying the Plan with a Three-level Service Architecture. In the table that follows, each tactic is associated with the Accountable Party or Parties and an approximate time frame for initiation of the activity.

The set of Accountable Parties is as follows:

Per 2018 Plan:

- Agency of Digital Services (ADS)
- Bi-state Primary Care Association
- Blueprint for Health
- Department of Vermont Health Access (DVHA)
- HIE Steering Committee (HIE SC)
- OneCare Vermont (OCV)
- Vermont Care Partners (VCP)
- Vermont Department of Health (VDH)
- Vermont Information Technology Leaders (VITL)

New: (Recommended by plan or suggested in speed review by HIE SC, 8/8/19)

- All stakeholders
- All providers
- Payers
- VHIE participants (or subsets, i.e., all those submitted data to the VHIE)
- Legal (legal experts from provider organizations and the state)

- Green Mountain Care Board (GMCB)

Potential future entities:

- Quality Reporting Leaders Task Force (see non-HIT plan)
- Care coordinators Task Force (see non-HIT plan)
- Additional HIE SC sub-committees: Tactics ascribed to the HIE SC may be delegated by the SC to one or more sub-committees including legal and technical advisors, SDOH Task Force, and others).

Stage Key: (R) = Requirements; (P) = Planning; (E) = Execution

Launch Timeframe Key: Near Term = 12-18 months; Mid Term = 19-36 months; Long Term = 37-60 months

Where multiple accountable parties listed, the first/top listed is the primary responsible party.

Table 4: Accountable Party or Parties and Timeframe per Tactic

Component/Tactic (stage)	Accountable Party/Parties	Launch Timeframe
End-User Services		
Reporting Services (R)		
Investigate integration of outpatient cancer reporting	• VDH • VITL	Near Term
Automate reportable labs	• VDH • VITL	Mid Term
Define Quality program universe through census	• HIE SC	Near Term
Assess data availability against Quality program requirements	• Quality Leaders Task Force	Near Term
Identify opportunities for simplification/harmonization	• HIE SC • Quality Leaders Task Force	Near Term
Reporting Services (P)		
Increase ambulatory cancer reporting	• VDH • VITL	Mid Term
Support birth and fetal death standard reporting	• VDH • VITL	Mid Term
Improve standard immunization reporting	• VDH • VITL	Near Term
Design Query/Retrieve for Immunizations	• VDH • VITL	Near Term
Standard quality reporting formats	• VDH • VITL • Quality Leaders Task Force	Mid Term
Reporting Services (E)		

Implement query/retrieve for immunizations	• VDH • VITL	Mid Term
Pilot standard quality reporting formats	• VDH • VITL • Quality Leaders Task Force	Long Term
Notification Services (P)		
Identify use cases and understand workflow for notifications	• HIE Steering Committee • All providers	Near Term
Notification Services (E)		
Increase sources of notifications	• VITL • VHIE Participants (subsets)	Near Term
Expand sources to new VHIE participants	• VITL • VHIE Participants (subsets)	Near Term
Increase recipients of notifications	• VITL • VHIE Participants (subsets)	Near Term
Adhere to standards for consistency	• All VHIE participants	Near Term
EHR Integration (R)		
Investigate eClinicalWorks exchange solutions	• VITL	Near Term
EHR Integration (P)		
Evaluate workflow and data access preferences	• HIE SC (sub-committee)	Near Term
Maintain/expand use of pharmacy claims	• GMCB • All Payers	Mid Term
EHR Integration (E)		
Implement VITLAccess SSO using standards	• VITL • VHIE Participants	Near Term
Consumer Tools (R)		

Component/Tactic (stage)	Accountable Party/Parties	Launch Timeframe
Review current research on consumer access	• HIE SC	Near Term
Define principles of data access for consumer tools	• HIE SC	Mid Term
Track progress of open APIs (FHIR)	• VITL	Near Term
Evaluate third-party applications	• VITL	Mid Term
Care Coordination Tools (R)		
Define care coordination tool requirements	• Care Coordination Task	Near Term
Assess care coordination tools against requirements	• Care Coordination Task	Near Term
Expand care coordination tool adoption	• Care Coordination Task	Near Term
Patient Attribution (R)		

Validate care team attribution service capabilities	• HIE SC • VITL	Near Term
Develop a care team attribution use case	• HIE SC • VITL	Near Term
Exchange Services		
Data Extraction & Aggregation (R)		
Document requirements for statewide repository	• HIE SC • VHIE participants	Near Term
Identify what SDOH will be beneficial	• HIE SC • Data Analysts • Care Coordinators	Near Term
Data Extraction & Aggregation (P)		
Review state data on SDOH	• HIE SC • ADS • AHS	Near Term
Review VHIE SDOH data	• HIE SC • VITL	Near Term
Align VHIE SDOH with national standards	• HIE SC • VITL	Near Term
Map and align state agency data to data standards	• HIE SC • ADS • AHS	Mid Term
Monitor standards for capture of SDOH at point of care	• VITL	Near Term
Pilot integration of AHS data into EHRs	• VITL • VHIE participants • AHS • ADS	Mid Term
Explore document management services	• HIE SC • VITL • VHIE Stakeholders	Near Term
Develop Request for Proposal (RFP) for statewide clinical repository	• HIE SC • DVHA • ADS • VITL	Near Term
Data Extraction & Aggregation (E)		

Component/Tactic (stage)	Accountable Party/Parties	Launch Timeframe
Select and implement statewide clinical repository solution	• HIE SC • DVHA • ADS • VITL	Mid Term
Terminology Services (E)		
Flag and categorize sensitive data per TEFCA	• VITL	Near Term

Normalize coded data to standards	• VITL	Near Term
Interoperability (R)		
Evaluate federal regulations/rules	• HIE SC • DVHA • ADS • VITL	Near Term
Evaluate federated exchange solutions	• HIE SC • VITL • DVHA • ADS	Near Term
Explore expanding FHIR and query-based capabilities	• HIE SC • VITL	Near Term
Interoperability (P)		
Identify and initiate FHIR and query-based use case pilot	• Use Case Sub-committee • VITL • VHIE stakeholders	Mid Term
Interoperability (E)		
Support standards for existing use cases	• VHIE stakeholders • VITL	Near Term
Ensure data alignment with USCDI	• VITL • HIE SC	Near Term
Provide education regarding all available services, including VHIE Direct Secure Messaging (DSM) service	• VITL	Near Term
Data Quality (R)		
Develop data quality work queue and process	• HIE SC • VITL	Near Term
Define rejection threshold	• HIE SC • VITL	Near Term
Consider constraining Connectivity Criteria	• HIE SC • VITL	Near Term
Data Quality (P)		
Consider tools and methods for local validation	• VITL	Near Term
Expand Connectivity Criteria template	• HIE SC • VITL	Mid Term
Data Governance (E)		
Define sensitive data	• Data Governance Authority	Near Term
Map sensitive data to standards	• Data Governance Authority	Near Term
Foundational Services		
Identity Management (R)		
Component/Tactic (stage)	Accountable Party/Parties	Launch Timeframe

Investigate how to support identity management associated with sensitive data exchange	• HIE SC • GMCB • VITL	Near Term
Identity Management (P)		
VHIE to provide mechanisms for stakeholders to use UMPI matching	• HIE SC • VITL	Near Term
Define UMPI value derivation processes	• VITL	Mid Term
Identity Management (E)		
Reconcile individuals associated with clinical VHIE information using UMPI in HCI	• VITL	Near Term
Provide UMPI-matched identities to initial stakeholders	• HIE SC • VITL	Near Term
Test reconciliation process	• VITL	Near Term
Consent Policy & Management (R)		
Investigate standards-based consent management independent of HCI	• VITL	Mid Term
Evaluate and pilot granular consent management	• HIE SC • VITL • VHIE stakeholders	Long Term
Consent Policy & Management (E)		
Implement approved consent policy	• HIE SC • VITL • VHIE stakeholders	Near Term
Provider Directory (P)		
Evaluate existing provider directory capabilities	• HIE SC • DVHA	Near Term
Request IAPD funds for integrating with provider directory	• DVHA	Near Term
Develop VHIE Provider Directory Integration Project Plan	• DVHA • VITL	Near Term
Seek annual MMIS IAPD funding	• DVHA	Mid Term
Provider Directory (E)		
Pilot Provider Directory Interoperability	• DVHA • VITL	Near Term
Fully Deploy Expanded Provider Directory Functionality	• DVHA • VITL • VHIE Stakeholders	Mid Term

Appendix E - Acronyms & Abbreviations

ACO	Accountable Care Organization
ADS	Agency of Digital Services
ADT	Admissions, Discharge, and Transfer

AHS	Agency for Health Services
APCD	All Payer Claims Database
API	Application Programming Interface
ARTC	Additional Required Terms and Conditions
BCBSVT	Blue Cross Blue Shield of Vermont
BMI	Body Mass Index
BPHC	Bureau of Primary Health Care
CAH	Critical Access Hospital
CAQH	Council for Affordable Quality Healthcare, Inc.
CARE	Continuity Assessment Record and Evaluation
CCHD	Critical Congenital Heart Disease
CDA	Clinical Document Architecture
CDC	Centers for Disease Control and Prevention
CMS	Centers for Medicare & Medicaid Services
CPT-4	Current Procedural Terminology code, 4th Edition
DGA	Data Governance Authority
DHMC	Dartmouth-Hitchcock Medical Center
DSM	Direct Secure Messaging
DVHA	Department of Vermont Health Access
eCQM	electronic clinical quality measure
EH	Eligible Hospital
EHR	electronic health record
EMR	electronic medical record
EP	Eligible Professionals
ETL	extract, transform, load
FHIR	Fast Healthcare Interoperability Resources
FQHC	Federally Qualified Health Center
GMCB	Green Mountain Care Board
HAIMS	Health Artifact and Image Management Solution
HAPI	HL7 API (a server with V2 and FHIR applications)
HCI	Health Catalyst Interoperability
HEDIS	Healthcare Effectiveness Data and Information Set

HIE SC	HIE Steering Committee
HIE	health information exchange
HIN	HealthInfoNet
HIPAA	Health Insurance Portability and Accountability Act
HIV	human immunodeficiency virus
HL7	Health Level Seven International
HRSA	Health Resources and Services Administration
HUD	US Department of Housing and Urban Development
IAPD	Implementation Advanced Planning Document
ICD-9/10	International Classification of Diseases, 9th and 10th Revisions
ID	identifier
IRF-PAI	Inpatient Rehabilitation Facility Patient Assessment Instrument
IT	information technology
LOINC	Logical Observation Identifiers Names and Codes
LTC	long-term care
MAT	medication-assisted treatment
MDS	Minimum Data Set
MECA	
MMIS	Medicaid Management Information System
MPI	Master Patient Index
MRN	Medical Record Number
MRTC	Minimum Required Terms and Conditions
MU	Meaningful Use
NPI	National Provider Identifier
NPPES	National Plan and Provider Enumeration System
NVRH	Northeast Vermont Regional Hospital
OASIS	Outcome and Assessment Information Set
OCV	OneCare Vermont
ONC	Office of the National Coordinator for Health Information Technology
OUD	opioid use disorder
PBM	pharmacy benefits manager
PHI	Protected Health Information

PHR	personal health record
PI	Promoting Interoperability
PII	personally identifiable information
PPNNE	Planned Parenthood of Northern New England
Q/A	question/answer
QHIN	Qualified Health Information Network
QRDA	Quality Reporting Document Architecture
QTF	QHIN Technical Framework
RCE	Recognized Coordinating Entity
REST	Representational State Transfer
SAMHSA	Substance Abuse and Mental Health Services Administration
SDOH	social determinants of health
SIREN	Social Interventions and Research Evaluation
SNF	Skilled Nursing Facility
SNOMED	Systematized Nomenclature of Medicine
SSO	single sign on
STI	sexually transmitted infection
SUD	substance use disorder
TEFCA	Trust Exchange Framework and Common Agreement
TPA	Third-Party Administrator
TPO	treatment, payment, healthcare operations
UMPI	Universal Master Patient Index
USCDI	US Core Data for Interoperability
UVM	University of Vermont
UVMMC	University of Vermont Medical Center
VAHHS	Vermont Association of Hospitals and Health Systems
VCP	Vermont Care Partners
VDH	Vermont Department of Health
VHCURES	Vermont Health Care Uniform Reporting and Evaluation System
VHIE	Vermont Health Information Exchange
VITL	Vermont Information Technology Leaders, Inc.
VPMS	Vermont Prescription Monitoring System

VSAC	Value Set Authority Center

Appendix F - Common Stakeholder Challenges Phase 1

Common Challenges Shared by Stakeholders - from phase 1, shared with the Steering Committee on 6-12-2019

- Duplication of infrastructure and effort across programs and repositories:
    - Patient identity management and de-duplication
    - Terminology mapping and management
    - Clinical system interface development and maintenance
- Data quantity: low number of data sources and sites reporting, slow uptake speed
- Data quality: issues with data gaps (e.g., vitals), format, structure, and terminology
- Lack of data set diversity: legal, financial, social determinants of health, others
- Legal impediments to data sharing:
    - Lack of granular consent, policies to exchange substance use, mental health and sensitive data
    - Gaps in data and inability to share lead to partial patient records
- Duplication of data and development of data silos
- Disparate technical infrastructure: rural providers, FQHCs, CAHs vs. larger facilities
- Increased data audits for data reporting and prescription drug programs

Appendix G - National Trends and Initiatives

The following are brief descriptions of the four major federal initiatives. Information on current work from CDC and the public/private initiatives and trends is available from the HIE Steering Committee (SC) on request.

G.1 Trust Exchange Framework and Common Agreement (TEFCA)

TEFCA, the Trusted Exchange Framework and Common Agreement, is a congressionally mandated project for the ONC outlined in the 21st Century Cures Act of 2016. In its most recent second draft, TEFCA is split into the Trusted Exchange Framework, a section which explains the theory behind and purpose for TEFCA, and the Common Agreement, which outlines the technical requirements in three sections: the Minimum Required Terms and Conditions (MRTC), Additional Required Terms and Conditions (ARTC), and QHIN Technical Framework (QTF).

TEFCA functions as a network of networks, uniting a diverse set of healthcare stakeholders by facilitating health information exchange through QHINs. This exchange is supervised by the Recognized Coordinating Entity (RCE) and intends to promote standardization and subsequent national interoperability for improved population-level health and coordination of care across the country. TEFCA is a top-down approach to national interoperability which charges the federal government with establishing a health information network freely accessible across America.

TEFCA exists primarily in theory and has been criticized for setting unrealistic goals. The second draft does a better job in addressing practical concerns, but the following issues remain:

- The ONC has been vague in their language surrounding the way they will address states with differing consent laws regarding sharing health information. They have hinted they will adhere to the most stringent laws when conflicts occur, but oftentimes the differences are not that simple. More guidance will likely be necessary prior to rollout.
- In its first draft, TEFCA presented a year-long onboarding timeline which received heavy pushback from the industry for being far too ambitious given the extensive undertaking TEFCA participation would entail. The second draft of TEFCA extended the timeline from 12 to 18 months which many have deemed sufficient, but others – particularly policymakers – still believe this is unrealistic.
- The ONC has little funding to provide as an incentive for participation other than the prospect of cost reductions associated with interoperability – fewer patient readmissions, increased accuracy of care, reduced administrative costs.

On September 3, 2019, the ONC awarded a common agreement to the Sequoia Project to act as the Recognized Coordinating Entity for TEFCA. Sequoia will create baseline technical and legal requirements to share electronic health information under the 21st Century Cures Act. In this capacity, Sequoia will

> “collaborate with ONC to designate and monitor Qualified Health Information Networks (QHIN), modify and update accompanying QHIN technical requirements, engage with stakeholders through virtual public listening sessions, adjudicate noncompliance with the Common Agreement, and propose

> sustainability strategies to support TEFCA beyond the cooperative agreement's period of performance."[16]

As Vermont realizes the HIE Strategic Plan's vision, the technical and legal requirements defined by the RCE must be evaluated against existing and proposed use cases for health information. Additionally, the HIE Steering Committee must monitor, and VHIE adhere to, the Common Agreement's requirements, which will dictate rules for participating in the QHIN model to share and query data across the national network of networks.

G.2 Proposed Rule from ONC

In February 2019, the ONC—the same entity who authored TEFCA—released a notice of proposed rulemaking with the intention of accomplishing the following three goals for the healthcare industry: increased innovation and competition, advanced interoperability, and widespread patient access. Their goal was to encourage payers and providers to engage in safe, secure, and standard user-facing sharing of electronic health information.

Information blocking is the illegal practice of "hoarding" healthcare information by explicit or inadvertent refusal to share it—i.e., exorbitant fees for use, discriminatory sharing practices, etc. The ONC proposed rule was colloquially dubbed "the information blocking rule" because of its in-depth explanation of seven exceptions barring prosecution under information blocking regulations.

However, the ONC also touched on conditions of certification for health IT developers, open APIs encouraging patient interaction, and public health initiatives. The ONC rule supported many of TEFCA's initiatives prior to the second draft's release. The ONC proposed rule helped to initiate next steps toward national interoperability between TEFCA drafts by promoting widespread ease of access to electronic health information.

The ONC rule envisions the widespread overhaul of current health IT practices. This means different things for different kinds of organizations, so many portions of the rule apply to only a niche audience. Additionally, the ONC has no means by which to compel developers, HIEs, or providers to undertake the radical changes suggested in this rule besides those which previously existed, beyond the scope of their control. As a result of these conditions, this document functions more as a suggestion than a rule for most healthcare entities.

The ONC proposed rule aligns itself with the CMS proposed rule and TEFCA drafts; their ultimate interests are all vested in national interoperability and healthcare accessibility. In general, the industry is highly supportive of interoperability as a concept, so although the initiatives are taking time to get off the ground, they represent an overarching trend throughout the healthcare industry. All entities should be preparing to undertake these changes sometime soon.

Within Vermont, the Proposed Rule from ONC impact tactics supporting Key Objectives for exchange including Delivering Information at the Point of Care and Providing Consumer Access by reinforcing

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[16] https://www.hhs .gov/about/news/2019/09/03/onc-awards-the-sequoia-project-cooperative-agreement.html

G.3 Proposed Rule from CMS

In February 2019, CMS presented a notice of proposed rulemaking, unveiling a plan to facilitate the share of health information throughout all programs which receive funding from them. The CMS rule centers around patient access as an outlet to spark further interoperable advancement. By learning to transmit health information to their patients, healthcare entities will find it much easier to engage in widescale health information exchange.

The CMS rule also steps away from patient access briefly in mandating certain CMS-funded agencies engage in the practice of ADT notifications. This means whenever a patient enters a healthcare facility, their other providers are notified, lifting that burden from the patient. The ADT notifications, in combination with increased patient access, are good first steps toward full interoperability.

The CMS rule positions organization for compliance with a component of HIPAA called the Privacy Rule. The Privacy Rule requires providers to issue a copy of a patients' medical record to that patient for free upon request. The Privacy Rule has been a tenet of HIPAA since its inception, but prior to this surge toward interoperability, few providers had a system in place to comply. They received no requests, so they never addressed the issue.

Recently, as most industries digitize—e.g., finance, travel, etc.—people have immediate access to almost all their important documents besides health records. This could be a result of HIPAA's stringent accessibility prerequisites, but it is also despite HIPAA's Privacy Rule. CMS introduced Blue Button, a user-facing health information delivery mechanism, on a small scale in 2018. This rule is just the growth of that momentum as it is supplemented by cross-industry trends. The CMS proposed rule aligns itself with the ONC proposed rule and TEFCA drafts in that it seeks interoperable advancement of the industry. However, it sets itself apart by focusing on patient access as a means of promoting interoperability.

Beyond just a newly revived sense of urgency regarding the share of health information, the CMS proposed rule will significantly affect the way healthcare payers and providers function. For the CMS rule, Medicare and Medicaid funding is contingent on participation, so if healthcare entities wish to maintain that funding, they must comply. This means much of their administrative tasks will need to be reworked to accommodate the documentation and transmission of health data through open APIs and ADT notifications. When passed, the CMS rule will undoubtedly alter the foundational logistics of the healthcare industry and catalyze further interoperable growth.

Across Vermont health plans and providers participating in CMS programs face a number of new requirements for sharing patient and provider information with new exchange partners in accordance with CMS' proposed rule. These new requirements serve as opportunities for VHIE and the HIE Steering Committee to provide increasing value to those across the network through successful development and seamless implementation of use cases to meet the demands of these new requirements.

G.4 42 CFR Part 2

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standards for health IT vendor certification including USCDI and patient / population APIs, as well as increasing patient (and provider) access to health information.

The concept of medical consent originated with the passage of 42 CFR Part 2 in 1975. At the time, many illnesses such as SUDs were heavily stigmatized. If one was discovered to have one of these ailments, it could threaten their relationships and even employment. It could also lead to health insurance discrimination or predatory pricing. As a protective measure, the federal government passed Part 2 in order to contain the bias espoused against patients with these illnesses in an era where medical information was otherwise – barring administrative inefficiencies – entirely and easily accessible.

For any health information of that nature to be shared, patient consent must be obtained. Additionally, under Part 2, information could not be re-disclosed in another instance without further patient consent. Exceptions to this rule include medical emergencies, legal intervention, or to a certain extent research. Under Part 2, patients were first granted some control over their healthcare operations. Part 2 has since been periodically updated but perpetuates the same character as it did at its inception. 42 CFR Part 2 was America's first introduction to medically required consent, protecting SUD patients' records to prevent discrimination. It remains steadfast to that same purpose today.

Over two decades following the implementation of Part 2, the federal government released the Health Insurance Portability and Accountability Act (HIPAA). HIPAA was instated in 1996 to ensure the privacy and security of all physical health information. Under HIPAA, any communication of Americans' health information must be consented to by the patient in question, except for instances of treatment, payment, or healthcare operations (TPO). It turns out that the TPO exceptions cover the majority of electronic health information sharing, the structure of which has built itself around TPO exceptions since HIPAA's release.

Behavioral health information, in contrast, is determined by individual states. Some attempt to keep the information accessible like HIPAA, whereas others impose more constraints like Part 2. The amalgamation of these differing provisions leaves many confused and hesitant.

Where provisions are even more stringent, healthcare entities tend to air on the side of caution when dealing with that data. As a result, much of the health information – which could very well be in the circulation of health information exchanges – remains locked away as a precautionary measure. There has been a recent push from certain providers to align Part 2 with HIPAA, allowing for TPO exceptions to the consent requirement. Congress has been hitherto unreceptive, but there is a current bill that may begin to move the needler here.

VITL's implementation of Vermont's new opt-out policy is the launch point to initiate granular, electronic consent management to address the challenges in sharing sensitive data in adherence with local, state, and federal laws including 42 CFR Part 2. Ability to manage consent at a granular level supports the Key Objective of Managing Sensitive Health Information and addresses challenges faced by the Blueprint, OCV, VITL and others attempting to integrate physical health, behavioral health, and substance use data.

Appendix E: 2018-2019 Tactical Plan

A tactical plan translates strategy into achievable actions that support long-term goals. Vermont's HIE Tactical Plan will be developed annually and constantly monitored and refined by the HIE Steering Committee. The HIE Tactical Plan identifies actions related to maturing all core services and furthering the three HIE goals across the dimensions of: Governance, Technology, Policy/Process and Financing. An accountable party is assigned to each tactic to ensure it is clear who is responsible for which aspects of the work.

The 2017 Vermont Evaluation of Health Information Technology Activities Report demonstrated that, most stakeholders feel that it's essential to have HIE services. To ensure that the HIE activities in 20182019 instills trust in stakeholders, and set HIE efforts on a solid, strategic path, the Tactical Plan is focused on achievability and setting a strong foundation for future growth and development.

The 2018-2019 Tactical Plan focused on enhancing foundational and exchange services in support of future and existing end-user services. It is important to note the developments of the HIE Collaborative Service initiative, which will enable the completion of many tactics identified in the areas of foundational and exchange services, particularly for members of the VITL and Blueprint teams.

The specific focus for 2018 and 2019:

- Establishing the permanent governance model for the HIE • Incremental progress in:
    - ○ Consent management
    - ○ Data quality ○ Identity management
- Initiating long-term, sustainable financial planning
- Overseeing the 2018-2019 plan and developing a 2020 plan, including a technical roadmap

Considering the importance of strategic, incremental progress, the Tactical Plans below are intentionally written as checklists as a simple mechanism for tracking the completion of necessary work.

Foundational Components, 2018-2019		
Accountable Party	**Area of Focus**	**Activity**
HIE Steering Committee	HIE Governance	☐ Establish an HIE Steering Committee - **Complete** ☐ Annually, engage stakeholders in the development of a Strategic Plan for the GMCB's review/approval by November 1 - **Complete** ☐ Develop an HIE technical road map and sustainability model to be included in the HIE Plan and built upon every year thereafter **Complete** ☐ Create an evaluation method for overseeing and measuring progress in implementation of HIE strategic plans and the effectiveness of the HIE Governance Model ☐ Evaluate statewide data governance efforts and design a data governance model appropriate for the State's HIE Steering Committee **Complete** ☐ Work with stakeholders to assess potential changes in the State's Consent policy and support the production of a Consent Report per Act 187 of 2018 **Complete**
VT Legislature and GMCB	HIE State Policy: Consent and Connectivity	☐ Legislature: Pass Act 187 of 2018 to continue momentum in HIE activities and enhance oversight and accountability **- Complete** ☐ Legislature: Consider the Consent Report and potential adjustments to current statute and/or policies, if deemed necessary **- Complete** ☐ GMCB: Review VITL's budget and updated Connectivity Criteria and consider ways to enforce consent management and adherence to Connectivity Criteria through existing regulatory framework **- Complete**

		☐ GMCB: Review and approve the annual HIE Strategic Plan **- Complete**
VHIE (VITL)	HIE State Policy: Consent and Connectivity	☐ Work with stakeholders to identify priority data sets to further develop the tiered Connectivity Criteria to drive improved data quality and patient matching in the VHIE; provide the Connectivity Criteria to the GMCB for approval annually (in 2018 Connectivity Criteria is included in the HIE Plan) **Complete** ☐ Review policy allowing payers access to health data for administrative and operational uses ☐ Evaluate the organization's consent management processes to mitigate the technical and administrative burden of transmitting consent **Complete**
DVHA	HIE Federal Policy	☐ Monitor changes to federal policy (e.g., H.R.6082- Overdose Prevention and Patient Safety Act; 21st Century Cures - TEFCA) and communicate impacts to the HIE Steering Committee to support informed planning **Complete**
VT Legislature	Financing	☐ Extend HIT-Fund and approve the DVHA HIE program budget **- Complete**
HIE Steering Committee	Financing	☐ Review available funding sources, inventory needs and develop a sustainability model **Anticipated 11/2019**
DVHA	Financing	☐ Obtain federal HIE development funds **- Complete** ☐ Manage the State HIE budget (including the HIT Fund) in alignment with goals and initiatives outlined by the HIE Steering Committee and in accordance with State and federal law **- Complete** ☐ Contract for services in service of the strategic direction set forth by the HIE Steering Committee **- Complete**

Foundational Services, 2018-2019

Accountable Party	Area of Focus	Activity
VHIE (VITL)	Consent Management	☐ Further automate the consent management process, increasing the number of records with consent documented to at least 42% in 2019 (35% in 2018) **Complete**
VHIE (VITL)	Security	☐ Adhere to HIE NIST security standards **Complete** ☐ Conduct an annual third-party security assessment and develop a mitigation plan, if necessary, to address items identified in assessment ☐ Partner with the Agency of Digital Services to manage security matters; hold a monthly meeting and adhere to industry reporting standards **Complete**

DVHA	Security	☐ Work with the Agency of Digital Services to ensure that all HIE contracts include industry-driven security measures and real oversight protocols **- Complete**
VHIE (VITL)	Identity Management	☐ Reduce duplicate records in the VHIE by 60% (40% in 2018; 20% in 2019) **- Complete** ☐ Assess shared identity matching tools and report to HIE Steering Committee on results, and if deemed appropriate, procure and implement new identity matching tool(s) **Complete** ☐ Ensure that existing patient matching services are effective and operational seven days a week and 24 hours a day with 94% average monthly uptime **Complete**
Blueprint for Health – Clinical Registry	Identity Management	☐ Enhance the Vermont Clinical Registry's record matching capabilities to support the Women's Health Initiative, Hub & Spoke program, and Blueprint Practices
Agency of Digital Services (ADS)	Other	☐ Complete the information, technical, and business dimensions of the State's Architectural Assessment of the VHIE to support effective VHIE operational planning and the HIE Steering Committee's understanding of the VHIE **Complete**

Exchange Services, 2018-2019

Accountable Party	**Area of Focus**	**Activity**
VHIE (VITL)	Data Extraction & Aggregation	☐ Increase the number of health care organizations contributing to the VHIE that meet Tier II Connectivity Criteria standards **Complete** ☐ Establish new or replacement interfaces (connections) feeding data from EHR systems to the VHIE ☐ Provide end users (OneCare Vermont, Blueprint for Health, Health Department, etc.) with data feeds to meet their unique data usage needs **Complete** ☐ Enable use of EHRs by providing Meaningful Use and Security Risk Assessment consultation to providers participating in the Medicaid EHR incentive program **Complete**
Vermont Care Partners	Data Extraction & Aggregation	☐ Collaborate with Designated Agencies in the procurement of EHR systems that support value-based payment and data sharing for mental health, SUD, and developmental disabilities. Data is to be aggregated in the Vermont Care Network data repository. **Complete**
Blueprint for Health	Data Extraction & Aggregation	☐ Develop the Clinical Registry to manage sensitive SUD data aggregation and exchange in support of the Hub/Spoke program ☐ Explore data aggregation opportunities for statewide screening and referral programs
GMCB	Data Extraction & Aggregation	☐ Enhance VHCURES by upgrading to current standards, anticipating state data needs, and resolving analytical challenges present in the system

VHIE (VITL)	Data Quality	☐ Develop a data quality mitigation plan, as a component of the organization's strategic plan, in consultation with the HIE Steering Committee with a focus on improving quality and volume of specific data points related to health system goals ☐ Pilot the implementation of a terminology services tool (Health Language) and measure the impact on the quality of specific lab transmission across 25 health care organization; report to DVHA and the HIE Steering Committee on the achieved impact ☐ Execute a data quality initiative to increase the quality and volume of data points included in the Connectivity Criteria Tier II data set ☐ Work with partners such as the Blueprint for Health, Bi-State Primary Care Association and OneCare VT to implement source-directed data quality initiatives ☐ Modify the Connectivity Criteria in collaboration with the GMCB, the HIE Steering Committee, and other key stakeholders to further enhance the quality of data exchange through the VHIE **Complete**
Blueprint for Health	Data Quality	☐ Continue to manage the Blueprint Sprint process to support data quality remediation at the source (health care organization) **Complete** ☐ Partner with OneCare Vermont and Bi-State Primary Care Association to develop a statewide data quality remediation model
VHIE (VITL)	Data Access	☐ Evaluate data access preferences with end users and focus on development of the preferred data access method **Complete** ☐ Implement single sign on to VITLAccess from EHR systems and/or cross community access (direct query and retrieve of some data within the VHIE) in accordance with the State's prioritized list **Complete** ☐ Maintain and expand use of VITLAccess and the pharmacy benefit manager medication history query and view service based on user interest **Complete**
VHIE (VITL)	Data Governance	☐ Begin development and implementation of a data governance model leveraging methods currently implemented by the GMCB and Agency of Human Services to align health data management practices across the State **Complete**
VHIE (VITL)	Interoperability	☐ Explore methods for bi-directional data exchange with public health registries; provide the HIE Steering Committee with recommended strategies **Complete**
		☐ Maintain existing data feeds (Clinical Registry, Public Health Registries, OneCare VT, AHS' Care Management Solution, etc.), explore methods for enhanced data exchange **Complete**
ADS	Interoperability	☐ Provide an HIE enterprise architecture recommendation to the HIE Steering Committee to support development of a technical roadmap **Complete**

End-User Services*, 2018-2019

Accountable Party	Area of Focus	Activity
One Care Vermont	Care Coordination & Analytics	☐ Leverage federal and state support to develop care coordination and analytics tools that support direct care, measurement and system improvement **Complete** ☐ Utilize the data feed from the VHIE to support analysis of All Payer Model Implementation **Complete**
VHIE (VITL)	Notification Services	☐ Route data to Patient Ping and other event notification services used by VT providers **Complete**
Blueprint for Health	Analytics	☐ Enhance the Clinical Registry to support data analytics needs related to Hub/Spoke, the Women's Health Initiative and other statewide initiatives ☐ Perform health program analysis based on claims data united with clinical data aggregated in the Clinical Registry **Complete**
Bi-State Primary Care Association	Analytics	☐ Aggregate clinical and claims data in data visualization tool (Qlick Sense) and use to support a Model for Improvement effort with Federally Qualified Health Centers Statewide **Complete** ☐ Train stakeholders how to leverage analyzed health data for practice improvement **Complete**
Dept. of Health	Analytics	☐ Procure a forecaster tool for the Immunization Registry to improve clinicians' ability to obtain real time and forecasted immunization data and support public health reporting. **Anticipated 2020**
Dept. of Health	Consumer Tools	☐ Maintain the public health reporting portals available to VT providers **Complete**
VHIE (VITL)	Secure Messaging	☐ Provide the VITLDirect secure, point to point messaging service based on customer need and use **Complete**

*As noted previously, the ultimate value to users is evident in Exchange and End-User services. However, tier one (Foundational) is required to enable tiers two and three (Exchange and End-User Services). While it may be ideal to have the foundation set before moving on to higher tiers, End-User Services have evolved in recent years out of necessity. However, the End-User Services that exist today will be enhanced as Foundational and Exchange Services become more effective over time.

APPENDIX D: Consent Policy Implementation

Report to
The Vermont Legislature

Progress Report on the Stakeholder Engagement Process and Consent Policy Implementation Strategy

In Accordance with Sec. 5 of Act 53 (2019): An act relating to informed health care financial decision making and the consent policy for the Vermont Health Information Exchange.

Submitted to:	House Committee on Health Care Senate Committee on Health and Welfare Health Reform Oversight Committee Green Mountain Care Board
Submitted by:	Cory Gustafson, Commissioner
Prepared by:	Jenney Samuelson, Deputy Commissioner
Report Date:	November 1st, 2019

VERMONT
AGENCY OF HUMAN SERVICES
DEPARTMENT OF VERMONT HEALTH ACCESS

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Act 53 of 2019, An act relating to informed health care financial decision making and the consent policy for the Vermont Health Information Exchange, adopts an opt-out consent policy for the sharing of patient health information through the Vermont Health Information Exchange (VHIE) and specifies that the implementation strategy shall include substantial opportunities for public input. Act 53 further specifies several requirements for associated patient education mechanisms and processes. This second progress update is being submitted in accordance with the requirements of Act 53 to provide updates on the stakeholder engagement process and the consent policy implementation strategy to the House Committee on Health Care, the Senate Committee on Health and Welfare, the Health Reform Oversight Committee, and the Green Mountain Care Board (GMCB).

Act 53 was signed by Governor Scott on June 10, 2019. The Act includes two major areas of implementation that are the responsibility of the Department of Vermont Health Access (DVHA) – an updated statewide Health Information Technology Plan that provides for the new consent policy and development of an implementation strategy for the new consent policy (the change to consent policy is effective March 1, 2020). This report is the second required status update on activities to support the transition to an opt-out consent policy and covers the few months from the submission of the August 1st progress report to now.

DVHA, in consultation with stakeholders, has developed an implementation plan for the new opt-out consent policy based on meaningful consent. DVHA has been facilitating a consensus-based, multi-party process to engage diverse audiences in plan development for implementing and managing consent. The implementation team considers the workstreams to be on schedule to ensure the activation of the new consent policy on March 1, 2020.

Consent Implementation Project Work Streams
The consent implementation project breaks down into three major work streams: stakeholder engagement for implementation strategy development, mechanisms to implement and manage consent for the VHIE, and evaluation of the success of stakeholder engagement objectives. In the two months since the first report was drafted, DVHA has made significant progress with the implementation planning and activities for the new consent policy. Workstream highlights include:

Stakeholder Engagement: Additional interviews and focus groups have been conducted and a good understanding of the messaging requirements has emerged. Planning for broader public input is under way. Messages and delivery mechanisms are now being developed to ensure that common message elements can be delivered to a variety of groups and Vermonters, using an appropriate mix of communications channels. DVHA is also asking the advocacy organizations to help deliver messages about consent once the information campaign is ready. The Stakeholder Engagement workstream section of this report expands on this work and how it is being structured.

Mechanisms to Implement and Manage Consent for the VHIE: In addition to the policy and procedure updates that are being planned, Vermont Information Technology Leaders is significantly expanding the mechanisms through which Vermonters can act on a decision to opt-out if that is their choice, including the use of fax, telephone, web form and US Mail. An important consideration that is being addressed will ensure that people who have opted out under the existing policy will remain opted out when the new policy goes into effect on March 1, 2020. The Mechanisms workstream section of this report provides an update on the progress attained in this area.

Evaluation: An evaluation plan has been drafted and reviewed with the HIE Steering Committee. The draft question anchoring this evaluation is: “Can Vermonters meaningfully consent to whether or not their health care providers and organizations are able to view their health information available through the Vermont Health Information Exchange?” Additional questions to evaluate the anchor question have been drafted and data sources, including the Patient Experience Survey, are identified. Members for the evaluation committee are currently being recruited.

BACKGROUND

Act 53 of 2019, An act relating to informed health care financial decision making and the consent policy for the Vermont Health Information Exchange, adopts an opt-out consent policy for the sharing of patient health information through the Vermont Health Information Exchange (VHIE) and specifies that the implementation strategy shall include substantial opportunities for public input. Act 53 further specifies several requirements for associated patient education mechanisms and processes. This progress update is being submitted in accordance with the requirements of Act 53 to provide updates on the stakeholder engagement process and the consent policy implementation strategy to the House Committee on Health Care, the Senate Committee on Health and Welfare, the Health Reform Oversight Committee, and the Green Mountain Care Board (GMCB).

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MEANINGFUL CONSENT

Per the Office of the National Coordinator for Health Information Technology (ONC), meaningful consent "occurs when the patient makes an informed decision and the choice is properly recorded and maintained. Specifically, a meaningful consent decision has six aspects. The decision is:

- made with full transparency and education,
- made only after the patient has had sufficient time to review educational material,
- commensurate with circumstances for why health information is exchanged (i.e., the further the information-sharing strays from a reasonable patient expectation, the more time and education is required for the patient before he or she makes a decision),
- not used for discriminatory purposes or as a condition for receiving medical treatment,
- consistent with patient expectations, and
- revocable at any time.

The Department and Vermont Information Technology Leaders will promote meaningful consent as described as the gold standard for consent. The minimum acceptable consent as implemented by providers, practices, and the VHIE must satisfy the requirements of Act 53 and current federal requirements.

Federal Requirements Related to Consent to Share Health Information in the VHIE Federal regulations cannot be overruled or relaxed by state regulations although state regulations can impose restrictions that go beyond the constraints of federal regulations. The two federal regulatory areas that relate to the sharing of health information are found in the HIPAA Privacy Rule and in 42 CFR Part 2. HIPAA is the Health Insurance Portability and Accountability Act of 1996. 42 CFR Part 2 is the Confidentiality of Substance Use Disorder Patient Records. Vermonters receiving health care anywhere should have been presented with information on HIPAA and they have probably given permission for the provider and health care organizations to share information with payers, other providers, and health care organizations who may be involved or consulted on some aspect of the health care delivery.

The purpose of 42 CFR Part 2 is to ensure that a patient receiving treatment for a substance use disorder in a Part 2 program is not made more vulnerable than an individual with a substance use disorder who does not seek treatment. 42 CFR Part 2 requires patient consent for disclosures of protected health information for the purposes of treatment, payment, or health care operations; consent for disclosure must be in writing; re-disclosures without patient written consent are prohibited (with certain exceptions).

The VHIE does not currently receive information from designated 42 CFR Part 2 programs. Any patient who does not opt-out of health information sharing will know that information from designated 42 CFR Part 2 programs (related to substance use disorder and treatment) is not being transmitted.

The VHIE and the New Opt-out Consent Policy

Information related to health care treatment, in most cases, is transmitted to the VHIE where longitudinal health information is viewable by participating health care organizations. Data is also extracted and transmitted to support stakeholders involved in health care reform efforts such as the Blueprint for Health, the Vermont Department of Health, the Vermont Chronic Care Initiative and OneCare Vermont.

The existing Vermont opt-in consent policy and the new Act 53 opt-out consent policy have to do with an individual's management of who can access the information about the individual that is in the VHIE, and how the information that can be accessed under opt-out consent will never include the sensitive protected information described in the discussion of 42 CFR Part 2. A decision to approve access to a provider, health care organization, or payer is still subject to the restrictions of HIPAA. Taking no action will allow access by treating providers and health care organizations. Opting-out is simply removing electronic access through the VHIE as an option and forcing other methods which would most likely resolve to faxing information.

Consent discussions with patients including the presentation of opportunities to make informed consent decisions will continue to occur where individuals interact with the health care system, independent of Act 53. These points of interaction include the front desk of medical practice facilities, emergency rooms and urgent care centers, hospital admission and procedure locations, and a variety of settings where other providers and care coordinators interact with individuals. These discussions will still be about consent for treatment and the subsequent access to information in the VHIE. The difference now is the decision to allow access to information in the VHIE will change from opt-in to opt-out.

CONSENT IMPLEMENTATION GOVERNANCE AND PROJECT ORGANIZATION

DVHA is facilitating the implementation of the opt-out consent policy with the participation and advice of the Health Information Exchange Steering Committee. The consent implementation project is an included agenda item at Steering Committee biweekly meetings.

DVHA has formed a project team including representation from VITL to address best practices of project management while focusing on the main workstreams of the project – stakeholder engagement, mechanisms for consent management, and evaluation of the success of stakeholder engagement. This team meets weekly, the project log and schedule are maintained, and project activities are monitored for progress.

HEALTH INFORMATION TECHNOLOGY PLAN CONSIDERATIONS

Act 53 states requirements for Vermont’s statewide Health Information Technology Plan (HIT Plan), to be revised annually and presented to the Green Mountain Care Board on or before November 1. Act 53 requires the HIT Plan to provide that patient information in the VHIE will be accessible to health care facilities, professionals, and payers unless the patient has opted out of having their electronic health information shared in this manner. Accommodating the HIT Plan requirement involves coordinating additional threads of related health IT planning work currently underway at DVHA and this work is described in a section of this update.

DVHA has a significant amount of work to meet the requirements of Act 53 but the Department is confident the opt-out consent policy will be implemented on March 1, 2020 with full alignment with the requirements of Act 53.

STAKEHOLDER ENGAGEMENT WORKSTREAM

Stakeholder engagement emerges as a critically important workstream, one which will inform Vermonters about consent and any decisions to opt-out and the mechanisms that will be required to support those decisions. Act 53 identified the need to consider both the general public and populations or groups of Vermonters who may have special concerns about consenting to make their health information accessible to their providers and health care organizations. DVHA's intent is for a multi-party process for engaging diverse audiences in a meaningful consensus strategy which differentiates this work from past efforts. This consideration helped DVHA develop its approach to stakeholder engagement which is described here.

Interviewing Advocates for the Rights of All Vermonters

During the legislative session, some advocacy organizations working on behalf of the general population (all Vermonters) were actively involved in conversations about the consent policy. These organizations included the ACLU and the Office of the Health Care Advocate. Both were interviewed in the early stages of the stakeholder engagement work, in order to communicate DVHA's objectives for the project and solicit their recommendations for how to achieve an effective rollout of the new policy - a rollout that supports meaningful consent.

Advocate Interviewed	Interview Date
ACLU	6/12/19
Office of the Health Care Advocate	6/17/19

A meeting on August 30th engaged both organizations with updates and solicited their input on the project.

Identifying and Engaging Special Populations, Interviewing Advocates

The project team has identified special populations whose members may have concerns about sharing their health data, based on stigma (e.g. people living with HIV/AIDS), personal safety (e.g. people with experience of partner violence), or other reasons. The team has also identified special populations whose members may require different communication approaches than those used with the general public in order to fully understand their options and rights. The project team reached out to advocates for the special populations. Initial interviews were conducted and DVHA continues to schedule additional interviews with advocates. The objective of these interviews is to:

1) Inform advocates about the VHIE and the new opt-out consent policy,
2) Begin to understand each population's current understanding of and perspectives on health data sharing including benefits and risks,
3) Ask for help engaging members of these populations in conversation via interviews or focus groups,
4) Ask for the advocacy organizations to consider being messengers and possibly processing opt-out decisions for members of the populations they serve,
5) Develop a shared definition of success regarding the rollout of the opt-out consent policy.

A few themes emerging in these early interviews with advocates for special populations and through the previously mentioned advocacy organizations representing the general population include:

- A shared understanding that a multi-channel communications approach that relies on both a wide range of messengers and mediums will have the best chance of reaching most Vermonters. Most advocacy organizations interviewed committed to participating as messengers. This does not guarantee that every Vermonter will have been individually contacted with information about their rights and an opportunity to opt-out. There were differing opinions as to whether a mailing to every Vermont household would be an effective method of communicating the key messages, with many advocates indicating that it may be prohibitively expensive with poor outcomes.
- Some advocacy organizations representing special populations recognize unique risks of health information exchange to the people they represent and/or unique challenges in communicating with them about the Vermont Health Information Exchange and their rights – while also recognizing that they may experience more benefit from effective health information exchange than members of the general public.

- Some advocacy organizations have cautioned that messaging about the Vermont Health Information Exchange must be carefully designed to not create fear or uncertainty. Potential sources of fear cited include confusion that this impacts health insurance and some action is necessary to maintain coverage and/or access to care. People encountering the messaging should understand that no action is necessary and that they will continue to receive high quality care whether they take no action or choose to opt-out.

Special Populations Identified	Advocates Interviewed	Interview Date
People with developmental disabilities	Developmental Disabilities Council	6/4/2019
Families of people with developmental disabilities and/or special health care needs	Vermont Family Network	8/14/19
Refugees and New Americans	Cultural Brokers Program	7/15/2019
Migrant farm workers	Bridges to Health, UVM Extension	7/25/2019
People accessing sexual and reproductive health services	Planned Parenthood of Northern New England	7/2/2019
LGBTQ people	Pride Center	7/1/2019
People living with HIV/AIDS	People with AIDS	7/10/2019
Teenagers / young adults	TBD	
Elders	Southwestern Vermont Council on Aging, AgeWell	8/5/2019

Focus Groups and Interviews with Vermonters, Including Members of Special Populations
The project team has planned a series of focus groups, question and answer sessions, and individual and small-group interviews with people who are members of the special populations

mentioned above and with members of the general public. All of these engagements were designed to:

1) Understand participants' expectations of how their health data is shared and used;

2) Understand what information (about the VHIE, benefits and risks of health information sharing, and rights and options) matters most to participants and how to express it clearly;
3) Understand how best to communicate about the new policy – what messengers and communication channels will be most effective;
4) Engage participants in design of easy and accessible opt-out mechanisms.

The project team has learned a lot from focus group participants. Early findings include:

In this small sample there was a lack of awareness of the Vermont Health Information Exchange and how personal health data is stored and shared beyond practice, organization, or network electronic health records.

Participants generally agreed that the more information their health care providers have access to, the better. Some concern was noted about old or sensitive information being available to their current provider.

Participants wanted clarification about who would have access to their health information in the VHIE. They were interested in understanding both who is allowed access and who is capable of accessing, and what protections exist to limit access to the appropriate viewers.

A few participants wanted reassurance about the overall security of the system (against hacking, etc.)

The message "when my doctors have access to more complete information about my health, I may not need to tell my health story over and over again" resonates with many. Participants expect their providers will continue to ask them questions (including some seemingly repetitive questions) and listen closely to them. They also hope some repetition can be reduced (this is especially true among people with severe chronic conditions and their family members).

People with severe chronic conditions and family members of people with severe chronic conditions expend substantial time managing personal health data. They are hopeful about tools that enable data sharing and require less logistical/administrative work of them.

Participants want to learn about how their health data is stored, shared, and used from their health care provider. They are also open to learning from staff in their provider's office and in a wide variety of health care settings and other venues.

People want easy but reliable mechanisms to activate an opt-out decision.

Focus Groups	Population Engaged	Date
Developmental Disabilities Council Board	People with developmental disabilities	7/26/19
People with AIDS Retreat	People living with HIV/AIDS	7/27/19
St. Johnsbury-area Community Health Team patients	General population / health care patients	7/31/19
Vermont Family Network	Families of people with developmental disabilities and/or special health care needs	8/14/19
Burlington-area UVMMC patients	General population / health care patients	8/19/19
Cultural Brokers	Refugees and New Americans	9/11/19
Williston Rotary* *Informal question and answer session	General population	10/10/19

Importantly, in addition to completion of interviews and focus groups, planning for broader public input is also under way.

Message Development and Dissemination Strategy

Act 53 of 2019 requires that the policy implementation strategy shall "focus on the creation of patient education mechanisms and processes" that clearly explain:

i. the purpose of the VHIE;

ii. the way in which health information is currently collected; iii. how and
with whom health information may be shared using the VHIE; iv. the
purposes for which health information may be shared using the VHIE;
v. how to opt-out of having health information shared using the VHIE; and vi.
how patients can change their participation status in the future.

The project team has used the interviews and focus groups to learn about the best messaging approaches and do preliminary message testing. The team has also used these groups to learn about what communications channels will be most effective for reaching general audiences and special populations – where people want to learn about the Vermont Health Information Exchange and who they want to hear about it from. The team is developing a website to host information about the Vermont Health Information Exchange for Vermonters, and to provide all necessary information about how to opt-out. Simultaneously, the team is developing an outreach strategy that relies on three sets of messengers: health care organizations, advocacy organization and other partners, and the State of Vermont and VITL. With a marketing and communications agency and internal resources, the State is developing a broad set of outreach tactics and tools to be used by these messengers to reach Vermonters with information about what the Vermont Health Information Exchange is, why it matters to them, and their rights and options.

Core Information Resources

Communications will be supported by the VITL hotline and a website. The website will be designed with the help of an agency partner and hosted by VITL, and will provide accessible, clear information about what the Vermont Health Information Exchange is, why it matters to Vermonters, and their rights and options. Planning for the website is underway now, content may include:

- Brief video about the Vermont Health Information Exchange and options
- Directions for: how to opt-out, how to opt-back-in, how to request a personal health record, and how to request an audit of viewers of a personal health record
- Numbers for the VITL hotline and the Office of the Health Care Advocate – to reach a person who can answer questions, process opt-outs (VITL only), and support decision-making
- Extensive FAQ, answering questions received to date about the Vermont Health Information Exchange

Messengers & Channels

1. Messenger: Providers (practices and health care organizations)	**2. Messenger: Advocacy organizations & other partners**	**3. Messenger: Direct from the State of Vermont and VITL**
Inform patients about health data where it is created and used	Reach special populations through existing strong and trusting relationships	Reach Vermonters not reached in other channels and reinforce the message

1. Provider-Led Communications

At providers' offices	**Via health care organizations' communications channels**

<table>
<tr>
<td>• Provide all participating health care organizations with sample script and handout to use at check-in*
• Provide all participating health care organizations with language that may be inserted into HIPAA paperwork / notice of privacy practices
• May also produce posters and/or other materials to use in on-site education.</td>
<td>• Provide interested practices and health care organizations with a toolkit of materials they may choose to use in their existing communications channels. Toolkit will be the same, or similar to, toolkit provided to advocacy organizations.
✦ Suite of social content
✦ Newsletter item and/or blog post
✦ Other content TBD</td>
</tr>
<tr>
<td colspan="2">*Note: Focus group participants have been clear that they want to hear about how their health data is shared and used directly from their provider. However, it is unlikely that sharing this information can fit into the limited time providers have with their patients. The project team is looking for the closest proxy that does not place undue burden on providers or practices. The team is working with provider organizations to develop in-office education opportunities that are meaningful for patients and lowburden for health care organizations.</td>
</tr>
</table>

2. Communications from advocacy organizations and other partners

All interested advocacy organizations and other partners (such as health insurance providers) will receive a toolkit of materials they can use to inform the people they serve. At least one training will also be provided.

- Toolkit including
    - ✦ Suite of social content
    - ✦ Newsletter item and/or blog post
    - ✦ Slides and/or talking points for meetings
    - ✦ Handouts
    - ✦ Other content TBD
- Team members may be available to present in person at gatherings hosted by advocacy organizations for the people they serve – about the Vermont Health Information Exchange and opt-out options.

3. Communications from the State of Vermont and VITL

- The State of Vermont will use internal resources to develop content for the news media about the Vermont Health Information Exchange and Vermonters' options
    - ✦ An article for town/local papers
    - ✦ Pitch to statewide news organizations
- The State of Vermont will use its own relevant social media accounts to share information about the Vermont Health Information Exchange
- Within a limited budget, the State of Vermont may use some broad-reaching paid media to share information about the Vermont Health Information Exchange. Front Porch Forum is among the channels under consideration.

Engaging a Marketing and Communications Agency

The project team has developed a marketing firm work request and is in the process of selecting a vendor to support development of many of the communications tactics above. They will build on the findings from the interviews and focus groups to develop messages that are compelling and accessible. Tactics will support a wide range of learning styles and will include visualizations of the health information exchange. Communications will include translation into many languages spoken by Vermonters. The overall approach and complete set of tactics will aim to support full understanding of health data sharing options and the process of opting-out for people of “diverse needs, abilities, and learning styles with respect to information delivery” as required by Act 53 of 2019.

Engagement with Health Care Practices and Provider Organizations

The implementation plan aims to balance the goals of reducing the burden of explaining the VHIE on providers, practice staff, and health care organizations of explaining the Vermont Health Information Exchange with the recognition that these same professionals and organizations may be the most trusted communicators about health and health care-related issues and that point-of-care is the most natural moment for engaging Vermonters in conversations about how their health care data in collected and shared.

VITL has extensive experience educating providers about the Vermont Health Information Exchange and working with practices and health care organizations to build the opt-in consent process into workflows. That experience will inform the work to support practices and health care organizations in the consent policy change to an opt-out policy. In its expanded role of processing and managing consent decisions, VITL will support the adoption of patient education materials, which will be in line with the requirement of Act 53 that new information about the consent policy be included with existing patient education obligations, such as the disclosure requirements under the Health Insurance Portability and Accountability Act of 1996 (HIPAA). DVHA and VITL will work together to engage provider organizations to ensure this new information in included.

Additionally, the project team has met with Bi-State Primary Care Association and will engage the Vermont Association of Hospitals and Health Systems and OneCare Vermont to build the project team’s understanding of the communications needs of providers and the organizations supporting them and garner the organizational commitment necessary for leading or supporting education of their providers on this topic. VITL and Association perspectives will be supplemented by survey data from the provider and provider health care organization survey used to inform the State Medicaid HIT Plan (SMHP), in which consent specific questions are included. More information on the survey and preliminary results can be found in Evaluation section of this report.

Communications Roll-Out

March 1, 2020 marks the date of the consent policy change. February 1, 2020 is when the first phase of mechanisms for Vermonters to use in opting-out of sharing health data on the VHIE will be available. Communications letting people know about the option to opt-out must begin at or ahead of this February 1st date, although not so far in advance that Vermonters are given information with no ready opportunity to act upon it. In order to achieve this, all stakeholder organizations who will be acting as messengers must have the messaging toolkit and any other materials they need, and must be educated about the VHIE and the new consent policy and trained to support communications with their patients/clients/members in advance of February 1st.

Ongoing Engagement and a Culture that Supports Meaningful Consent

While the objectives and goals established in Act 53 of 2019 will be met and the State will be prepared to move to an opt-out policy by the target date, building a culture that promotes and supports meaningful consent for health information exchange is a project that will be ongoing beyond March 1, 2020. The Health Information Exchange plan presented to the General Assembly this fall will include recommendations for continued promotion of meaningful consent. The plan is updated yearly, and future updates will modify these recommendations based on the findings of the evaluation.

MECHANISMS AND CONSENT MANAGEMENT WORKSTREAM

The VHIE must technically and operationally support the new opt-out consent policy while managing the transition, on March 1, 2020, from an opt-in policy to the opt-out policy. Managing the current opt-in policy has given VITL significant experience in implementing and operating technical and operational solutions to manage consent and VITL will leverage that experience and much of the supporting infrastructure to engage the new policy. VITL has assembled a consent implementation team that meets weekly and has the requisite project management and technical assistance to support the new policy.

Policy and Procedure Changes in the VHIE to Support Opt-out Consent

VITL has existing policies and procedures to address the privacy and security of patient data and records and they follow best practices in periodically reviewing these documents and testing the actual security of systems and data. Related to this portfolio of existing policies and procedures VITL is:

- reviewing, updating, establishing and implementing standards and protocols to support the new consent policy;
- reviewing and updating its portfolio of consent and privacy and security related policies and procedures to reflect the new consent policy;
- consulting with stakeholders and legal counsel to ensure policies, processes, and procedures support the new consent policy.

Technical Changes in the VHIE to Support Opt-out Consent

In addition to policy and procedures changes to support the new policies there are technical changes that must occur to ensure that consent decisions can be captured, used to manage information access, and audited for compliance. Currently, the only method for Vermonters to opt-in or opt-out of the Vermont Health Information Exchange is by visiting a participating health care organization. Related to technical changes:

- VITL is developing processes and procedures to expand methods in which an individual can easily opt-out of the VHIE.
    - VITL is currently evaluating the following options:
        - Fax
        - In-person at VITL
        - Phone
        - USPS
        - VITL ticketing system
        - Web-based forms o This will also include use of the VHIE platform and other supporting systems to collect patient consent from participating health care organizations.
    - VITL is establishing a systematic way to maintain, audit, and process the decision of an individual to opt out of the VHIE.
- VITL is assessing existing processes and establishing new use cases, business processes/workflows, and requirements to ensure the solutions support the new opt-out consent policy and new methods to collect consent directly from individuals and stakeholders. This assessment is scheduled to complete in October of 2019.
- VITL along with Health Catalyst (the VHIE platform used to currently support the consent and associated patient records in the VHIE) has scheduled an update to the existing VHIE system to support the patient opt-out decision and hide records for the patient, outside of an emergency. This update will be deployed to a test environment in October of 2019.
- VITL will develop, test, and implement solutions based on the new use cases, business processes/workflows, and requirements established within the project to support the new consent policy. This work is scheduled to complete in early December.
- VITL will ensure an individual's pre-existing consent decision is maintained and new opt-out consent decision can be audited. This work is in progress.

- VITL is establishing post-implementation procedures and processes to provide ongoing support to residents and health care organizations in Vermont. This work is in progress.
- VHIE Consent Policy and Patient Information - VITL in collaboration with the State of Vermont and other stakeholders will create/update educational materials. This work is in progress.
- VITL is developing workflow recommendations and assistance for providers and health care organizations to implement the new consent policy based on use cases and identified solutions. This work is in progress.
- Work specifically focusing on expanding opportunities for patient consent collection and education for Vermont residents is in progress and will be ongoing even after the opt-out consent policy is implemented.

EVALUATION WORKSTREAM

Overview

In the first progress report submitted on August 1st, DHVA noted that Act 53 of 2019 requires the evaluation of the success of the stakeholder engagement and the intended purpose of that engagement to support informed consent decisions. DVHA also indicated that status of the evaluation plan and associated evaluation activity would be provided in the November 1st progress report. What follows is the current status of the evaluation plan.

Act 53 asks that Department of Vermont Health Access (DVHA), in consultation with the HIE Steering Committee, “identify a methodology for evaluating the extent to which the public outreach regarding the VHIE, consent policy, and opt-out processes has been successful.” To date, DVHA, in partnership with the Agency of Digital Services and VITL (the Consent Policy Implementation Team), has begun the process of developing the plan and methodology to evaluate the effectiveness of this public outreach. These steps include:

1) Establishing an Evaluation Committee and outlining its role;
2) Drafting an evaluation approach with specific aims; and
3) Identifying potential data sources to be used for the evaluation.

Regarding the Evaluation Committee, membership includes those who have expertise in evaluation methodology, those who can ensure the evaluation is asking the right questions to address the key concerns, and those who can support identifying and accessing data sources. The role of the Committee is to further define the primary research question and its underlying components, identify additional and feasible data sources, and finalize the best methodology given the available data.

The draft question anchoring this evaluation is: "Can Vermonters meaningfully consent to whether or not their health care providers and organizations are able to view their health information available through the Vermont Health Information Exchange?" The ability to meaningfully consent is based on the patient having enough information, including understanding the risks and benefits, to make a decision with which they are comfortable. As Act 53 identifies, this evaluation needs to assess whether Vermonters have this information and understanding, which involves ascertaining three key elements:

1) Are Vermonters aware of their ability to decide whether their health care providers can view their health information available through the VHIE?
2) Do they have enough information to understand the risks and benefits of providers viewing their health information available through the VHIE, and make a decision with which they are comfortable?
3) Can Vermonters easily register their decision to not allow their health care providers to view their health information available through the VHIE?

Baseline

One of the first steps in this evaluation is understanding the awareness and use of the current opt-in consent policy, which requires health care organizations participating in the VHIE to manage their patient's consent decision. To assess this baseline, the Consent Policy Implementation Team will use results from the

1) State Medicaid HIE Plan Provider Survey;
2) Questions included in the statewide patient experience survey administered DVHA; and
3) VITL's current records of organizations currently collecting and maintaining consent.

1) State Medicaid HIE Plan Provider Survey: A provider and health care organization survey, fielded in August of 2019 and meant to inform the State Medicaid HIT Plan (SMHP), included questions about providers' understanding of the VHIE and consent options. Surveys went to providers across the continuum of care including mental health providers, primary care, and specialists. While these results are informing communications and education strategies for health care organizations, it must be noted that in some instances the survey was completed by an individual representing their health care organization, which could have included several providers. Therefore, their responses may or may not reflect the views and knowledge of all providers in that organization. The following survey results are based on responses from the 293 participants; however, selection bias may limit their generalizability. With these cautions in place, below are select survey results relevant to the consent implementation plan.

- Generally, providers who responded to the survey expressed interested in using services related to the HIE and involving the sharing of electronic health information including: VITL Access (ability to see a longitudinal health record); VITL Direct Secure Messaging; Emergency Notification Services; and cross community electronic health information.
- Related to consent:
- In response to the question, “What is your familiarity with Vermont’s current law regarding patient consent to share electronic health information?”: ○ 46% comfortable explaining it to staff and patients ○ 36% know a little about it ○ 9% heard of it but do not understand it ○ 6% never heard of it
- In response to the question, “How does your organization CURRENTLY obtain patient consent to share electronic health information?”:
    - 66% paper consents – signed consents are gathered and filed in paper forms
    - 22% hybrid capture – signed papers are scanned into the EHR ○ 13% electronic – consents are obtained electronically with a verbal explanation
- In response to the question, “How does your organization PLAN to obtain patient consent to share electronic health information in the future?”: ○ 44% paper ○ 24% hybrid ○ 20% electronic
- In response to the question: “How often is consent to share electronic health information discussed with patients?”:
    - 30% As necessary per clinical event (e.g., before every surgical procedure)
    - 27% Once, only upon the first visit
    - 12% Annually
    - ○ 6% Every visit **2) Patient Experience Survey:** The two patient experience questions from the 2019 survey included:

The next two questions ask about your knowledge of the Vermont Health Information Exchange. The Vermont Health Information Exchange may electronically collect information about the health care you receive. You can choose whether your health care providers can see this information.

1. Have any of your health care or other service providers asked you whether you want your health care providers to be able to see your health information in the Vermont Health Information Exchange?
    1. ○ Yes
    2. ○ No (skip to Q___)
    3. ○ I don’t know

2. Did you get enough information to feel comfortable deciding whether your health care providers will be able to see your health information in the Vermont Health Information Exchange?
    4. ○ Yes
    5. ○ No
    6. ○ I don’t know

Draft Evaluation Plan

This evaluation plan is still in the development phase. While some data and methods are anticipated and spelled out below, the evaluation plan will continue to evolve as the educational campaign and consent mechanisms further develop.

Currently planned evaluation methods include monitoring activity leading up to the policy change date on March 1, 2020. For example, the Consent Policy Implementation Team will monitor the number of calls to the consent information hotline at VITL and the number of hits to VITL and the State’s online information websites.

The team will also continue to monitor the number of individuals either opting in or out prior to the policy change. This information is currently reported to DVHA monthly and GMCB quarterly. Once the opt-out policy goes into effect on March 1, 2020, the Team will continue to monitor calls to the VITL’s information hotline, hits to information websites, and the number of individuals opting out through any available mechanism. This continual monitoring could provide early indications of awareness or concern about the consent policy.

However, low numbers in any of these markers could mean awareness of but low concern about the opt-out consent policy or low awareness of the VHIE and opt-out consent policy. Therefore, the Consent Policy Implementation Team will also include questions in the 2020 patient experience survey that will continue to assess Vermonters’ awareness, their level of understanding, and the ease with which they can record their decision to opt out. This survey goes out to a wide sample of Vermonters receiving primary care and will provide an additional view into whether Vermonters are aware of and understand their decision to make their health information viewable through the VHIE.

Additional data and methods will need to be developed in the Evaluation Committee, which will begin meeting in November. For example, how should the evaluation assess heath care organizations' understanding of VHIE, the impact of consent, and their role in informing and supporting Vermonters to make consent decisions.? How can the state and VITL more accurately assess gaps in awareness? Other tasks that need to be addressed by the Evaluation Committee include determining evaluation methods to determine if Vermonters perceive mechanisms are in place to "easily opt out" and finalizing the 2020 patient experience questions to reflect an opt-out environment compared to the current opt-in environment. As noted above, finalizing the educational campaign methods and opt-out mechanisms may provide answers to these outstanding questions and issues. Updates to the evaluation plan will be made as the plan evolves.

HEALTH INFORMATION TECHNOLOGY PLAN ALIGNMENT

Act 187, an act relating to health information technology and health information exchange, required DVHA to submit a Health Information Technology Plan to the Green Mountain Care Board on or before November 1, 2018. The submitted plan, entitled Health Information Exchange Strategic Plan, was subsequently approved by the GMCB. The Health Information Technology Plan is subject to annual updates and a comprehensive update every five years. The approved Plan includes the development of a technical roadmap that will illustrate a path forward for exchange across the HIE network, including consent management. This technical roadmap has been developed and will be a significant part of the first annual update to the Plan which will be submitted on or before November 1, 2019.

Act 53 sustains the requirement to submit an annual update and adds a requirement that the updated plan "shall provide for each patient's electronic health information that is contained in the Vermont Health Information Exchange to be accessible to health care facilities, health care professionals, and public and private payers to the extent permitted under federal law unless the patient has affirmatively elected not to have the patient's electronic health information shared in this manner." The annual update to the Health Information Technology Plan has been developed by DVHA in collaboration with the HIE Steering Committee and includes both the roadmap required by the current approved plan and the provisions called for by Act 53 to provide for the opt-out consent policy. The Act 53-related content in the updated Plan reflects the consent implementation project as reported here. The Plan is consistent with the required

November 1st progress report and anticipates the successful completion of the consent implementation and the final report due on January 15, 2020.

SUMMARY

In the short amount of time since Act 53 was signed into law on June 10, 2019, initial activities completed included establishment of a project team and planning for the successful implementation of the requirements of the Act. Three main workstreams were identified to ensure a successful implementation: stakeholder engagement, supporting mechanisms, and evaluation of the success of the stakeholder engagement. An initial progress report was submitted on August 1st and this second progress report is required to be submitted on or before November 1st, with the final report due January 15th, 2020.

Stakeholder engagement is underway with advocacy organizations interviewed and focus groups initiated. Planning for broader public input is under way. Advocates are being recruited to help deliver the messages that will be developed. Stakeholder engagement will also continue after the implementation date of March 1, 2020, as discussions about consent will continue to occur where individuals meet the health care system. Materials will be defined and developed to support informed decisions by all Vermonters and those materials will be informed by the stakeholder conversations reported in this update.

Mechanisms and operating procedures to support the opt-out consent policy are being developed by VITL to leverage the infrastructure already in place to support the current opt-in policy. The critical need to protect the opt-out status of individuals who have already made the opt-out decision is acknowledged and is being addressed. VITL is also revising its portfolio of policies and procedures related to privacy and security of patient information. For opting out, mechanisms will be added to accommodate fax, telephone, and USPS notifications by individuals to activate an opt-out decision.

A plan to evaluate the success of stakeholder engagement has been drafted and presented to the HIE Steering Committee. The primary and exploratory secondary evaluation questions have been drafted and an evaluation committee is currently being recruited.

The Health Information Technology Plan has been updated as required by Act 187 and includes the provisions specified in Act 53. There are three concurrent planning activities underway, but all the planning work is being coordinated by DVHA and VITL with the HIE Steering Committee.

42 CFR Part 2 and HIPAA are the federal regulations that must always be followed for the appropriate sharing of health information. Act 53's opt-out consent policy is a flip of the current opt-in consent policy but the conversation about consent will be very similar and individuals will still decide whether or not to grant access to their information in the VHIE to their providers.

The next update for the implementation of the consent policy will be a final report of the implementation plan and will be submitted on or before January 15, 2020. Progress on all workstreams and a description of final preparations for the March 1, 2020 implementation will be included in the final report.

APPENDIX I: DETAILED ACT 53 IMPLEMENTATION WORK PLAN

2019 - 2020

The following table identifies the goals, objectives and activities associated with updating the statewide Health Information Technology Plan and stakeholder engagement process to create an implementation strategy for the change to the consent policy. The objectives are presented in terms of the requirements specified in Act 53. Overlaps between objectives are identified. Reporting and tracking progress in this way will ensure that Act 53 is being implemented as written and intended, keeping in mind that the overarching goal is to implement an environment and mechanisms that support informed and meaningful consent for all Vermonters.

Objective and Activity	Start and End Dates	Responsible Party	Status
Goal: Update the Statewide Health IT Plan			
Objective: Overall coordination of Vermont's statewide **Health Information Technology Plan**. The Plan shall be revised annually and updated comprehensively every five years to provide a strategic vision for clinical health information technology. The Plan shall provide for **each patient's electronic health information** that is contained in the Vermont Health Information Exchange **to be accessible** to health care facilities, health care professionals, and public and private payers to the extent permitted under federal lay **unless the patient has affirmatively elected not to have** the patient's electronic health **information shared in this manner**. **Activity**: DVHA and the Health Information Exchange Steering	June 1, 2019 - November 1, 2019	DVHA Steering Committee Lantana	**On schedule** DVHA and Lantana meet weekly to review status and planned activity; the Steering Committee is updated frequently and approves completed milestones. The plan is called the Health Information Exchange Strategic Plan and the initial version was approved by the GMCB on November 19, 2018. The updated Plan includes elements related to the change to the consent policy.

Committee (Steering Committee) coordinate the work of Lantana Consulting Group, Inc in developing the roadmap. (Steering Committee Composition: VITL, OneCare Vermont, Blue Cross Blue Shield of VT, Blueprint for Health, Vermont Care Network, Department of Health, Agency of Digital Services)			
Objective: Submission of the Health Information Technology Plan to the GMCB	June 1, 2019 - November 1, 2019	DVHA	**On schedule**

Objective and Activity	Start and End Dates	Responsible Party	Status
Goal: Stakeholder process to develop an implementation strategy for the consent policy			
Objective: Administer a robust stakeholder process to develop an implementation strategy for the consent policy for the sharing of patient health information through the Vermont Health Information Exchange (VHIE) as revised pursuant to the above requirements. **Activity:** • Begin with stakeholders who advocate for special populations; • Convene focus groups of people who identify as part of special populations; • Convene focus groups to represent Vermonters; • Seek additional expert	June 1, 2019 - March 1, 2020	DVHA; Health Information Exchange Steering Committee	**On schedule** DVHA has met with ten advocacy organizations. Some of these organizations are helping to identify participants and communications to initiate focus group conversations; some program managers from the Blueprint program are helping to create focus group opportunities with Vermonters. Advocate group representatives are willing to have further conversations as needed.

interviews as needed; - Plan when and how to engage providers and practices			
Objective: The implementation strategy shall include substantial opportunities for public input. Current stakeholder engagement with advocacy groups is focused on public input. **Activity:** - Focus groups with people who identify with advocacy groups and with other Vermonters will inform preferred options for further public input; - Media options such as call in radio programs and webinars are under consideration	June 1, 2019 - March 1, 2020 (March 1, 2020 is the consent policy start date; public input will be welcome up to and past this date)	DVHA; Health Information Exchange Steering Committee	**On schedule** DVHA has met with ten advocacy organizations; Plans are under way to engage other Vermonters in focus groups; Planning for broader public input is under way.

Objective and Activity	Start and End Dates	Responsible Party	Status
Goal: Provide Clear Explanations of Key Elements of the Consent Policy			
Objective: Focus on the creation of patient education mechanisms and processes that combine new information on the consent policy with existing patient education obligations, such as disclosure requirements under the Health Insurance Portability and Accountability Act of 1996 (HIPAA) **Activity:** • Define informed consent as a minimum requirement; • Define meaningful consent as an ideal objective; • Develop a communications message that explains Act 53 consent management aligned with current HIPAA disclosure requirements; Develop collateral material in a variety of formats to support the message at the public, practice, provider, and patient level.	June 1, 2019 – March 2020 and beyond	DVHA; HIE Steering Committee; VITL	**On schedule** This activity is being informed by the stakeholder engagement currently underway. Developing the message is a part of planning conversations, including a review of existing collateral that can be updated and continue to take advantage of existing distribution channels.

Objective: Aim to address diverse needs, abilities, and learning styles with respect to information delivery. **Activity***:* • Identify a limited set of populations for separate messages (providers and practices; patients; other); • Identify a set of needs, abilities, and learning styles to inform message and delivery options; • Follow Vermont's state web accessibility standards for all web content (based on Section 508 of the Rehabilitation Act and W3C Web Accessibility Initiative standards)	June 1, 2019 – March 2020 and beyond	DVHA; HIE Steering Committee; VITL	**On Schedule** This activity is being informed by the stakeholder engagement currently underway. Developing the message is a part of planning conversations

Objective: Clearly explain: • the purpose of the VHIE; • the way in which health information is currently collected; • how and with whom health information may be shared using the VHIE; • the purposes for which health information may be shared using the VHIE; • how to opt-out of having health information shared using the VHIE; and • how patients can change their participation status in the future. **Activity:** Develop message material including brief handouts, more detailed descriptions, and presentation materials to address the content requirements identified in this objective.	June 1, 2019 – September 2019	DVHA; HIE Steering Committee;	**On Schedule** In parallel with stakeholder engagement activities, DVHA and VITL are identifying the content and format requirements for this material. This material should be available to meet a broader public engagement following focus group discussions. VITL has announced the effective date of the new consent policy and has provided a link to Act 53 on its website.

Objective: Enable patients to fully understand their rights regarding the sharing of their health information and provide them with ways to find answers to associated questions, including providing contact information for the Office of the Health Advocate. **Activity:** Develop messaging and delivery strategies as described above; ensure that information about the Office of the Health Advocate is included, including contact information.	June 1, 2019 – November 2019	DVHA; HIE Steering Committee; VITL	**On Schedule** In parallel with stakeholder engagement activities, DVHA and VITL are identifying the content and format requirements for this material.

Objective and Activity	Start and End Dates	Responsible Party	Status
Goal: Identify Mechanisms for Opting Out of Sharing Health Information Through the VHIE			

Objective: Identify the mechanisms by which Vermonters will be able to easily opt-out of having their health information shared through the VHIE and a timeline identifying when each mechanism will be available, which shall begin at least one month prior to the March 1, 2020 change to the consent policy. **Activity:** Identify opt-out mechanisms, including paper-based and electronic, for initial implementation to meet the required date; Identify any additional mechanisms for consideration at a later date; include patient, provider, and practice perspectives including practice workflows and EHR considerations.	June 1, 2019 – February 2020	VITL; DVHA; HIE Steering Committee.	**On Schedule** VITL has established a project team for this activity and has a project plan in place to complete the activity. VITL is aware of EHR upgrade and replacement activity with the DAs and is considering that in its project plan.

Objective and Activity	Start and End Dates	Responsible Party	Status
Goal: Develop or Supplement Consent Management Processes at the VHIE; Provide Clear Explanations of Key Elements of the Consent Policy			
Objective: Include plans for developing or supplementing consent management processes at the VHIE to reflect the needs of patients and providers. **Activity:** In addition to the mechanisms activity described above, there are several VHIE policies related to privacy and security that will require updating; develop operational procedures at the VHIE to support consent management processes.	June 1, 2019 – February 2020	VITL; DVHA; HIE Steering Committee.	**On Schedule** The VITL implementation plan for consent management mechanisms includes operational considerations including registering individual optout choices and establishing audit trails for consent management.

Objective: Include multisector communication strategies to inform each Vermonter about the VHIE, the consent policy, and their ability to opt-out of having their health information shared through the VHIE. **Activity:** See previous objectives and activities related to the development of messages and delivery. Identify sectors to benefit from separate communication strategies. Develop variations of message content for each identified sector.	June 1, 2019 – September 2019	DVHA; HIE Steering Committee; VITL	**On Schedule** In parallel with stakeholder engagement activities, DVHA and VITL are identifying the content and format requirements for this material.

Objective and Activity	Start and End Dates	Responsible Party	Status
Goal: Evaluate the Extent to Which Public Outreach Has Been Successful			
Objective: Identify a methodology for evaluating the extent to which the public outreach regarding the VHIE, consent policy, and opt-out processes has been successful. **Activity:** Develop a plan for evaluating the required public outreach associated with Act 53 consent implementation; Identify resources to conduct the evaluation; identify and agree on a methodology for the evaluation; conduct the evaluation; report on the evaluation.	August 1, 2019 – November 2019	DVHA; HIE Steering Committee	**On Schedule** DVHA has developed a plan for evaluation; evaluation questions are being developed; mechanisms for stakeholder involvement are being developed; timeline will accommodate folding evaluation into other planning and reporting activities.

Objective and Activity	Start and End Dates	Responsible Party	Status
Goal: Provide Status Updates to Legislative Committees and the GMCB			
Objective: DVHA shall provide updates on the stakeholder engagement process and the consent policy implementation strategy to the House Committee on Health Care, the Senate Committee on Health and Welfare, the Health Reform Oversight Committee, and the Green Mountain Care Board on or before August 1 and November 1, 2019. **Activity:** Develop an update report for the identified legislative committees and the GMCB for August 1, 2019 and November 1, 2019 submission dates. Present updates based on these reports as invited or as opportunities are available.	June 1, 2019 – August 1, 2019 (first update) November 1, 2019 (second update)	DVHA; HIE Steering Committee	**On Schedule** August 1, 2019 report submitted on time. November 1, 2019 report submitted on time.

Objective: DVHA shall provide a final report on the outcomes of the stakeholder engagement process and the consent policy implementation strategy to the House Committee on Health Care, the Senate Committee on Health and Welfare, and the Green Mountain Care Board on or before January 15, 2020. Develop a final report on outcomes of the stakeholder engagement process and the consent policy implementation strategy;	November 1, 2019 – January 1, 2020	DVHA; HIE Steering Committee	**Not started**
Include description and discussion of the mechanisms that will support the strategy; Include description and discussion of the evaluation methodology for the stakeholder engagement strategy.			

APPENDIX C: POLICY ON PATIENT CONSENT FOR HIE

Policy on Patient Consent for Provider Access to

Protected Health Information on VHIE or through the Blueprint

Approved by Secretary of Agency of Administration and

By Green Mountain Care Board as of March 13, 2014.

Replaces Policy Approved as of October 25, 2012

Section 1 - Introduction

Upon approval by the Vermont Secretary of Administration and the Green Mountain Care Board, this Policy shall be incorporated into and become part of the Vermont statewide Health Information Technology Plan (the "Plan"). Vermont law requires that the Plan include standards and protocols for the implementation of an integrated electronic health information infrastructure for the sharing of electronic health information among health care facilities, health care professionals, public and private payers, and patients.

As required by statute, VITL has been designated in the Plan to operate the exclusive statewide health information exchange network for the State of Vermont and its standards and protocols shall be consistent with those adopted by the Plan. In consultation with health care providers and health care facilities, VITL shall establish criteria for creating and maintaining connectivity to the Vermont Health Information Exchange ("VHIE").

Section 2 - Definitions

(a) "Consent" or "Written Consent" shall mean an individual's act of giving written permission to a Participating Health Care Provider in the Vermont Health Information Exchange ("VHIE") and in the Blueprint Registry maintained under the State of Vermont Blueprint for Health ("Blueprint" and, collectively with VHIE, the "Exchanges") to permit access to the individual's protected health information ("PHI") on the Exchanges to all Participating Health Care Providers involved in the treatment of the individual. Consent shall be evidenced by a signature provided in writing or other legally recognized tangible medium that is retrievable in a perceivable form. Consent may be provided by an individual's legal representative as authorized by law.

(b) "De-identified" shall mean that all identifying information related to an individual as set forth in the HIPAA Privacy and Security Rule are removed from the protected health information.

(c) "Exchanges" shall mean the Vermont Health Information Exchange ("VHIE") and the Blueprint Registry maintained under the State of Vermont Blueprint for Health ("Blueprint").

(d) "Health Care Operations" shall mean activities of Participating Health Care Providers providing treatment to an individual relating to quality assessment and improvement, evaluations relating to the competence of treating providers or necessary administrative and management activities.

(e) A "Legal Representative" under Vermont law may be a legal guardian, a parent of an unemancipated minor or an agent once an advance directive becomes effective.

(f) A "Medical Emergency" is a condition which poses an immediate threat to the health of any individual and which requires immediate medical intervention. The term "Medical Emergency" specifically is intended to include an "Emergency Medical Condition" which is defined as a medical condition manifesting itself by acute symptoms of sufficient severity such that the absence of medical attention could reasonably be expected to result in (1) placing the health of the individual in serious jeopardy or (2) serious impairment to bodily functions or (3) serious dysfunction of any bodily organ or part .

(g) A “Participating Health Care Provider” shall mean a health care provider, including a physician practice and any health care organization, that has contracted with either the Vermont Information Technology Leaders, Inc. (“VITL”) or the State of Vermont Blueprint for Health initiative to make PHI of its patients available electronically on either or both of the Exchanges. The term “Participating Health Care Provider” shall include all the individual providers and authorized staff employed or otherwise legally associated with the entity or organization.

(h) “Protected Health Information” (“PHI”) shall mean “individually identifiable health information” in any form or medium about the past, present or future physical or mental health or condition of an individual as such terms are defined in the HIPAA Privacy and Security Rule.

(i) “Revoke” or “Revocation” of Consent shall mean an individual’s statement of intent to terminate the permission given to a Participating Health Care Provider to access the individual’s Protected Health Information on the Exchanges. Revocation of Consent shall be evidenced by a signature provided in writing or other legally recognized tangible medium that is retrievable in a perceivable form. Revocation of Consent may be provided by an individual’s legal representative as authorized by law.

(j) “Treatment” shall mean the provision, coordination, or management of health care and related services by one or more health care providers.

Section 3 - Policy

(a) Consent for Provider Access

Participating Health Care Providers shall only access Protected Health Information on the Exchanges for individuals who have a current Written Consent for such access on record. The policy does not apply where the PHI is being accessed from the Participating Health Care Provider’s own electronic health record or the PHI is directed to a Participating Health Care Provider from another Participating Health Care Provider in a manner consistent with the federal HIPAA privacy regulations and Vermont law.

(b) Patient Education Materials

Participating Health Care Providers shall direct individuals to educational information developed and made available to them by VITL and the State of Vermont regarding the Exchanges and their use by Participating Health Care Providers and shall refer individuals to VITL and the State of Vermont for additional information. This information shall advise individuals of the ability of Participating Health Care Providers to access their PHI for treatment and of their individual rights under this Policy. It shall advise them of the content of the information on the Exchanges accessible to Participating Health Care Providers. It also shall advise them that their information can be available to Participating Health Care Providers providing treatment in an emergency and that de-identified information may be used for research, quality improvement and public health purposes. Upon request, the individual shall also be provided a Notice of Privacy Practices by the Participating Health Care Providers.

(c) Consent Procedure for Provider Access

Participating Health Care Providers shall enter into a Business Associate Agreement (“BAA”), including, if applicable, a Qualified Service Organization Agreement (“QSOA”), with the Exchange(s) to make the PHI of its patients available to the Exchange(s). Written Consent from patients for access to their PHI on the Exchanges shall have been obtained by a Participating Health Care Provider using a Consent form which includes statements required by this Policy. The Exchanges shall establish a mechanism for Participating Health Care Providers to confirm that an individual has consented to Participating Health Care Providers’ access to the individual’s PHI on that Exchange. It is the obligation of the Participating Health Care Provider that collects a Written Consent from a patient to provide confirmation to the Exchange that the individual has consented to Participating Health Care Providers’ access to the individual’s PHI on that Exchange and to maintain a record of the individual’s Written Consent.

(d) Form of Consent

(1) An individual’s Consent for Participating Health Care Providers’ access to his or her PHI on either or both of the Exchanges (1) shall be dated with the name, address, and birth date of the individual, (2) shall be effective until the Exchange(s) ceases operation or Consent is revoked and (3) shall include statements substantially similar to the following:

(A) I give my consent to Participating Health Care Providers to access and use or disclose my protected health information, including mental health, and substance abuse treatment information, on the Vermont Health Information Exchange, or through the Vermont Blueprint for Health’s Registry (the “Exchanges”) for my treatment, for payment for my treatment and for health care operations consistent with the federal HIPAA privacy regulations and Vermont law.

(B) I have been referred to VITL and the State of Vermont Blueprint for Health for information regarding the Exchanges and am aware that I can request information regarding the privacy practices of any Participating Health Care Provider as described in its Notice of Privacy Practices.

(C) I understand I do not have to give my consent in order to receive treatment from any Participating Health Care Provider.

(D) This consent is subject to my revocation (termination) at any time except to the extent that my protected health information obtained from the Exchanges has already been accessed by Participating Health Care Providers and included in their medical records.

(E) If not previously revoked, or otherwise stated, my consent will terminate automatically when the Exchange stops operating. My consent will remain in effect indefinitely unless I provide written notice of revocation.

(2) Consent may be given by an Individual’s Legal Representative as authorized by law.

(e) Individual Access to PHI on the Exchanges

An individual shall be provided the right of access to his or her PHI available on the Exchanges through a Participating Health Care Provider or through VITL or the State of Vermont Blueprint for Health.

(f) Access by Treating Participating Health Care Providers Only

All Participating Health Care Providers shall have policies and procedures (1) to ensure that PHI from another Participating Health Care Provider is accessed on the Exchanges only when an individual has provided Consent or the PHI is directed to the Participating Health Care Provider from another Participating Health Care Provider and (2) to ensure that only those involved in the diagnosis or treatment of an individual, payment for that treatment or necessary health care operations may access the individual's PHI on the Exchanges. Participating Health Care Providers, VITL and the State of Vermont Blueprint for Health shall comply with all applicable federal and state laws.

(g) Emergency Access to PHI on Exchanges

A Participating Health Care Provider may access the PHI of an individual on the Exchanges without the individual's Consent for use in the treatment of the individual for a Medical Emergency when the Participating Health Care Provider is unable to obtain the individual's Consent due to the individual's Emergency Medical Condition. Participating Health Care Providers accessing PHI for a Medical Emergency must notify the individual or the individual's Legal Representative of such access as soon after such access as is reasonably possible and must obtain Written Consent for further access to PHI of that individual on the Exchange after the Medical Emergency has ended.

(h) Audit of Consents

VITL and the State of Vermont shall periodically audit the Consent records of Participating Health Care Providers in the VHIE or in the Blueprint, respectively. Failure to obtain patient consent, as required by this Policy, shall result in sanctions. VITL and the State of Vermont shall review all instances of emergency access to PHI on the VHIE or the Blueprint, respectively.

(i) Request for Audit Report

An individual may request and receive an Audit Report of access to his or her PHI on the VHIE by contacting VITL's Privacy Officer. VITL shall provide the requested Audit Report as soon as reasonably possible and within 30 calendar days. An individual may request and receive an Audit Report of access to his or her PHI on the Blueprint by contacting the State of Vermont Agency of Human Services' Privacy Officer. The State of Vermont shall provide the requested Audit Report as soon as reasonably possible and within 30 calendar days.

(j) Revocation

An individual who has granted Consent to permit his or her PHI to be accessed on the Exchanges for treatment, for payment for treatment, and Health Care Operations by Participating Health Care Providers shall be entitled to revoke such consent. After receiving an individual's Revocation of Consent, Participating Health Care Providers shall not access the Exchanges to seek the individual's PHI. VITL and the State of Vermont shall each establish a mechanism for Participating Health Care Providers to confirm that an individual has revoked consent for access to the individual's PHI on their respective Exchange. It is the obligation of VITL and the State of Vermont to maintain a record of the individual's Revocation for their respective Exchange.

Section 4 – Substance Abuse Treatment Programs

The regulations set forth in 42 C.F.R. Part 2, governing substance abuse treatment records, require additional protections before PHI from such records may be available to be shared between providers on the Exchanges. Therefore, VITL and the State of Vermont intend to supplement this Policy to accommodate PHI from substance abuse treatment programs upon the completion of necessary due diligence and a final plan for the implementation of a 42 CFR Part 2-compliant HIE and consent architecture that will enable the legal and appropriate exchange of PHI from substance abuse treatment programs

APPENDIX D: PENNSYLVANIA MAPIR COLLABORATIVE APPROVAL LETTER

DEPARTMENT OF HEALTH and HUMAN SERVICES
Centers for Medicare and Medicaid Services
Chicago Regional Office
233 North Michigan Avenue, Suite 600
Chicago, Illinois 60601

CMS
CENTERS FOR MEDICARE & MEDICAID SERVICES

Consortium for Medicaid and Children's Health Operations

June 25, 2018

Leesa M. Allen
Executive Medicaid Director
Pennsylvania Department of Public Welfare
Office of the Secretary
331 Health and Welfare Building
Harrisburg, PA 17120

Dear Ms. Allen:

This letter is in response to the Pennsylvania Department of Public Welfare's request that the Centers for Medicare and Medicaid Services (CMS) review and approve Pennsylvania's Health Information Technology (HIT) Implementation Advance Planning Document Update (IAPD-U) for the Medical Assistance Provider Incentive Repository (MAPIR) system. This submission was received by the HITECH mailbox on May 14, 2018.

The IAPD-U details the implementation of Phase VI of the MAPIR system, which is a stand-alone, web-based application for use in interfacing with Medicaid Management Information Systems (MMIS) in support of the Promoting Interoperability Program. As described in the IAPD-U, DXC Technology (DXC), formally Hewlett Packard Enterprise Services (HPES), will provide development, operations and maintenance of MAPIR enhancements for a multistate collaborative through the HPES MMIS. The 14 states participating in this collaborative are Arkansas, Colorado, Connecticut, Delaware, Florida, Georgia, Indiana, Kansas, Massachusetts, Oregon, Pennsylvania, Rhode Island, Wisconsin, and Vermont.

The multistate collaborative seeks approval of $6,501,762 (Federal Share $5,851,586) for activities described in the MAPIR HIT IAPD-U for an implementation cycle from October 1, 2018 through September 30, 2020. Each state in the collaborative is responsible for outlining the MAPIR core cost of $464,412 ($417,971 Federal Share) in their state specific HIT IAPD submitted to CMS. The Commonwealth of Pennsylvania, the lead State of the collaborative, also seeks $336,868 (Federal Share $303,182) for integration of the MAPIR core at the State level.

CMS approves the MAPIR HIT IAPD-U, effective October 1, 2018, in accordance with 42 CFR § 495, Subpart D. Federal funding associated with changes to the MMIS is approved in accordance with Section 1903(a)(3) of the Social Security Act and regulations found at 42 CFR § 433, Subpart C, 45 CFR § 95, Subpart F, and Part 11 of the State Medicaid Manual. CMS is approving total expenditures for this IAPD-U in an amount not to exceed $6,838,629 ($6,154,766 Federal Share) at 90 percent Federal Financial Participation (FFP). The approved MMIS funding will expire on September 30, 2020. These authorized funds cannot be increased or reallocated between Federal Fiscal Years, even within the period of this letter's approval, without submission and approval of an amendment to the IAPD-U.

The State must provide adequate support for all costs claimed and provide detailed records and proper audit trails. Additionally, only actually incurred costs are reimbursable. Onsite reviews will be conducted at the discretion of CMS to determine if the objectives for which FFP was approved are being accomplished and to verify that the program is being administered efficiently and effectively as described in 42 CFR § 495, Subpart D.

The State is reminded that any change in an approved IAPD regarding scope, cost, or schedule, requires CMS' prior approval of an IAPD-U, in accordance with 42 CFR § 495, Subpart D. Additionally, any Requests for Proposals (RFP) and/or contracts related to the IAPD must be approved by CMS prior to release of a RFP and prior to the execution of a contract.

Please refer to Appendix B for additional information about the State's responsibilities concerning activities described in the HIT IAPD. In accordance with 42 CFR § 495.342, please submit an IAPD-U no later than 12 months from the date of the approved IAPD. If the State is requesting additional funding, please provide ample time for CMS to conduct a review and issue approval.

CMS appreciates the State's efforts in implementing its Medicaid HIT project and looks forward to its continued success. If you have any questions, please contact the MAPIR HITECH Lead, Robert McCarthy, at (206) 615-2505 or by email at Robert.McCarthy@cms.hhs.gov, or CDR Samuel J. Schaffzin, USPHS at (212) 616-2474 or by email at Samuel.Schaffzin@cms.hhs.gov.

Sincerely,

Jackie Garner

Jackie Garner

Consortium
Administrator

APPENDIX E: VERMONT 2016 AUDIT STRATEGY APPROVAL LETTER

DEPARTMENT OF HEALTH & HUMAN SERVICES
Centers for Medicare & Medicaid Services
7500 Security Boulevard, Mail Stop S2-26-12
Baltimore, Maryland 21244-1850

CMS
CENTERS FOR MEDICARE & MEDICAID SERVICES
CENTER FOR MEDICAID & CHIP SERVICES

July 29, 2019

Cory Gustafson
Commissioner
State of Vermont, Department of Vermont Health Access
289 Hurricane Lane, Suite 201
Williston, VT 05495

Dear Mr. Gustafson:

Thank you for your correspondence dated June 4 2019, requesting that the Centers for Medicare & Medicaid Services (CMS) approve Vermont's State Health Care Authority comprehensive audit strategy for the Medicaid Promoting Interoperability Program. The audit strategy identifies the method that the State will employ both pre-payment and post-payment to avoid disbursing improper incentive payments.

CMS completed its review of the audit strategy and approves it effective on the date of this letter, in accordance with Federal Regulations at 42 CFR § 495, subpart D. Vermont may proceed with implementing the audit strategy for Medicaid eligible professionals and Medicaid eligible hospitals participating in the State's Medicaid Promoting Interoperability Program. Please refer to Enclosure A for recommendations that will assist with audit activities and help further improve the audit strategy.

CMS appreciates Vermont's continued commitment and dedication to administering this important program that will lead to improved healthcare for populations served by the Medicaid Program.

We look forward to working with you as you proceed through the implementation process of your Medicaid Health Information Technology (HIT) project. If you have any questions or concerns regarding this information, please feel free to contact your Medicaid Enterprise Systems State Officer, Timothy Pappalardo, at 617-565-1324, or by email at Timothy.Pappalardo@cms.hhs.gov.

Sincerely,

Dzung Hoang
Director
Division of HITECH & MMIS

APPENDIX F: LIST OF LINKS FOR REFERENCED MATERIAL

2017 HIT Evaluation: https://legislature.vermont.gov/assets/Legislative-Reports/VT-Evaluation-of-HIT-Activities-FinalReport-Secretary-Signature.pdf

2019 HIE Roadmap: https://healthdata.vermont.gov/content/vermont-health-information-exchange-program

2019 HIE Strategic Plan: https://healthdata.vermont.gov/content/vermont-health-information-exchange-program

ACT 53: https://healthdata.vermont.gov/Vermont-Patient-Consent

VT PIP/EHRIP Website: https://healthdata.vermont.gov/ehrip

GMCB Reports (on act 53/consent): https://healthdata.vermont.gov/Vermont-Patient-Consent

HITECH IAPD: https://healthdata.vermont.gov/content/vermont-health-information-exchange-program

S282: https://legislature.vermont.gov/bill/status/2018/S.282

SIM Grant: http://healthcareinnovation.vermont.gov/tags/hdi-status-reports

Vermont All Payer ACO Model: http://gmcboard.vermont.gov/payment-reform/APM

APPENDIX G: TABLE OF TABLES