

**VT Health Care Innovation Project**  
**Health Care Workforce Work Group Meeting Agenda**  
**Wednesday, February 22th, 2017; 3:00-5:00pm**  
**WSOC Oak Conference Room, 280 State Drive, Waterbury, VT**  
**Call-in Number: 1-877-273-4202; Conference ID: 456-178-751**

Item #	Time Frame	Topic	Presenter	Decision Needed? (Y/N)	Relevant Attachments
1	3:00-3:05	Welcome and Introductions	Mary Val Palumbo	N	<ul style="list-style-type: none"> <li>• <a href="#"><u>Attachment 1: 2-22-17 Meeting Agenda</u></a></li> </ul>
2	3:05-3:10	Approval of Meeting Minutes	Mary Val Palumbo	Y	<ul style="list-style-type: none"> <li>• <a href="#"><u>Attachment 2: 12-7-16 Meeting Minutes</u></a></li> </ul>
3	3:10-3:20	Updates: <ul style="list-style-type: none"> <li>- Work group status update (role of work group in future, co-chair update)</li> <li>- Administration update</li> <li>- Others</li> </ul>	Mary Val Palumbo Mary Kate Mohlman, AHS Georgia Maheras Group Discussion	N	
4	3:20-4:20	Presentation and Discussion: All Payer Model, ACO-based health reforms	Pat Jones, GMCB Melissa Miles, GMCB Michael Costa, DVHA Group Discussion	N	<ul style="list-style-type: none"> <li>• <a href="#"><u>Attachment 4: Implementing the All Payer Model</u></a></li> </ul>
5	4:20-4:55	Discussion: Microsimulation demand modeling	Group Discussion		<ul style="list-style-type: none"> <li>• <a href="#"><u>Attachment 5: Workforce Demand Modeling Presentation (originally presented to group on 12/7/16, included here for reference)</u></a></li> </ul>
6	4:55-5:00	Public Comment/Wrap Up/Next Steps		N	

Attachment 2  
12-07-16 WF Meeting Minutes

## **Vermont Health Care Innovation Project Workforce Work Group Meeting Minutes**

### **Pending Work Group Approval**

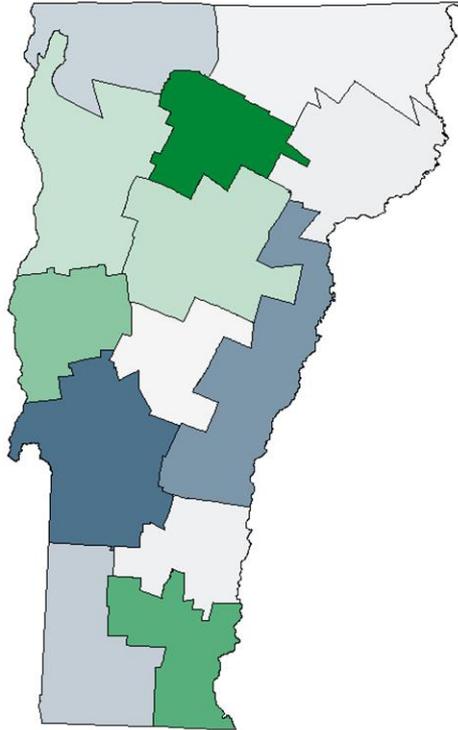
**Date of meeting:** Wednesday, December 7, 2016, 3:00-5:00pm, Oak Conference Room, Waterbury State Office Complex

Agenda Item	Discussion	Next Steps
<b>1. Welcome and Introductions</b>	Mary Val Palumbo called the meeting to order at 3:00pm. A roll call attendance was taken and a quorum was not present.	
<b>2. Meeting Minutes</b>	This agenda item was delayed due to lack of quorum.	
<b>3. Project Updates</b>	<p><i>Sustainability Plan:</i> This group was created by Executive Order. Though other SIM Work Groups wrap up this month, this group will continue until the Governor Elect makes a different decision.</p> <p><i>Co-Chair Update:</i> Robin Lunge was appointed to the Green Mountain Care Board so can no longer serve as co-chair representing the Administration. The Governor-Elect appointed a new Secretary of Administration yesterday, and will likely select a new representative for this group in the coming weeks.</p>	
<b>4. Presentation and Discussion: Draft Health Care Workforce Demand Modeling Report</b>	<p>Terry West, Will Iacobucci, and Tim Dall of IHSMarkit presented draft study findings and modeling results from the Workforce Microsimulation Demand Model (Attachment 3).</p> <ul style="list-style-type: none"> <li>• This project has been ongoing for approximately 7 months. The goal is to quantify current and future demand for health professions in Vermont through 2030.</li> </ul> <p>Discussion:</p> <ul style="list-style-type: none"> <li>• Paul Bengtson noted that finding providers and professionals to fill open positions is a challenge, especially in fields like primary care. Mary Val suggested we would discuss this later in the meeting.</li> <li>• Mary Val noted a projection of 22% growth in hospital nursing, but later noted a lower demand in inpatient and ED nursing (slide 9). She noted that she and other researchers had previously expected a reduction in need for inpatient nursing following the implementation of the ACA. Terry replied that the aging population is resulting in higher intensity services for those admitted to the hospital, which requires higher nursing staff levels. He also expected a higher and more rapid shift from inpatient to community settings, but that this has not materialized; this might be due in part to preliminary results from new care models, or evaluations focused</li> </ul>	

Agenda Item	Discussion	Next Steps
	<p>on financial results and care quality rather than workforce. Tim added that some of this might be an accounting issue in terms of how patient care is counted; a person who goes to the hospital for 23.5 hours uses the same amount of nursing care as a patient who goes to the hospital for 24 days, but they are counted differently.</p> <ul style="list-style-type: none"> <li>• Rick Barnett asked about slides 14 and 15 – are naturopaths, physical therapists, occupational therapists included on the health professions list? Terry commented that the professions chosen were selected in part because there is more robust data to allow for analysis and modeling. There is not enough data about naturopaths, for example, to do modeling, but it is identified in the report as a profession to watch.</li> <li>• Monica White agreed that Vermont has an aging population, and asked about the increase of 69% modeled for nursing home RNs. She noted that Vermont has succeeded in reducing nursing home utilization in favor of home- and community-based care over the past few years. Tim clarified that the oldest population bracket (&gt;75) is growing rapidly, but it is possible that the estimate for nursing home and residential care are a bit too high and home health is a bit too low. Tim noted that inpatient is where most nurses are. Georgia noted that IHS is still waiting on the VHCURES dataset, and invited Monica to share additional non-claims data from DAIL if it could inform this calculation. Tim noted that IHS is currently working with HRSA to strengthen the long-term care component of these projections in its model. Monica will follow-up offline.</li> <li>• David Adams asked about the 2% predicted growth in need for dental care. Terry commented that this is consistent with overall population growth. David noted that supply is currently a constraint.</li> <li>• David also asked how Vermont might vary from national datasets because Vermont might be a unique environment. Georgia commented that when this project went out to bid, we considered whether we wanted a custom Vermont model (expensive, incomplete) or a model that adapts a national model with Vermont-specific data sources. We looked at population trends and other models that were Vermont specific (including from Department of Labor) to make sure this was responsive to Vermont’s context. Also, this is a model and will never be perfect. This is another input for work group members and policymakers to use to support work on health care workforce supply.</li> <li>• Mary Val asked how IHS worked with supply data from Vermont’s licensed health professions. Does this incorporate aging professionals? IHS did look at some of this data, but it is incomplete. Tim added, with respect to dentists, that we are modeling demand with respect to need, which for some services (dental, psych) is greater than need for reasons that include price/cost/coverage – increasing the number of dentists doesn’t solve this financial access barrier.</li> <li>• Rick asked a question about Slide 36. Will noted that 2015 numbers are assuming that these care delivery interventions are already phased in as a “status quo”. Tim added that the demographics of people who use mental health services are very different than people who use cardiology or other specialties. Rick noted that many mental health services are delivered by licensed counselors, master’s and doctoral level psychologists, and many others – it is a complex mix of professionals.</li> <li>• Monica noted that many Vermonters are seen by providers in New Hampshire (Dartmouth-Hitchcock) or other states. Terry noted that this will be adjusted once IHS has VHCURES data.</li> </ul>	

Agenda Item	Discussion	Next Steps
	<ul style="list-style-type: none"> <li>• Monica asked about avoidable ED visits. Falls prevention, seniors nutrition, and other initiatives that might be outside the scope of usual modeling will be important for reducing ED visits in the future – how can they be incorporated into this model? Terry agreed that this is a challenge; IHS focused on avoidable ED visits based on Lewin Group algorithm.</li> <li>• David asked how this model responds to evolving care models that might not be explicit, or through emerging technologies. Terry replied that this can be modeled as scenarios if there is data, but they can't always be modeled. Georgia added that it could be possible to do updates to respond to scenarios like this in the future when there is more data (e.g. slide 37).</li> <li>• Slide 39 – Mat Barewicz asked whether these numbers can be added to get a total change across all professions/care settings. Will noted that shifting utilization out of the ED would not necessarily reduce overall workforce needs, but would require additional ambulatory care services to offset (though this is a much less expensive setting). Mary Val asked about emerging occupations within this slide; Terry added that IHS is going to look at health navigators in the coming weeks.</li> <li>• Slide 28 – Stephanie Pagliuca asked whether dental pain is reflected here. Will and Terry will check and let us know.</li> <li>• David asked how scope of practice informs modeling. Terry commented that IHS tracks these developments and updates the model annually to reflect these changes, though they may take a few years to show in modeling. Georgia noted that the State talked with IHS about the new dental therapist law passed last year.</li> <li>• Mary Val asked how aging workforce and educational pipeline fit into this modeling. Terry commented that those are supply questions and are recommended areas for future research.</li> <li>• Paul Bengtson commented that there are obvious trends in this data, and asked how the state could go about developing an action plan to address these issues. Mary Val agreed and noted that Paul's region deals with serious shortages as a result of maldistribution within the state. David agreed, noting that Chittenden County may not need another dentist. Georgia commented that VHCURES data will help look at this.</li> </ul> <p>Next Steps: This contract has been extended so that IHSMarkit can use VHCURES data. Modeling should be done by March, but we can expect a new set of information in January or early February. The State has received a draft report from IHSMarkit to which a great deal of detail will be added. If members wish to send additional data, please do so within the next month. Please submit additional questions to Amy Coonradt (<a href="mailto:amy.coonradt@vermont.gov">amy.coonradt@vermont.gov</a>) by the end of December.</p>	
<b>5. Public Comment, Wrap-Up, Next Steps, Future Agenda Topics</b>	<p>There was no public comment.</p> <p><b>Next Meeting:</b> TBD – February 2017.</p>	<p><b>February meeting to be scheduled</b></p>

Attachment 4  
Implementing the All Payer Model



# ***All-Payer Accountable Care Organization Model Update***

***Pat Jones, Health Care Project Director  
Melissa Miles, Health Policy Project Director***

***Health Care Work Force Work Group  
February 22, 2017***

# Context: Vermont's Significant Payment & Delivery System Reform Efforts

**(1) The Blueprint for Health** – Vermont's advanced primary care program, an integrated model of patient-centered medical homes and community health teams

- Initiated in 2008 in pilot health service areas (HSAs)
- Statewide implementation in all 14 HSAs in 2012
- Part of the Center for Medicare and Medicaid Innovation's Multi-Payer Advanced Primary Care Practice demonstration
- Quality results from claims and clinical data regularly reported to each HSA and practice, and selected quality measures impact payment levels

# Significant Payment & Delivery System Reform Efforts (cont'd)

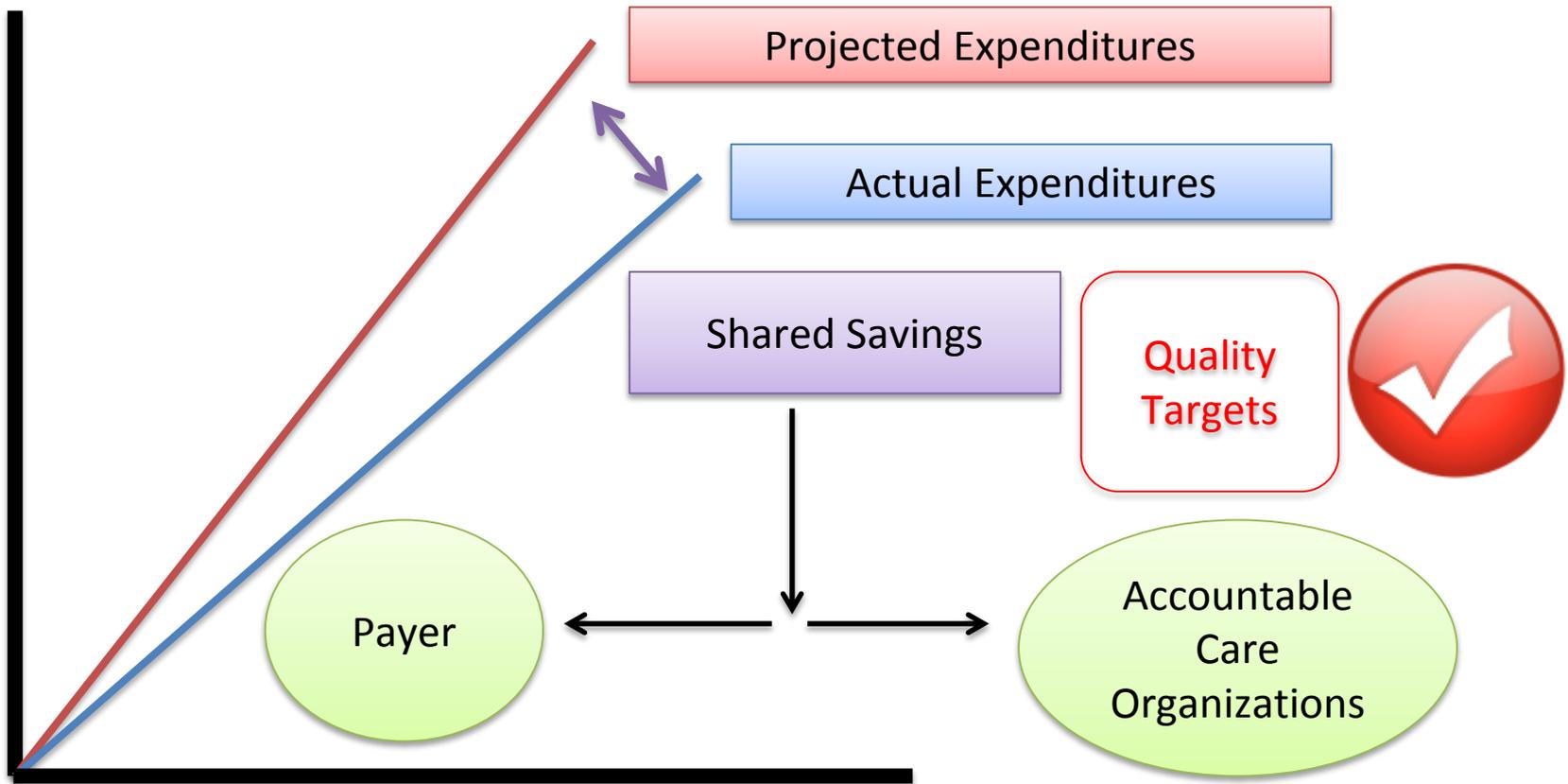
## (2) Commercial and Medicaid ACO Shared Savings Programs

- Built on Medicare Shared Savings Program; supported by SIM Testing Grant
- Initiated in 2014 by Medicaid, Blue Cross Blue Shield of Vermont, and three Accountable Care Organizations (ACOs) in Vermont

# What are Accountable Care Organizations and Shared Savings Programs?

- Accountable Care Organizations (ACOs) are composed of and led by health care providers who have agreed to work together and be accountable for the cost and quality of care for a defined population
- Shared Savings Programs (SSPs), precursors to the All-Payer Model, are payment reform initiatives developed by health care payers. SSPs are offered to providers (e.g., ACOs) who agree to participate with the payers to:
  - Promote accountability for a defined population
  - Coordinate care
  - Encourage investment in infrastructure and care processes
  - Share a percentage of savings realized as a result of their efforts
- Participation in ACOs and SSPs is voluntary

# Shared Savings Calculated Annually



# Significant Payment & Delivery System Reform Efforts (cont'd)

## (3) All-Payer ACO Model

- In October 2016, Vermont signed Agreement with CMS to pursue All-Payer ACO Model; Agreement allows Medicare's participation
- Model would enable the three main payers of health care in Vermont – Medicaid, Medicare, and commercial insurance – to pay ACO differently than through fee-for-service reimbursement.
- Quality framework includes goals for improving the health of Vermonters

# All-Payer ACO Model: What Is It?

- Enables VT's three main payers of health care – Medicaid, Medicare, and commercial insurance – to pay an ACO differently than through fee-for-service reimbursement. The Agreement requires alignment across payer types.
- Opportunity to improve health care delivery to Vermonters, changing emphasis from seeing patients more routinely for episodic illness to providing longitudinal and preventive care. Predictable revenue stream supports providers in initiating additional delivery system reforms that improve quality and reduce costs.

# What does health care look like with Fee-for-Service Payment vs. Value-Based Capitation-Style Payment?

## Fee-for-Service

- Each medical service generates a fee
  - Could lead to duplicative services
- Services that promote health may not be covered
  - Phone consultations, time spent coordinating care

## Value-Based Capitation-Style Payment

- Providers receive a monthly amount to cover health care services for their patients
- Providing services that promote health improves quality and increases system efficiency

# All-Payer ACO Model Agreement: Financial Targets

Moves from volume-driven fee-for-service payment to value-based, pre-paid model for ACOs, with targets for per-person financial trends:

- ✓ All-Payer Cost Growth Target: No more than 3.5% per year
- ✓ Medicare Cost Growth Target: At least 0.1-0.2% below national Medicare growth projections

# All-Payer ACO Model Agreement: Scale Targets

	Performance Year 1 (2018)	Performance Year 2 (2019)	Performance Year 3 (2020)	Performance Year 4 (2021)	Performance Year 5 (2022)
All-Payer Scale Target	36%	50%	58%	62%	70%
Medicare Scale Target	60%	75%	79%	83%	90%

**Note:** The Agreement requires that Medicaid Scale is no more than 15% less than Medicare Scale

# All-Payer ACO Model Agreement: Overarching Population Health Goals

3 important goals to improve the health of Vermonters:

**#1: Improving access to primary care**

**#2: Reducing deaths from suicide and drug overdose**

**#3: Reducing prevalence and morbidity of chronic disease (COPD, Diabetes, Hypertension)**

Vermont's priorities helped inform these goals  
(e.g., State Health Improvement Plan)

# All-Payer ACO Model Quality Framework: Focus on Collaborative Health Improvement

- Framework includes 20 carefully selected measures to support improvement on important population health goals
- Builds on measurement and health care initiatives already underway in Vermont
- Results come from consumer surveys, medical records, claims, hospital discharge data, health department information
- Measurement occurs at statewide or ACO level, not at practice or provider level
- No financial penalty for not meeting targets
- ACO will develop related quality program with provider input
- Encourages health, public health, community service providers to work together to improve quality and integration of care

# Population Health Goal #1

## Improving Access to Primary Care

**Population  
Health  
Outcomes**

**Health Care  
Delivery System  
Quality Targets**

**Process Milestones**

- Increase % of VT Adults Reporting that they have a Personal Doctor or Health Care Provider

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- Increase % of VT Medicare Beneficiaries Reporting Getting Timely Care, Appointments and Information

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- Increase % of VT Medicaid Adolescents with Well-Care Visits
  - Increase % of VT Medicaid Beneficiaries Aligned with a VT ACO

# Population Health Goal #2

## Reducing Deaths from Suicide and Drug Overdose

**Population  
Health  
Outcomes**

**Health Care  
Delivery System  
Quality Targets**

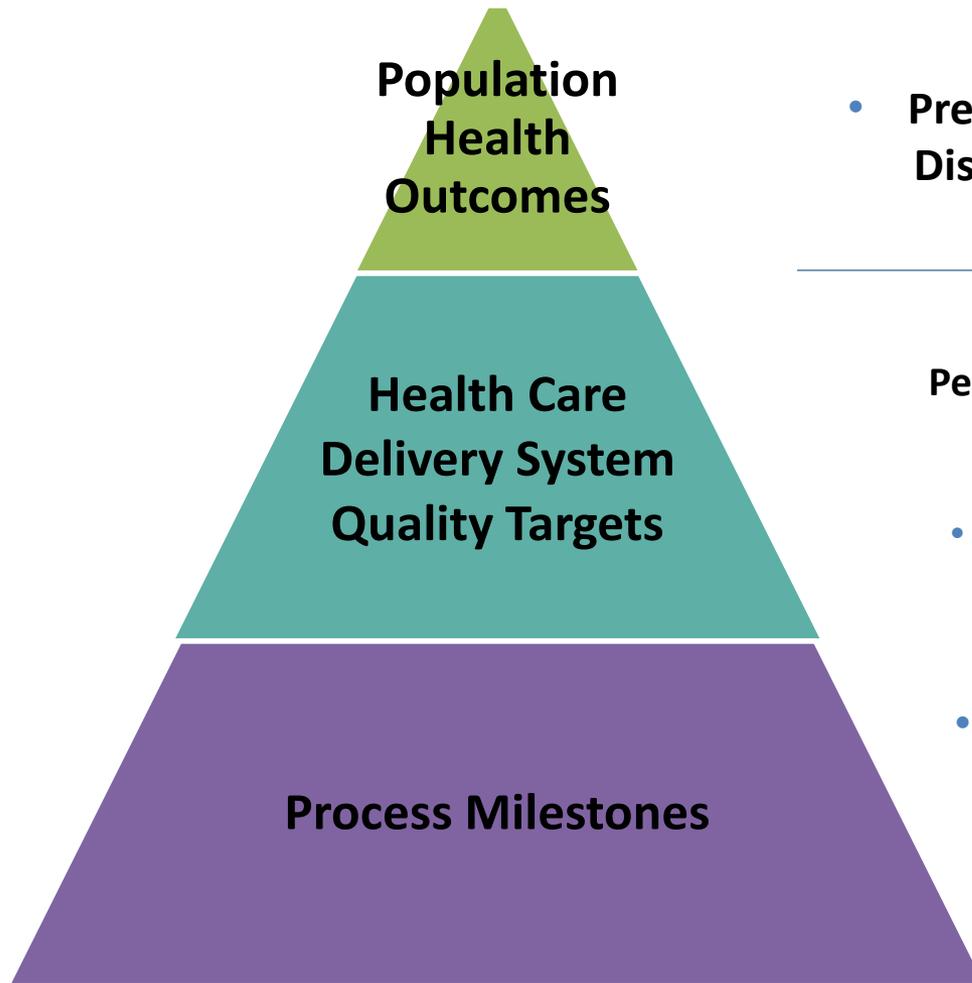
**Process Milestones**

- **Reduce Deaths from Drug Overdose**
  - **Reduce Deaths from Suicide**

- 
- **Increase Initiation and Engagement of Alcohol and Other Drug Dependence Treatment** (*2 measures*)
  - **Improve Follow-Up After Discharge from ED for MH and SA Treatment** (*2 measures*)
    - **Reduce Rate of Growth of ED Visits for MH/SA Conditions**
- 
- **Increase Use of VT's Rx Monitoring Program**
    - **Increase # of VT Residents Receiving Medication-Assisted Treatment for Opioid Dependence**
  - **Increase Screening for Clinical Depression and Follow-Up Plan**

# Population Health Goal #3

## Reducing Prevalence and Morbidity of Chronic Disease



- **Prevalence of Chronic Obstructive Pulmonary Disease, Diabetes and Hypertension Will Not Increase by More Than 1% (*3 measures*)**

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**For VT Medicare Beneficiaries, Improve Performance on Composite Measure that Includes:**

- **Diabetes Hemoglobin A1c Poor Control**
  - **Controlling High Blood Pressure**
- **All-Cause Unplanned Admissions for Patients with Multiple Chronic Conditions**

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- **Improve Rate of Tobacco Use Assessment and Cessation Intervention**
    - **Improve Rate of Medication Management for People with Asthma**

# Implementation is a Journey



# All-Payer ACO Model Agreement: First Step in a Multi-Step Process

Agreement signed in October 2016 is the first of 3 steps in creating an All-Payer ACO Model:

- **Step 1:** Agreement between CMS and VT provides an opportunity for private-sector, provider-led reform in VT
- **Step 2:** ACOs and payers (Medicaid, Medicare, Commercial) work together to develop ACO-level agreements
- **Step 3:** ACOs and providers that want to participate work together to develop provider-level agreements

# What Does All-Payer ACO Model Implementation Look Like?

- ACOs and Payers (including Medicaid) are responsible for ACO Development and Implementation:
  - Establishing ACO Initiatives through ACO/Payer agreements (including financial incentives and linkage to ACO quality)
  - Developing analytic and reporting capacity
  - Implementing payment mechanisms
- ACOs and Providers are responsible for Delivery System Implementation:
  - Establishing ACO/provider agreements
  - Developing programs to improve care coordination and quality of care
  - Meeting scale targets

# All-Payer ACO Model Implementation (cont'd)

- AHS is responsible for developing, offering, and implementing a Medicaid ACO Program
- GMCB is responsible for Regulatory Implementation:
  - Certifying ACOs (includes rulemaking)
  - Reviewing ACO budgets
  - Reviewing and advising on Medicaid ACO rates
  - Setting Commercial and Medicare rates for ACOs
  - Reporting on progress to CMS
  - Tracking financial benchmarks, scale targets and quality targets
  - Implementing changes to other GMCB processes to create an integrated regulatory approach (e.g., hospital budgets; health insurance premium rate review)

# Implications for Health Care Workforce

- This is voluntary, provider-led reform. ACOs are provider organizations; providers participate in governing body, clinical/operational committees.
- ACOs are investing in analytics and care coordination resources to support providers.
- Improving access to primary care is one of three overarching population health goals; strengthening primary care is a priority.
- Predictable and flexible revenue stream can support innovation and integration of care, and allow for investments in community programs that address social determinants of health.

# Implications for Health Care Workforce (cont'd)

- Opportunity to advocate for Medicare coverage of services or provider types not currently covered (e.g., telemedicine, post-discharge home visits, easier access to skilled nursing facilities, licensed alcohol and drug counselors).
- Maintains Medicare participation in proven Vermont programs that support providers in delivering comprehensive care: Blueprint for Health, SASH.
- Creates path to maximize quality performance and reimbursement under new Medicare payment models (MACRA/MIPS).

# Discussion

Attachment 5  
Workforce Demand Modeling Presentation

# DRAFT STUDY FINDINGS AND MODELING RESULTS

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Presentation

Prepared for: **Governor's Health Care Work Force Work Group**

## Vermont's Health Workforce: Demand Modeling

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07 December, 2016

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## Meeting Agenda

- Vermont health workforce study goals and objectives
- Key study findings and implications
- Overview of microsimulation demand modeling methods
- Vermont population and service demand projections
- Vermont health workforce demand projections
  - Physician FTE demand projections
  - Registered nurse, advanced practice nurse and physician assistant demand projections
  - Other cross-occupation demand projections
- Scenarios modeling select components of a high-performing Vermont healthcare system
- Project next steps

## Study Goals and Objectives

- Model and analyze demand for Vermont's health workforce to inform State and local policy and planning
- Quantify current and future demand for health professions through 2030 statewide and by HSA and care setting under alternative scenarios reflecting:
  - Population characteristics and prevalence of disease/health risk factors
  - Changing healthcare market factors (e.g., greater integration of care delivery, emerging care models) and other trends
  - System redesign and changes in care delivery of interest to Vermont stakeholders (e.g., team-based care, evidence-based chronic disease management)

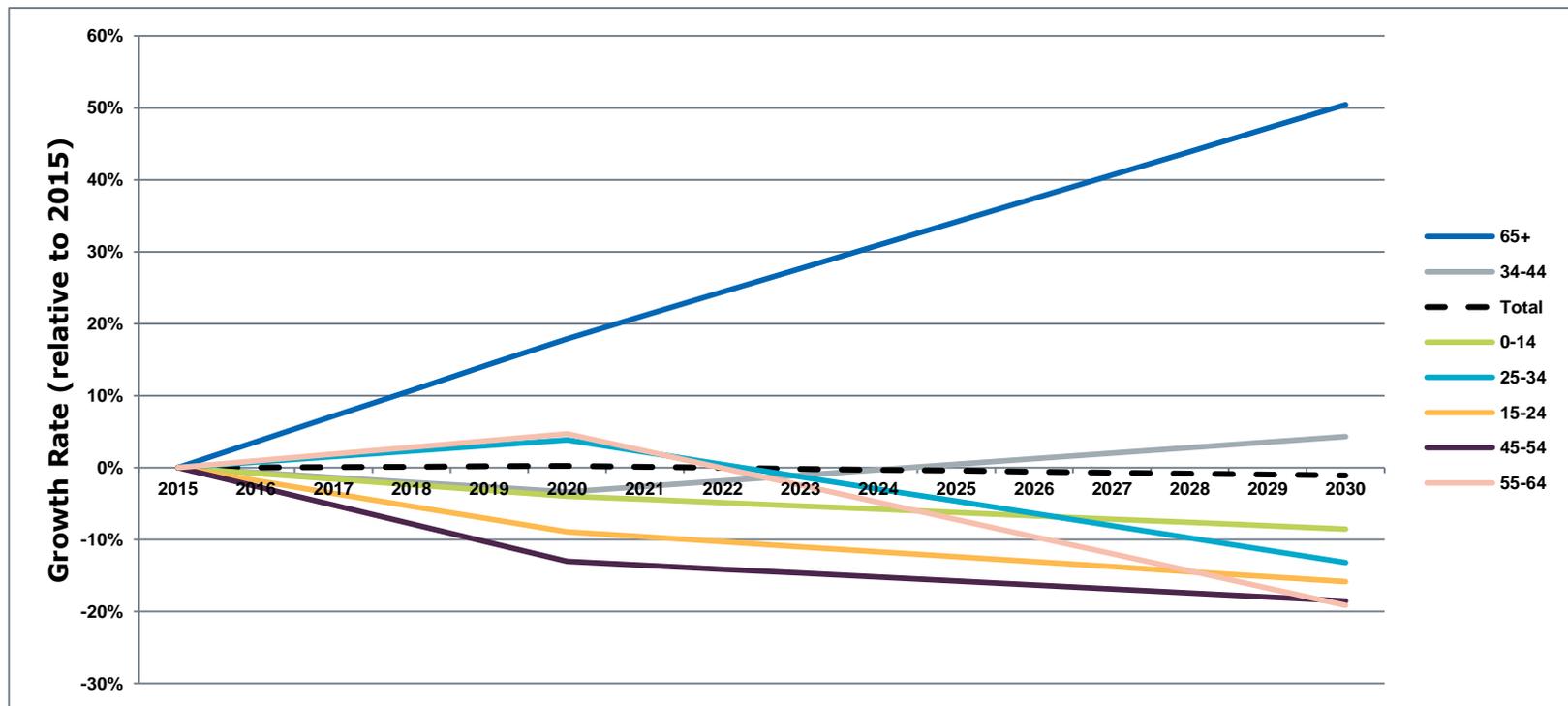
# Summary of Key Demand Modeling Findings and Implications

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## Summary of Health Workforce Study Findings

### Population aging is the primary driver of projected Vermont healthcare service and workforce demand growth

- State population projected to decline -0.9% by 2030, but grow 50% in the population age sixty-five and older-driving demand for care



## Summary of Health Workforce Study Findings

- **Despite overall population declines physician demand will grow**
  - Under current care delivery patterns demand is projected to grow by 187 FTEs (13%) by 2030, due largely to population aging

Physician Specialty Category	2015	2020	2025	2030	Growth, 2015-2030	% Growth, 2015-2030
<b>Primary Care</b>	623	646	665	684	61	10%
<b>Medical Specialties</b>	215	232	248	263	48	22%
<b>Surgical Specialties</b>	233	249	262	274	41	18%
<b>Other</b>	375	392	402	412	37	10%
<b>Vermont Total</b>	<b>1,446</b>	<b>1,518</b>	<b>1,576</b>	<b>1,633</b>	<b>187</b>	<b>13%</b>

## Summary of Health Workforce Study Findings

- **By 2030 statewide demand for RNs will grow by about 1,426 FTEs (22%)**
  - Highest growth rates in nursing homes and residential care (69%); highest absolute growth in hospitals (784 FTEs) and nursing homes (267 FTEs)

Care Setting	2015	2020	2025	2030	Growth 2015-2030	% Growth 2015-2030
<b>Office</b>	476	501	518	535	59	12%
<b>Outpatient</b>	228	240	246	252	24	11%
<b>Emergency</b>	540	547	550	553	13	2%
<b>Inpatient</b>	3,614	3,862	4,131	4,398	784	22%
<b>Home Health</b>	534	595	675	755	221	41%
<b>Nursing Home</b>	385	425	539	652	267	69%
<b>Residential Care</b>	119	131	166	201	82	69%
<b>School</b>	158	150	146	141	-17	-11%
<b>All Other</b>	407	408	404	400	-7	-2%
<b>Vermont Total</b>	<b>6,461</b>	<b>6,859</b>	<b>7,374</b>	<b>7,887</b>	<b>1,426</b>	<b>22%</b>

## Summary of Health Workforce Study Findings

- Demand for many other Vermont health professions modeled also will grow faster than overall projected population growth

Profession	2015	2020	2025	2030	Growth, 2015-2030	% Growth, 2015-2030
<b>Diagnostic Services</b>						
Medical sonographers	129	137	145	153	24	19%
Medical & clinical lab technicians	355	377	400	422	67	19%
Medical & clinical lab technologists	358	380	403	426	68	19%
Nuclear medicine technologists	23	25	28	30	7	30%
Radiologic Technologists	84	92	100	107	23	27%
<b>Direct Care Services</b>						
Home health aides	1,549	1,728	1,958	2,187	638	41%
Nurse aides	2,710	2,943	3,468	3,992	1,282	47%
<b>Pharmacy Services</b>						
Pharmacists	428	450	465	479	51	12%
Pharmacy Technicians	530	559	578	598	68	13%
Pharmacy Aides	55	59	61	63	8	15%
<b>Vision Services</b>						
Optometrists	98	99	99	98	0	0%
Opticians	153	155	154	154	1	1%
<b>Other Professions</b>						
Dentists	323	329	330	330	7	2%
Dietitians	146	153	163	173	27	18%
Podiatrists	20	22	24	27	7	35%

# Modeling Components of a High Performing Vermont Healthcare System

- Scenarios model future workforce demand implications of changing care use and delivery patterns, including effects of:
  - **Greater use of integrated care delivery models**
    - Impacts include increased demand for primary care physicians and surgical specialties and decreased demand for medical and other specialties
  - **Expanded access to mental health/substance use services through integrated team-based care**
    - Impacts include increased demand for clinical social workers and care managers in PCMH settings and lower demand for inpatient and ED nurses
  - **Improved care transitions to reduce avoidable ED use**
    - Impacts include much lower demand for ED RNs and much higher demand for primary care physicians and nurses
  - **Improved evidence-based chronic disease management**
    - Impacts include higher demand for PCPs, health coaches

## Implications of Modeling Results and Future Research Directions

- Demand implications for the Vermont health professions of emerging care delivery models and other market factors currently are complex and unclear
  - Speed of adoption and growth among emerging care delivery models and their effects on organization and patterns of care will be important factors as will national and state policy developments
  - Examples of other factors likely to influence future demand for Vermont health professions include:
    - Extent of care migration from institutional to community and home-based settings spurred by new delivery models (e.g., ACOs)
    - Changing health care payment and coverage policies (e.g., ACA repeal??)
    - More effective chronic disease management (e.g., team-based care)
    - Economic developments: last recession (2008-2009) influenced supply and demand by slowing retirements and consumer demand for many services
  - Modification of Vermont waivers in short- to mid-term not likely

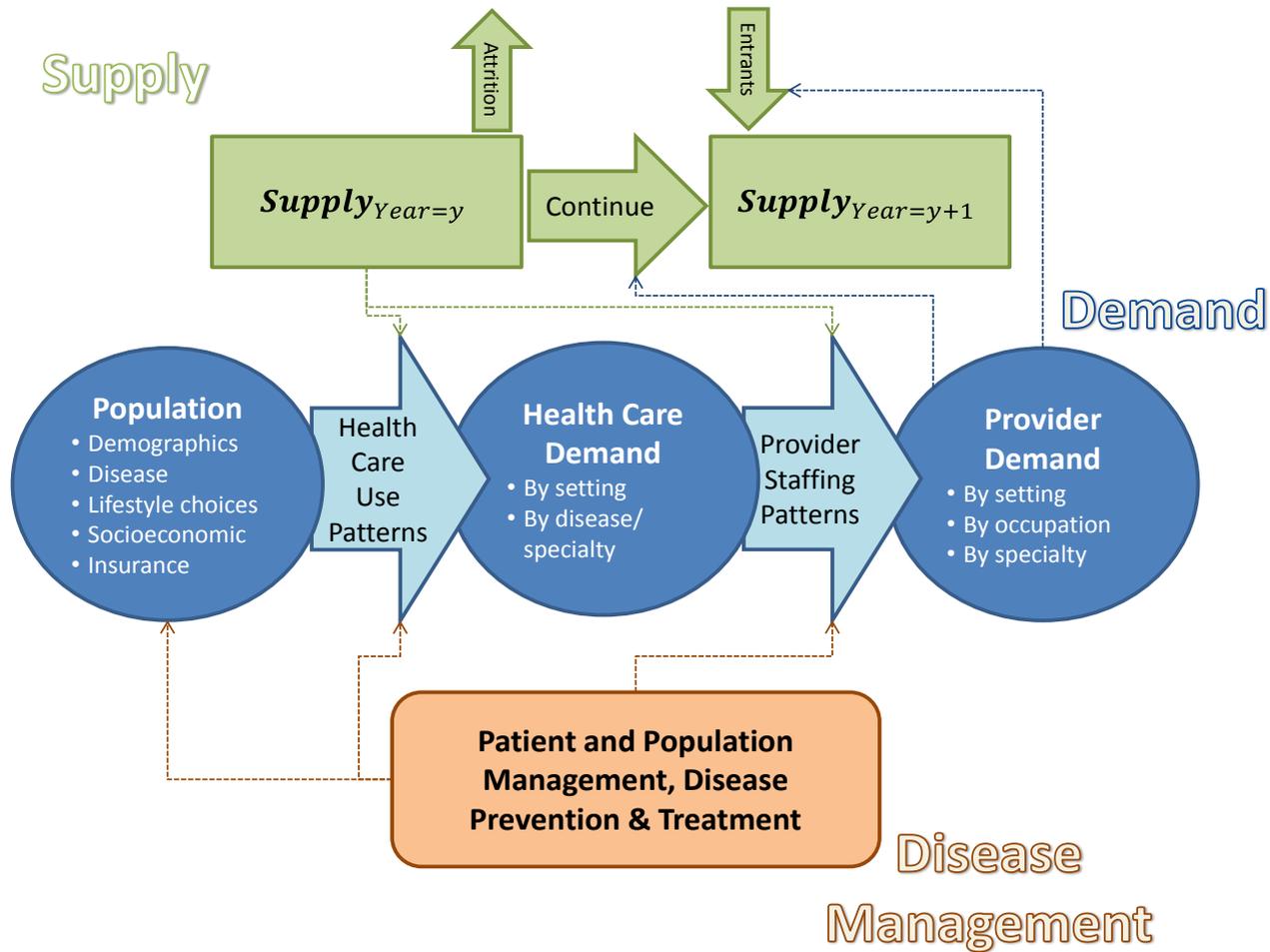
## Implications of Modeling Results and Future Research Directions

- Potential future research directions in health workforce modeling include:
  - Looking more closely at specific professions that may experience or portend future shortages, including:
    - Generalist disciplines (e.g., mental health/substance use, primary care)
    - Professions focused in areas in which the illness burden is increasing (e.g., oncology, cardiology, pulmonology)
  - Integrating supply and demand projections to present a profile of the current and projected future size and characteristics of Vermont's health workforce together with future demand for health professionals

# Overview of Vermont Health Workforce Demand Modeling Methods

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# Health Workforce Model



## Microsimulation Demand Model

- Model has been described in detail elsewhere
  - Used to develop HRSA's workforce projections  
<http://bhpr.hrsa.gov/healthworkforce/supplydemand/simulationmodeldocumentation.pdf>
  - Used to develop AAMC's physician workforce projections  
[https://www.aamc.org/download/458082/data/2016\\_complexities\\_of\\_supply\\_and\\_demand\\_projections.pdf](https://www.aamc.org/download/458082/data/2016_complexities_of_supply_and_demand_projections.pdf)
  - Detailed technical documentation <https://cdn.ihs.com/www/pdf/IHS-HDMM-DocumentationApr2016.pdf>

# Health Professions Modeled

## Health Professions

- Physicians
- Advanced practice nurses
- Physician assistants
- Nurses (RNs & LPNs)
- Pharmacy professions
- Dietary and nutrition professions
- Diagnostic laboratory professions
- Diagnostic imaging professions
- Vision and hearing professions

## 36 Physician Specialties

- Allergy & immunology
- Anesthesiology
- Cardiology
- Colorectal surgery
- Critical care medicine
- Dermatology
- Emergency medicine
- Endocrinology
- Gastroenterology
- General & family practice
- General internal medicine
- General pediatrics
- General surgery
- Geriatrics
- Hematology & oncology
- Infectious diseases
- Obstetrics & gynecology
- Occupational medicine
- Ophthalmology
- Orthopedic surgery
- Other specialties
- Otolaryngology
- Neonatal/perinatal
- Nephrology
- Neurological surgery
- Pathology
- Physical med & rehab
- Plastic surgery
- Psychiatry
- Pulmonology
- Radiation oncology
- Radiology
- Rheumatology
- Thoracic surgery
- Urology
- Vascular surgery

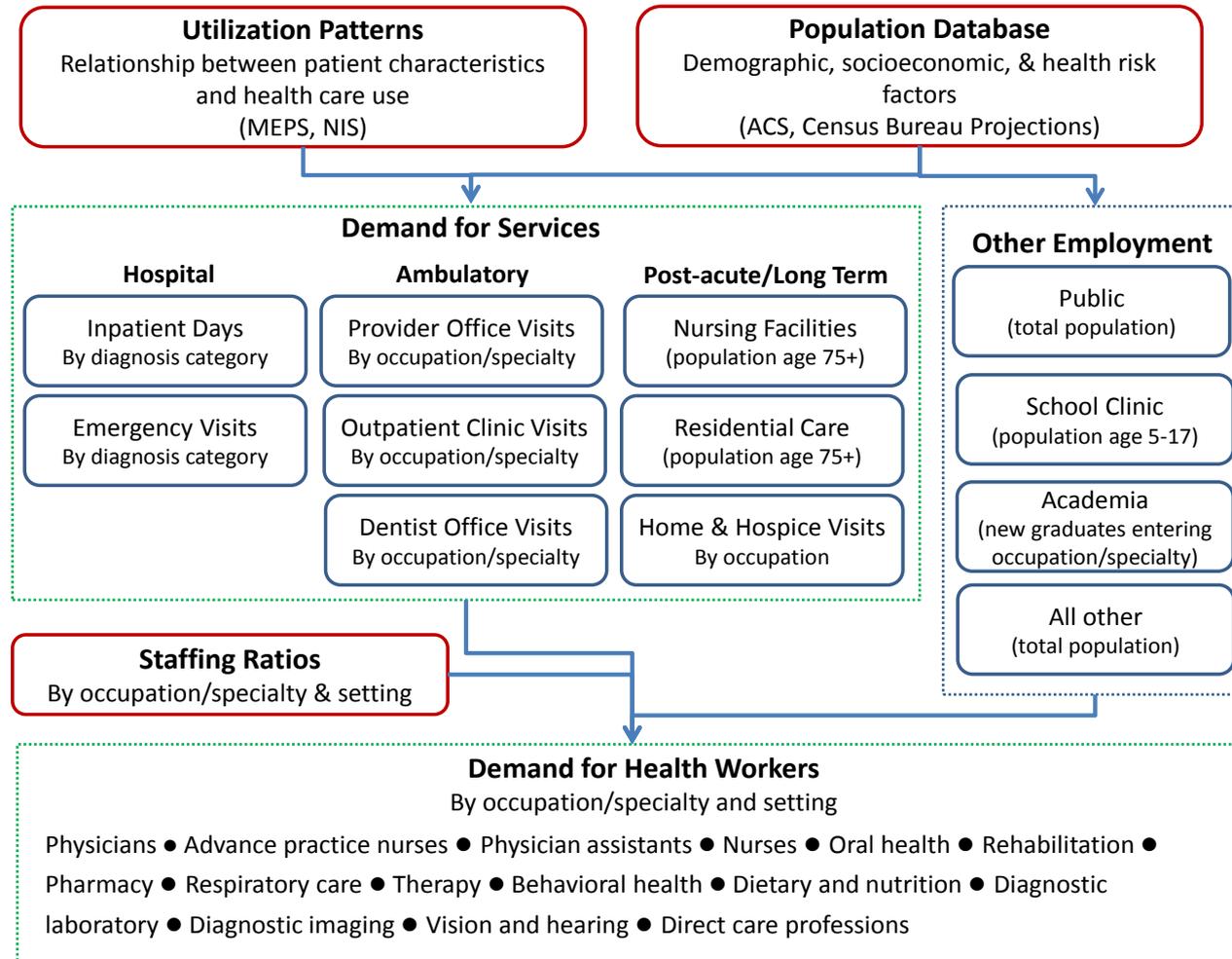
## Health Care Demand Microsimulation Model: Overview

- Create population files for representative population in each county
- Individuals are the unit of observation; create health/demographic/socioeconomic profile for each person in sample
- Health care use prediction equations
  - Based on combined 2009-2013 Medical Expenditure Panel Survey and Nationwide Inpatient Sample (national data)
  - Relate patient characteristics to use of health care services, by setting and type/specialty of care
  - Calibrate to Vermont health care use patterns (VHCURES/VUHDDS data)
- Population projections for each VT county are used to project service demand into the future
- Convert predicted service demand into full time equivalent (FTE) providers
  - Current national ratios of providers to health care use, by setting
- Alternative scenarios: parameters based on literature and original analysis

## Converting Service Demand to Health Profession FTEs

- Translate demand for health care services into full time equivalent (FTE) providers
  - Occupation/specialty/setting specific surveys and studies
  - National organizations (e.g., Medical Group Management Association's Physician Compensation and Production Survey)
  - National or state ratios (e.g., home health aides to home health visits)
  - Reported statistics (e.g., nurse staffing ratios in nursing homes)

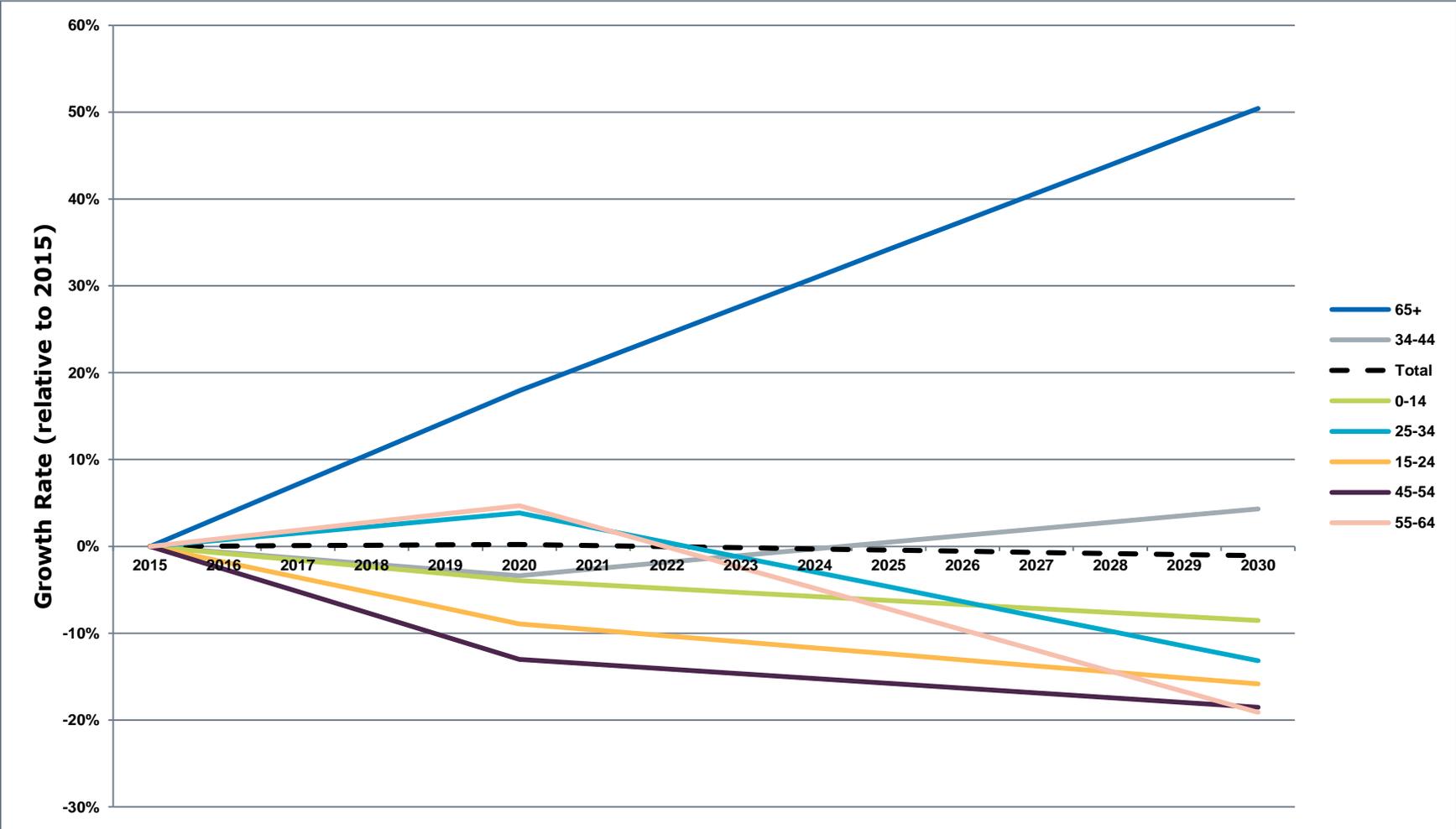
# Conceptual Model for Projecting Service Demand and Health Workforce Demand



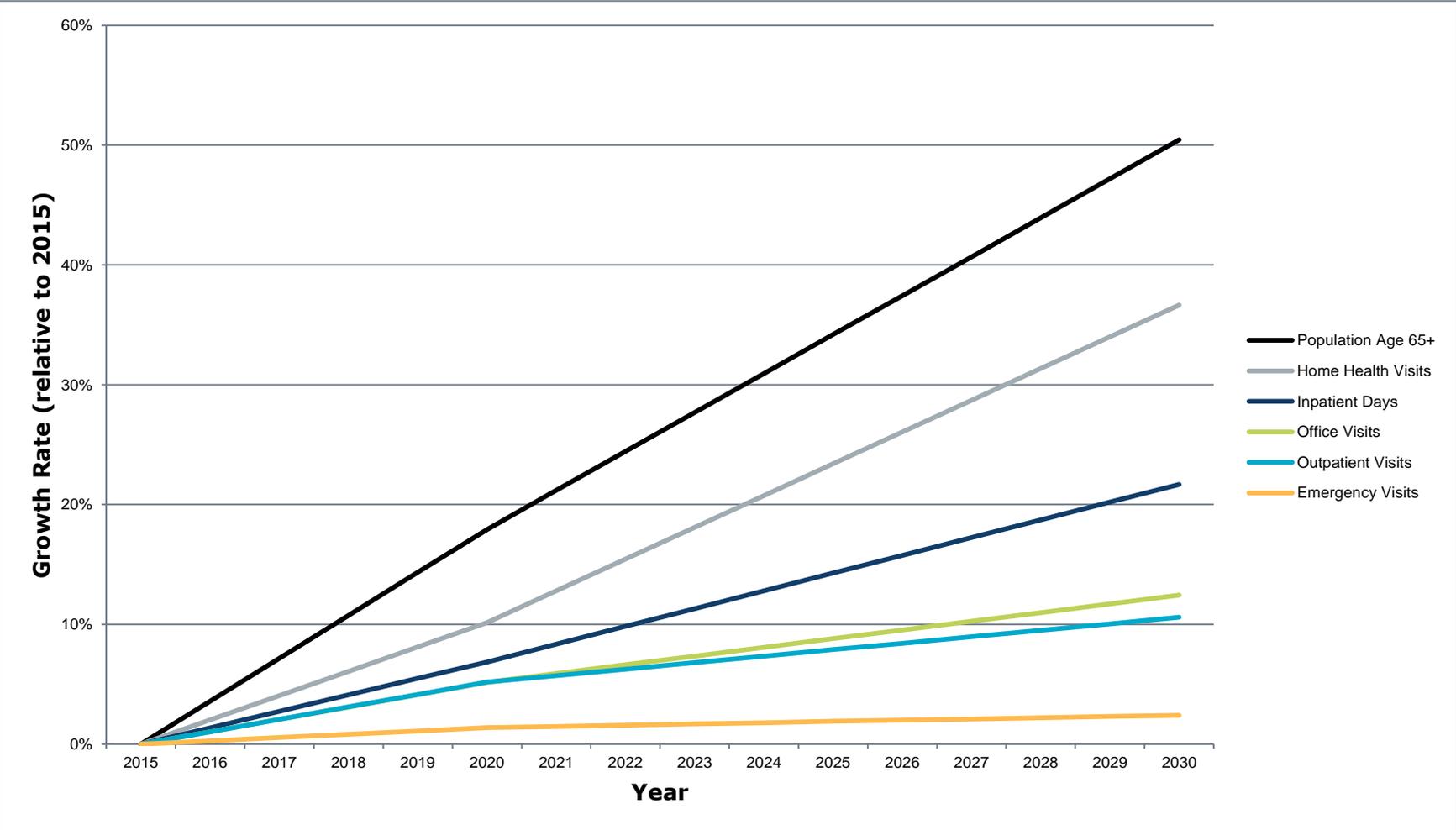
# Vermont Population and Service Demand Estimates and Projections

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# Vermont Population Growth by Age Group



# Projected Growth in Vermont Service Demand by Care Setting



# Vermont Health Workforce Demand Estimates and Projections by Profession

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Physician Specialties

Physician Assistants

Advanced Practice Nurses

Registered Nurses

Other Occupations

## Physician Specialty Categories Modeled

Category	Specialties	
Primary Care	<ul style="list-style-type: none"> <li>• Family Medicine</li> <li>• General Internal Medicine</li> <li>• Geriatric Medicine</li> <li>• Pediatrics</li> <li>• Obstetrics &amp; Gynecology</li> </ul>	
Medical Specialties	<ul style="list-style-type: none"> <li>• Allergy &amp; Immunology</li> <li>• Cardiology</li> <li>• Critical Care/Pulmonology</li> <li>• Critical Care</li> <li>• Pulmonology</li> <li>• Dermatology</li> <li>• Endocrinology</li> </ul>	<ul style="list-style-type: none"> <li>• Gastroenterology</li> <li>• Hematology &amp; Oncology</li> <li>• Infectious Diseases</li> <li>• Neonatal-perinatal</li> <li>• Nephrology</li> <li>• Rheumatology</li> </ul>
Surgical Specialties	<ul style="list-style-type: none"> <li>• Colorectal Surgery</li> <li>• General Surgery</li> <li>• Neurological Surgery</li> <li>• Ophthalmology</li> <li>• Orthopedic Surgery</li> <li>• Otolaryngology</li> <li>• Plastic Surgery</li> </ul>	<ul style="list-style-type: none"> <li>• Thoracic Surgery</li> <li>• Urology</li> <li>• Vascular Surgery</li> </ul>
Other	<ul style="list-style-type: none"> <li>• Anesthesiology</li> <li>• Emergency Medicine</li> <li>• Neurology</li> <li>• Pathology</li> <li>• Physical Medicine &amp; Rehab</li> <li>• Psychiatry</li> <li>• Radiation Oncology</li> </ul>	<ul style="list-style-type: none"> <li>• Radiology</li> <li>• Other</li> </ul>

## Projected Growth in Physician FTE Demand by Specialty Category

Physician Specialty Category	2015	2020	2025	2030	Growth, 2015-2030	% Growth, 2015-2030
<b>Primary Care</b>	623	646	665	684	61	10%
<b>Medical Specialties</b>	215	232	248	263	48	22%
<b>Surgical Specialties</b>	233	249	262	274	41	18%
<b>Other</b>	375	392	402	412	37	10%
<b>Vermont Total</b>	<b>1,446</b>	<b>1,518</b>	<b>1,576</b>	<b>1,633</b>	<b>187</b>	<b>13%</b>

## Projected Growth in Vermont Physician FTE Demand by Care Setting

Physician Care Setting	2015	2020	2025	2030	Growth 2015-2030	% Growth 2015-2030
Office	991	1,045	1,084	1,123	132	13%
Outpatient	92	96	99	101	9	10%
Inpatient	262	274	289	304	42	16%
Emergency	102	104	105	106	4	4%
<b>Vermont Total</b>	<b>1,446</b>	<b>1,518</b>	<b>1,576</b>	<b>1,633</b>	<b>187</b>	<b>13%</b>

## Projected Growth in Vermont Physician FTE Demand by Hospital Service Area

Physician Hospital Service Area	2015	2020	2025	2030	Growth, 2015-2030	% Growth, 2015-2030
<b>Barre</b>	147	154	161	167	20	14%
<b>Bennington</b>	92	96	99	101	9	10%
<b>Brattleboro</b>	70	74	76	79	9	13%
<b>Burlington</b>	439	465	488	510	71	16%
<b>Middlebury</b>	60	63	65	67	7	12%
<b>Morrisville</b>	57	60	63	66	9	16%
<b>Newport</b>	66	69	72	75	9	14%
<b>Randolph</b>	32	33	35	36	4	13%
<b>Rutland</b>	139	142	143	144	5	4%
<b>Springfield</b>	62	65	66	68	6	10%
<b>St. Albans</b>	116	123	130	137	21	18%
<b>St. Johnsbury</b>	60	63	66	68	8	13%
<b>White River Jct.</b>	106	110	113	116	10	9%
<b>Vermont Total</b>	<b>1,446</b>	<b>1,518</b>	<b>1,576</b>	<b>1,633</b>	<b>187</b>	<b>13%</b>

## Projected Growth in Vermont Physician Assistant FTE Demand by Specialty Category

<b>PA Specialty Category</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>Growth, 2015-2030</b>	<b>% Growth, 2015-2030</b>
<b>Primary Care</b>	94	98	101	105	11	12%
<b>Medical Specialties</b>	29	31	33	35	6	21%
<b>Surgical Specialties</b>	44	47	49	51	7	16%
<b>Other</b>	46	47	48	49	3	7%
<b>Vermont Total</b>	<b>213</b>	<b>223</b>	<b>232</b>	<b>240</b>	<b>27</b>	<b>13%</b>

## Projected Growth in Vermont Advanced Practice Nurse FTE Demand by Profession

APN Category	2015	2020	2025	2030	Growth, 2015- 2030	% Growth, 2015- 2030
<b>Nurse Practitioners</b>	<b>340</b>	<b>354</b>	<b>367</b>	<b>381</b>	<b>41</b>	<b>12%</b>
Primary Care	208	215	222	228	20	10%
Medical Specialties	49	53	56	60	11	22%
Surgical Specialties	18	19	20	21	3	17%
Other	66	67	69	71	5	8%
<b>CRNAs</b>	<b>94</b>	<b>101</b>	<b>106</b>	<b>110</b>	<b>16</b>	<b>17%</b>
<b>Nurse Midwives</b>	<b>28</b>	<b>27</b>	<b>26</b>	<b>25</b>	<b>-3</b>	<b>-11%</b>
<b>Vermont APN Total</b>	<b>461</b>	<b>482</b>	<b>499</b>	<b>516</b>	<b>55</b>	<b>12%</b>

## Projected Demand in Vermont Registered Nurse FTE Demand by Care Setting

RN Care Setting	2015	2020	2025	2030	Growth 2015- 2030	% Growth 2015- 2030
<b>Office</b>	476	501	518	535	59	12%
<b>Outpatient</b>	228	240	246	252	24	11%
<b>Emergency</b>	540	547	550	553	13	2%
<b>Inpatient</b>	3,614	3,862	4,131	4,398	784	22%
<b>Home Health</b>	534	595	675	755	221	41%
<b>Nursing Home</b>	385	425	539	652	267	69%
<b>Residential Care</b>	119	131	166	201	82	69%
<b>School</b>	158	150	146	141	-17	-11%
<b>All Other</b>	407	408	404	400	-7	-2%
<b>Vermont Total</b>	<b>6,461</b>	<b>6,859</b>	<b>7,374</b>	<b>7,887</b>	<b>1,426</b>	<b>22%</b>

## Projected Growth in Select Vermont Cross-Occupation FTE Demand by Profession

Profession	2015	2020	2025	2030	Growth, 2015-2030	% Growth, 2015-2030
<b>Diagnostic Services</b>						
Medical sonographers	129	137	145	153	24	19%
Medical & clinical lab technicians	355	377	400	422	67	19%
Medical & clinical lab technologists	358	380	403	426	68	19%
Nuclear medicine technologists	23	25	28	30	7	30%
Radiologic Technologists	84	92	100	107	23	27%
<b>Direct Care Services</b>						
Home health aides	1,549	1,728	1,958	2,187	638	41%
Nurse aides	2,710	2,943	3,468	3,992	1,282	47%
<b>Pharmacy Services</b>						
Pharmacists	428	450	465	479	51	12%
Pharmacy Technicians	530	559	578	598	68	13%
Pharmacy Aides	55	59	61	63	8	15%
<b>Vision Services</b>						
Optometrists	98	99	99	98	0	0%
Opticians	153	155	154	154	1	1%
<b>Other Professions</b>						
Dentists	323	329	330	330	7	2%
Dietitians	146	153	163	173	27	18%
Podiatrists	20	22	24	27	7	35%

# Modeling Key Components of a High-Performing Vermont Health Care System

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Team-Based Care  
Care Coordination  
Disease Management  
Integrated Care

# Modeling Components of a High Performing Vermont Healthcare System

- Expanded access and team-based care
  - Modeling scenario: Expand access to mental health and substance abuse services by providing services in team-based primary care settings
- Improved care transitions
  - Modeling scenario: Reduce avoidable ED visits by focusing on redirecting care for at-risk populations to primary care settings
- Clinical improvement: Chronic disease management
  - Modeling scenario: Cardiovascular disease management initiative
- Integrated care delivery
  - Modeling scenario: Impact on physician demand if the Vermont population were enrolled in an integrated care entity

## Status Quo Scenario

- Will be used as the baseline for comparison to all other scenarios
- Status quo modeling assumptions:
  - Project healthcare use into the future using projections of how Vermont's population will grow (shrink) and change over time absent changes in care delivery
  - Vermont's health care use patterns follow national health care use patterns
    - We will revise this assumption once we analyze VHCURES all-payer database
  - Health care use patterns remain the same over time

## Expanded Access and Team-Based Care: Integration of Primary Care and MH & SA Services

- **Purpose:** Integrate MH/SA screening and treatment into PC settings to improve access, reduce care fragmentation, better manage co-morbid physical and MH/SA needs
- **Target Population:** Medicaid or uninsured primary care patients with mild-to-moderate depressive/anxiety disorders or substance abuse and who are not receiving specialty MH/SA services
- **Model Structure:** Outpatient focus, with MH/SA care managers/social workers co-located with PC providers; some psychiatric consults
- **Modeling Assumptions and Inputs** from the literature used in this analysis include:
  - Assume 15% of the target population has unmet MH/SA needs (mild-moderate substance abuse or depressive disorders not treated by a specialty provider)
  - 80% of those with unmet MH & SA needs visit a primary care provider during the year

## Integration of Primary Care and MH & SA Services: Modeling Process

- Estimate proportion who would be diagnosed with depression
  - Under status quo: [50% of patients](#) with unmet MH/SA needs would be successfully diagnosed and referred by a PCP to a MH/SA provider
  - Under the initiative: PCPs receive additional training and 80% of patients with unmet needs are diagnosed and referred
- Estimate proportion of diagnosed and referred who meet with MH/SA specialist
  - Under status quo [25% of those correctly diagnosed complete the referral](#) and see a MH/SA provider
  - Under integrated model assume 50% of diagnosed MH/SA needs will see a MH/SA provider
- Staffing assumptions: Assume MH/SA services will be provided by a mix of providers (50% licensed clinical social workers, 25% addiction counselors, 15% psychologists, 10% psychiatrists/psych NPs)

## Integration of Primary Care and MH & SA Services

	2015	2020	2025	2030
<b>Population modeled</b>				
Population with unmet MH/SA needs (15% of Vermont Uninsured/Medicaid Pop)	23,748	23,001	22,045	21,080
Population with unmet MH/SA needs visiting PCP (80%)	18,998	18,401	17,636	16,864
Population screening positive for MH/SA needs absent Integration (50%)	9,499	9,200	8,818	8,432
Population screening positive for MH/SA needs with Integration (80%)	15,199	14,721	14,109	13,491
Screened population completing MH/SA referral absent Integration	2,375	2,300	2,204	2,108
Screened population completing MH/SA referral with Integration	7,599	7,360	7,054	6,746
Change in population receiving MH/SA counseling	5,225	5,060	4,850	4,638
<b>Health care use impact of Integration</b>				
Encounters with MH/SA care manager	14,629	14,169	13,580	12,985
Primary care visits	1,776	1,720	1,649	1,577
MH/SA-related ED visits	-240	-233	-223	-213
MH/SA-related inpatient days	-387	-374	-359	-343
<b>Workforce FTE implications</b>				
<b>Office setting</b>				
Licensed clinical social worker	35.0	33.5	32.5	31.0
Psychiatrists/psych nurses	3.5	3.5	3.5	3.0
Primary care providers	1.0	0.5	0.5	0.5
Direct medical support	2.0	1.0	1.0	1.0
Direct admin support	15.5	14.5	14.0	13.5
Staff registered nurses	0.5	0.5	0.5	0.5
<b>Emergency Department</b>				
Emergency physicians	0.0	0.0	0.0	0.0
Nurse practitioners or physician assistants	-2.0	-2.0	-2.0	-1.5
Staff registered nurses	-0.5	-0.5	-0.5	-0.5
<b>Inpatient</b>				
Hospitalists	0.0	0.0	0.0	0.0
Staff registered nurses	-2.5	-2.0	-2.0	-2.0
Licensed practical nurses	0.0	0.0	0.0	0.0
Nurse aides/assistants	-0.5	-0.5	-0.5	-0.5

## Enhanced Care Coordination: Reducing Avoidable ED Use

- Program Goals: Reduce potentially avoidable ED use 25% by:
  - Identifying ED patients who would be better served by a primary care provider (PCP) who can provide continuity of care
  - Linking patients without a primary source of care to a PCP
  - Referring patients to Health Homes and Home Care Services as appropriate.
  - Educating patients on appropriate use of ED services
- Target population: patients with one or more ED visits potentially appropriate for diversion or usually treated and released from the ED
- Program components include:
  - Hospital connectivity to community-based PCPs and home health providers
  - Provision of care management support
  - Extended patient care hours

## Redirecting Avoidable ED Visits: Modeling Approach

1. Classify all 2014 VUHDDS ED visits into broad service categories (e.g., allergy, cardiology, etc.)
2. Using The Lewin Group's emergent care classifications, identify the percentage of VUHDDS ED visits in each service category that are potentially preventable
3. Scale down microsimulation model projected visits by service category based on these percentages

Category of ED Visit	Percent Potentially Preventable	# of VT visits	# of Potentially Preventable VT Visits
Allergy & immunology	81%	108	87
Cardiology	15%	8,789	1,318
Endocrinology	14%	4,061	569
Gastroenterology	59%	23,217	13,698
Hematology & oncology	12%	2,155	259
Infectious diseases	64%	7,284	4,662
Neurology	55%	11,413	6,277
Obstetrics & Gynecology	64%	5,235	3,350
Ophthalmology	59%	2,466	1,455
Orthopedic surgery	27%	39,336	10,621
Otolaryngology	5%	4,525	226
Psychiatry	86%	11,403	9,807
Pulmonology	1%	36,876	369
Rheumatology	51%	4,692	2,393
Thoracic surgery	67%	14,611	9,789
Urology	24%	22,332	5,360
Other	3%	23,685	711

## Reduction in Avoidable ED Use: Staffing Impact

- Assumptions
  - Assume 25% of all **avoidable or potentially avoidable** visits (as defined by the Lewin classification) can be avoided
  - Shift these visits to primary care physician offices
- Overview of Modeling Results
  - Shifts in care from the ED to primary care settings would result in a need for 38 additional primary care physicians, 50 fewer ED RNs and 8 fewer ED physicians by 2030

<b>Ambulatory Care (FTEs)</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>
Primary care physicians	35	36	37	38
Nurse practitioners	14	15	15	15
Physician assistants	9	9	9	10
RN or LPN	16	17	18	18
<b>Emergency Department</b>				
Emergency physicians	-8	-8	-8	-8
Nurse practitioners	-1	-1	-1	-1
Physician assistants	-3	-3	-3	-3
Registered nurses	-49	-49	-50	-50

## Chronic Disease Management: Cardiovascular Disease

- **Initiative Modeled:** Impact of evidence-based best practices in improving adherence to aspirin prophylaxis, blood pressure and cholesterol control and treatment guidelines
- **Target population:** Adult patients (ages 18+ years) with cardiovascular conditions
- **Modeling assumptions and inputs from the literature:**
  - 50% participation from the target population
  - Improved primary care management will:
    - Decrease CVD-related emergency visits by 20%
    - Decrease hospital inpatient days by 39%
    - Increase visits to PCPs by 1 visit annually
    - Increase visits to cardiologists by 0.5 annually (one additional visit every two years)
  - Health coaches to be used in a ratio of 1:2000 patients

## Chronic Disease Management: Cardiovascular Disease

- Assuming program enrollment of about 92,000, annual projected utilization impacts include the following:
  - 1,050 fewer ED visits
  - 2,050 fewer Inpatient days
  - 92,000 additional primary care visits
  - 46,000 additional visits to cardiologists
- Workforce Implications: Analysis suggests that the greatest impact of this initiative will be in outpatient settings with additional demand for PCPs, cardiologists, medical and administrative support staff, RNs and health coaches
- Impacts in inpatient settings include decreases in staff RNs and nurse aides

# CVD Chronic Disease Management: Staffing Impact

	2015	2020	2025	2030
<b>Number of actively engaged patients</b>	73,367	81,129	86,581	92,042
<b>Projected Care Use Impacts</b>				
Emergency visits	-893	-960	-1,002	-1,043
Inpatient days	-1,741	-1,873	-1,954	-2,034
Additional visits to PCP	73,367	81,129	86,581	92,042
Additional visits to cardiologist	36,683	40,565	43,290	46,021
<b>Workforce FTE implications</b>				
<b>Outpatient/Office setting</b>				
Primary care providers	33.5	37.0	39.5	42.0
Direct medical support	77.7	85.9	91.7	97.5
Direct admin support	55.5	61.4	65.5	69.6
Staff registered nurses	24.6	27.2	29.1	30.9
Specialists (cardiologist)	10.9	12.1	12.9	13.7
<b>Emergency Department</b>				
Emergency physicians	-0.4	-0.4	-0.5	-0.5
Nurse practitioners and physician assistants	-0.1	-0.1	-0.1	-0.1
Staff registered nurses	-1.5	-1.6	-1.6	-1.7
<b>Inpatient</b>				
Hospitalists	-0.9	-0.9	-1.0	-1.0
Staff registered nurses	-10.4	-11.2	-11.6	-12.1
Licensed practical nurses	-0.6	-0.6	-0.7	-0.7
Nurse aides/assistants	-2.6	-2.8	-2.9	-3.1
<b>Health Coaches (1:2,000 patients)</b>	36.7	40.6	43.3	46.0

## Integrated Care Delivery Scenario

- Initiative goals:
  - Improve the coordination and quality of patient care by reducing inefficiencies and eliminating redundancy
  - Shift care to lower cost settings and providers
  - Improving preventive care efforts
  - Controlling medical expenditures
- Modeling Assumption:
  - Assume 100% of the Vermont population is enrolled in an integrated care program

## Integrated Care Delivery: FTE Impacts

- Integrated care scenario modeling assumptions result in little change in overall FTE demand
- For physicians, FTE demand shifts away from medical specialties and other specialties
- Increased demand for primary care physicians and surgical specialties

<b>Workforce FTE Impacts</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>
<b>Physicians</b>	21	20	20	19
Primary care	38	39	40	40
Medical specialties	-8	-9	-10	-10
Surgical specialties	8	9	9	10
Other specialties	-17	-19	-19	-20
<b>Advanced practice nurses</b>	4	3	2	0

## **Alternative Payer Scenario: Modeling Medicaid Population Under Private Insurance Use Patterns**

- Modeling Assumptions
  - Begins with status quo assumptions (projections of population change and aging project health care use into the future)
  - Assumes statewide Medicaid beneficiaries have the same health care use patterns as those with private insurance

## Workforce FTE Implications of Modeling the Medicaid Population Using Private Health Care Use Patterns

- Workforce impacts of modeling the Medicaid population under commercial insurance assumptions suggest that FTE demand would be lower for all professions modeled
- By 2030, RN demand is projected to shrink by 467 (-6%) FTE nurses under these assumptions
- Among physician specialties, demand for psychiatry projected to shrink by -30% and OB/GYN by -12%

<b>Workforce FTE Impacts</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>
<b>Physicians</b>	<b>-103</b>	<b>-101</b>	<b>-96</b>	<b>-90</b>
Primary care	-24	-24	-23	-21
Medical specialties	-13	-13	-12	-11
Surgical specialties	-5	-5	-5	-4
Other specialties	-61	-60	-57	-53
<b>Advanced practice nurses</b>	<b>-40</b>	<b>-40</b>	<b>-37</b>	<b>-35</b>
<b>Physician assistants</b>	<b>-10</b>	<b>-9</b>	<b>-9</b>	<b>-8</b>
<b>Registered nurses</b>	<b>-539</b>	<b>-529</b>	<b>-498</b>	<b>-467</b>
<b>Psychologists</b>	<b>-63</b>	<b>-61</b>	<b>-58</b>	<b>-56</b>

# Project Next Steps

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## Next Steps

- Analyze VHCURES database to refine state and HSA service and health workforce demand projections
  - Research Vermont-specific healthcare use patterns
- Complete developing and refining healthcare workforce demand modeling scenarios under a high-performing Vermont healthcare system
- Workforce workgroup review of draft and final reports

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