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Earl Ray Tomblin
Governor

Karen L. Bowling
Cabinet Secretary

July 21, 2016

Mr. Joshua A. Traylor
Project Officer, State Innovations Group
Center for Medicare and Medicaid Innovation
7500 Security Blvd.
Baltimore, MD 21244

Dear Mr. Traylor:

I am pleased to submit West Virginia's State Innovation Model health system innovation plan (SIM plan) as the final deliverable for our round two model design award from the Center for Medicare and Medicaid Innovation. We are grateful for the support and guidance from the Innovation Center, Centers for Disease Control and Prevention, Office of the National Coordinator for Health Information Technology and contracted technical assistance resources as we drafted the SIM plan. This support and guidance ultimately made the SIM plan stronger.

As Cabinet Secretary for the Department of Health and Human Resources, my staff and I, in partnership with West Virginia University, oversaw a robust and productive stakeholder engagement process to arrive at the final SIM plan. This process lasted 18-months and involved countless health care stakeholders, including payers, providers and consumers, coming together to cooperatively author a plan that provides the state a roadmap for health care system transformation. Our state, similar to other SIM states, recognizes the challenges of organizing resources to rapidly and dramatically transform our health care system to value-focused. Still, we know that the status quo is unsustainable and we must pursue value in our health care system by striving to achieve the Triple Aim.

West Virginia faces numerous health care challenges—many of which are detailed in the SIM plan. However, with the public and private sectors partnering, I am confident that the recommendations of the SIM plan can be successfully implemented. Key among these recommendations is the establishment of the West Virginia Health Transformation Accelerator (WVHTA), which is intended to serve as a coordinating entity to shepherd various state and federal health care transformation activities and resources. My staff and I, with assistance from West Virginia University staff, are committed to seeing the WVHTA created in a timely manner. The WVHTA will provide a vehicle for public and private collaboration on the execution of the SIM plan.

The SIM planning process brought together a strong stakeholder group at the state-level focused on health care transformation. The process also fostered a level of cooperation heretofore unseen in West Virginia regarding health care transformation. A prime example of this is a currently pending application from Partners In Health Network, Inc., West Virginia Medicaid and the West Virginia University Center for Excellence in Disabilities for the Accountable Health Communities (AHC) funding opportunity.

The aforementioned entities are all equally and fully committed to improving the health of and social determinants for the AHC participating Medicare and Medicaid beneficiaries. Additionally, the AHC funding opportunity is featured prominently in the SIM plan and showcased as an important way to identify, support and align programs in the state to address the critical gaps between clinical care and community services that often occur in our rural state. AHC is but one of many goals and strategies in the SIM plan, but it illustrates how our state has proactively taken steps to address the health issues we face.

We celebrate what we accomplished with the SIM plan as a great first step, knowing that health care transformation will be an even more demanding and longer-term task. Thank you for this opportunity. We look forward to continuing as partners in transforming our state's health care system.

Sincerely

Karen L. Bowling
Cabinet Secretary

KLB:ns

Enclosure

cc: The Honorable West Virginia Governor Earl Ray Tomblin
The Honorable West Virginia Lt. Governor & Senate President William P. Cole, III
The Honorable West Virginia Speaker of the House Tim Armstead
The Honorable U.S. Senator Joseph Manchin, III
The Honorable U.S. Senator Shelley Moore Capito
The Honorable U.S. Representative Evan H. Jenkins
The Honorable U.S. Representative David B. McKinley
The Honorable U.S. Representative Alex X. Mooney
SIM Primary Investigator and Project Director Dr. Jeffrey Coben

State Health System Innovation Plan (SHSIP) Errata

Due to an autosum calculation error in Microsoft Excel, the projected cost of intervention and projected net savings per year totals in Tables 12.13, 12.15 and 12.16 were incorrect. These tables have all been updated to reflect the correct totals, which are also provided below.

Table 12.13 - Page 285

Projected cost of intervention (Total):	$167,860,000
Projected net savings per year (Total):	$93,740,000

Table 12.15 - Page 289

Projected cost of intervention (Total):	$91,560,000
Projected net savings per year (Total):	$71,940,000

Table 12.16 - Page 290

Projected cost of intervention (Health System Improvement):	$167,860,000
Projected cost of intervention (Administrative Improvement):	$91,560,000
Projected cost of intervention (Total):	**$284,018,000**

Projected net savings per year (Health System Improvement):	$93,740,000
Project net savings per year (Administrative Improvement):	$71,940,000
Projected net savings per year (Total):	**$245,873,400**

Revision made to the July 21, 2016, SHSIP. The revised SHSIP is now dated August 5, 2016.

2016

West Virginia State Health System Innovation Plan

AUGUST 5, 2016

West Virginia
STATE INNOVATION
MODEL GRANT

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Acronyms Guide

AADE	American Association of Diabetes Educators
AAFP	American Academy of Family Physicians
ACA	Affordable Care Act
ACO	Accountable Care Organization
ADA	American Diabetes Association
ADT	Admission, discharge and transfer
AHC	Accountable Health Communities
AHIMA	American Health Information Management Association
AHIP	America's Health Insurance Plans
AHRQ	Agency for Healthcare Research and Quality
AMA	American Medical Association
APM	Alternative Payment Model
APRN	Advanced practice registered nurse
ARDI	Alcohol-Related Disease Impact
BAC	Blood alcohol content
BBHHF	Bureau for Behavioral Health and Health Facilities
BMI	Body mass index
BMS	Bureau for Medical Services
BPCI	Bundled Payment for Care Improvement
BPH	Bureau of Public Health
BRFSS	Behavioral Risk Factor Surveillance System
CBHC	Community Behavioral Health Center
CCP	Comprehensive Care Partnership
CDC	Centers for Disease Control and Prevention
CHD	Coronary heart disease
CHF	Congestive heart failure
CHIP	Children's Health Insurance Program
CMMI	Center for Medicare & Medicaid Innovation
CMS	Centers for Medicare & Medicaid Services
CON	Certificate of need
COPD	Chronic obstructive pulmonary disease
CPC+	Comprehensive Primary Care Plus
CSAPP	Controlled Substance Automated Prescription Program
CVD	Cardiovascular disease
DO	Doctor of Osteopathic Medicine
DPC	Division of Primary Care, Office of Community Health Systems and Health Promotion
DSMP	Diabetes Self-Management Program
DTP	Division of Tobacco Prevention, Bureau of Public Health
ED	Emergency department
EDC	Everyone with Diabetes Counts
EDIE	Emergency department information exchange

EHR	Electronic health record
ER	Emergency room
FFS	Fee-for-service
FOA	Funding opportunity announcement
FQHC	Federally qualified health center
FTC	Federal Trade Commission
GACSA	Governor's Advisory Council on Substance Abuse
GOHELP	West Virginia Governor's Office of Health Enhancement and Lifestyle Planning
HB	House Bill
HBP	High blood pressure
HCBS	Home- and community-based settings
HCPLAN	Health Care Payment Learning and Action Network
HHS	U.S. Department of Health and Human Services
HiAP	Health in All Policies
HIE	Health information exchange
HIPAA	Health Insurance Portability and Accountability Act of 1996
HIT	Health information technology
HPCD	Division of Health Promotion and Chronic Disease, Bureau of Public Health
HPSA	Health professional shortage area
HRSA	Health Resources and Services Administration
IT	Information technology
MACRA	Medicare Access and CHIP Reauthorization Act of 2015
MCO	Managed care organization
MD	Doctor of Medicine
MDEs	Major depressive episodes
MDTV	Mountaineer Doctor Television
MFP	Money Follows the Person
MHA	Mental Health America
MICA	Mentally Ill and Chemical Addiction
MIPS	Merit-Based Incentive Payment System
MITA	Medicaid Information Technology Architecture
MLR	Medical loss ratio
MMIS	Medicaid Management Information System
MUA	Medically underserved area
NAS	Neonatal abstinence syndrome
NCAHD	National Center for the Analysis of Healthcare Data
NCQA	National Committee for Quality Assurance
NDPP	National Diabetes Prevention Program
NGA	National Governors Association
NHE	National Health Expenditure
NICU	Neonatal intensive care unit
NIS	National Immunization Survey

OEPS	Office of Epidemiology and Prevention Services
OIC	West Virginia Offices of the Insurance Commissioner
ONC	Office of the National Coordinator for Health Information Technology
PAC	Potentially avoidable complications
PCMH	Patient-centered medical home
PCP	Primary care provider
PEIA	West Virginia Public Employees Insurance Agency
PGHD	Patient-generated health data
PHITF	Public Health Impact Task Force
PHR	Personal health record
PIHN	Partners In Health Network
Project ECHO	Extension for Community Healthcare Outcomes
PSN	Provider-sponsored network
PTN	Practice Transformation Network
QHP	Qualified health plan
QIN-QIO	Quality innovation network-quality improvement organization
RCM	Remote care management
REC	Regional Health Information Extension Center
RIM	Rural Interdisciplinary Medical Home
ROI	Return on investment
RRCP	Recruitment and Retention Community Project
SAEs	Smoking-attributable neonatal expenditures
SAN	Support and Alignment Network
SAMHSA	Substance Abuse and Mental Health Services Administration
SB	Senate Bill
SDH	Social determinants of health
SHIP	State Health Improvement Plan
SHSIP	West Virginia State Health System Innovation Plan
SIM	State Innovation Model
SLRP	State Loan Repayment Program
SMHP	State Medicaid HIT Plan
SMI	Serious mental illness
SWOT	Strengths, weaknesses, opportunities, threats
TANF	Temporary Assistance for Needy Families
TCPI	Transforming Clinical Practice Initiative
TEDS	Treatment Episode Data Set
USDA	U.S. Department of Agriculture
USPSTF	U.S. Preventive Services Task Force
WVATS	West Virginia Adult Tobacco Survey
WVBHEP	West Virginia Behavioral Health Epidemiological Profile
WVBP	West Virginia Board of Pharmacy
WVCHIP	West Virginia Children's Health Insurance Program
WVDHHR	West Virginia Department of Health and Human Resources
WVHCA	West Virginia Health Care Authority

WVHEPC	West Virginia Higher Education Policy Commission
WVHIC	West Virginia Health Innovation Collaborative
WVHIN	West Virginia Health Information Network
WVHITSSP	West Virginia Health Information Technology Statewide Strategic Plan
WVHTA	West Virginia Health Transformation Accelerator
WVHA	West Virginia Hospital Association
WVMI	West Virginia Medical Institute
WVRHA	West Virginia Rural Health Association
WVRHITEC	West Virginia Regional HIT Extension Center
WVTA	West Virginia Telehealth Alliance
WVU	West Virginia University
WVUES	West Virginia University Extension Service
WVVSS	West Virginia Vital Statistics System
WVYTS	West Virginia Youth Tobacco Survey
YRBS	Youth Risk Behavior Survey
YRBSS	Youth Risk Behavior Surveillance System

1.0 Introduction

Health care in the United States is in a period of unprecedented change as it evolves from a system based on volume to one based on value. This shift in the way health care is understood, delivered and paid for presents an opportunity for the system's constituents—providers, payers, legislators, regulators and patients themselves—to elevate American health care to unparalleled levels of innovation.

However, this opportunity is not without challenge. First, value-based care hinges on the ability to coordinate traditionally disparate stakeholder groups and to align a common understanding among all stakeholders of what constitutes quality and value. Second, to successfully manage the health of populations, providers must address deeply entrenched cultural and socioeconomic factors beyond what has traditionally been the scope of the health care system. Additionally, providers must engage patients as active participants in their own care to drive better outcomes. Finally, underpinning all these imperatives is the need to address a national health care workforce shortage and to leverage information technology effectively.

Despite these challenges, West Virginia's health care leaders believe that they must take action, as the current trends in poor health outcomes and high costs are unsustainable. To that end, a diverse and dedicated group of stakeholders operating under the West Virginia Health Innovation Collaborative has used a State Innovation Model (SIM) grant from the Centers for Medicare & Medicaid Services (CMS) to craft a framework for improving the health of West Virginians through transformed health care delivery and payment models. That framework is designed to achieve the Triple Aim of better health, better experience of care and lower cost of care, and it is outlined in this State Health System Innovation Plan (SHSIP).

As noted previously, health care innovation is fraught with challenges, and perhaps the most significant is how to effect systemic change under tight fiscal constraints. West Virginia's resources are limited, and this stark reality shapes the state's approach to health care innovation.

In state fiscal year 2017, West Virginia faced a budget shortfall of approximately $271 million.[1] After a protracted budget stalemate of many weeks, a bipartisan deal to close the budget gap emerged with support from the governor and leadership from the Senate and House of Delegates. A key revenue stream in fixing the budget woes of the state was increasing taxes on tobacco products. The 65-cent tax increase

[1] State fiscal year 2017 begins on July 1, 2016, and ends on June 30, 2017.

on tobacco products, as well as first-time tax of e-cigarette liquids, is expected to raise an estimated $98 million in state fiscal year 2017.[2]

West Virginia's unsteady fiscal climate and the uncertain future of implementation funds from CMS pose challenges to navigating a clear course to a better health care system. These fiscal realities greatly influenced the development of the payment and delivery system transformation plan that follows.

[2] West Virginia more than doubled its tax on cigarettes with the 65-cent tax increase. Before the tax increase, West Virginia levied a 55-cent tax per cigarette pack. The tax is now $1.20 per cigarette pack. Additionally, e-cigarette liquids, which were previously excluded from excise taxes, are now taxed.

2.0 Plan Goals and Objectives

The West Virginia SHSIP is based on and aligned with the national Triple Aim objectives of improved population health, improved experience of care and improved value through reductions in the overall cost of health care services. The Steering Committee charged with overseeing the SIM design codified the project's alignment with the Triple Aim through the following project aim statement.

West Virginia will improve the health of our population, enhance quality and access to health care and moderate health care spending. During the next five years, the state will:

- Establish a highly coordinated care delivery system built upon a comprehensive primary care model.
- Implement payment systems developed to enhance value for consumers.
- Adopt population health improvement strategies that address existing health disparities, modifiable risk factors and preventable conditions.
- Expand the use of information technologies to provide better intelligence to providers and other stakeholders.
- Address workforce infrastructure and sustainability by developing strategies and solutions to assure an adequate and well-trained workforce to participate in the new health care models and to effectively use health IT (HIT) tools.

Importantly, the SHSIP team approached the plan design with the above goals in mind, while also remaining cognizant of significant fiscal limitations—both from the state budget crisis and the possible lack of implementation funds from CMS. Therefore, the focus of the SHSIP is to establish a framework that will encourage, facilitate, assist and lead the state through an incremental advancement toward achievement of the Triple Aim.

It was also important to the state's health care leaders that they refrain from designing a plan that would be overly prescriptive. Rather, their vision was for a framework that would allow the state to "follow the free market" by building the foundation and aligning incentives for the free market itself to foster solutions for health care transformation.

In developing the SHSIP, West Virginia stakeholders utilized CMS-designated components of a "transformed and high-performing health care delivery system" (SIM Round 2 FOA). Thus, the SHSIP framework should encourage and facilitate the following objectives:

- Providers across the state and across the care continuum participate in integrated or virtually integrated delivery models.
- More than 80% of payments to providers from all payers are in fee-for-service alternatives that link payment to value.
- Every resident of the state has a primary care provider who is accountable both for the quality and for the total cost of their health care.
- Care is coordinated across all providers and settings.
- There is a high level of patient engagement and quantifiable results on patient experience.
- Providers leverage the use of HIT to improve quality.
- There is an adequate health care workforce to meet state residents' needs.
- Performance in quality and cost measures is consistently high.
- Population health measures are integrated into the delivery system.
- Data is used to drive health system processes.

3.0 Current Health Care Environment

West Virginia has an array of highly qualified health care providers operating within the state in a variety of practice settings. These providers also operate within a number of formal and informal collaborations and payment configurations. While some providers in more urban areas of the state operate within hospital-based organizations or within large or academic-based practices, there are still a significant number of providers that operate as solo practitioners or in small, independent practices.

Coordination of health care among providers is not highly organized or widespread. In fact, the West Virginia Legislature created the West Virginia Governor's Office of Health Enhancement and Lifestyle Planning (GOHELP) to coordinate health improvement and transformation efforts, but this office was eliminated in 2015. A new initiative, the West Virginia Health Innovation Collaborative (WVHIC), was launched to accomplish many of GOHELP's duties. However, while the WVHIC shares the aims of GOHELP, it lacks the administrative and financial support to fully lead health care transformation efforts in the state.

West Virginia has more hospital bed capacity per capita than national averages,[3] yet there are a number of health professional shortage areas (HPSAs) or medically underserved areas (MUAs) in the state. (In fact, 40 of West Virginia's 55 counties are partial or whole-county HPSAs.)[4] Rates of obesity, smoking and chronic disease are among the highest in the nation, and prevalence trends are not favorable.

As noted, the current health and outcome indicators provide significant opportunity for improvement. To better identify the opportunities for improvement in the current health care delivery and payment models, it is necessary to examine the health of West Virginia's population and the drivers of the current poor health outcomes.

3.1 Population Health Assessment

In 2012, the West Virginia Bureau for Public Health (BPH) conducted a State Public Health System Assessment that resulted in the compilation of a State

[3] The Henry J. Kaiser Family Foundation, State Health Facts. Available at http://kff.org/other/state-indicator/beds-by-ownership.
[4] "West Virginia Recruitment Programs," West Virginia Higher Education Policy Commission. Available at https://www.wvhepc.org/healthsciences/FY2010%20Heart%20Summary.pdf.

Health Profile and targeted priorities for the State Health Improvement Plan (SHIP). These targeted priorities were reviewed and approved by the workgroups of the WVHIC and serve as the basis for the SHSIP.

Several other studies and reports concur with a central finding of BPH: Most of the adverse health outcomes in West Virginia are driven by poor health behaviors and lifestyle choices. For example, the SIM Better Health workgroup (discussed in more detail in Section 6.4) adopted the following consensus statements. (Workgroup members voted to agree or disagree on a 10-point scale, the average of which is included in parentheses.)

- West Virginians often have a poor diet and nutritional habits. (8.65)
- West Virginians generally have a sedentary lifestyle. (8.38)
- West Virginian's fatalistic attitude can create a roadblock to changing unhealthy behavior(s). (8.09)
- Some West Virginians have a fear of or aversion to visiting a health care provider. (7.24)

Still, a number of complex and interrelated factors also drive poor health at the individual and population levels, and these factors require innovative solutions if decade-long trends are to be reversed.

A major population health concern in West Virginia is the prevalence of chronic disease, with BPH reporting in a 2011 report that chronic diseases represent five of the 10 leading causes of premature death in the state. West Virginia has historically had some of the highest chronic conditions risk factor and prevalence rates in the country, including high rates of tobacco use, lack of exercise, hypertension, angina, coronary heart disease, heart attack, diabetes, poor nutrition and arthritis. Up to 1 million of West Virginia's approximately 1.2 million adults have or are at risk for one or more chronic diseases.[5]

These adverse health outcomes contribute to high health care spending and cost on both the global and individual levels. In a 2015 report, CCRC Actuaries, LLC, projected total spending on health care in the state would grow to at

[5] "Advocating for Chronic Disease Management and Prevention," Bureau for Public Health, West Virginia Department of Health and Human Resources. Available at http://www.wvdhhr.org/bph/hsc/pubs/other/chronicdiseasemanandprev2011/advocating_for_chronic_disease_management_and_prevention_2011.pdf.

least $20.3 billion—possibly up to $25 billion—by 2025. Using the CCRC projections for 2025, the 2025 per capita cost will exceed $11,300.[6]

3.2 Targeted Health Improvement Areas

The BPH State Public Health System Assessment was used to group the priority health interventions into three main categories with three cross-cutting priorities. The priorities are summarized in Figure 3.1.

[6] CCRC Actuaries, LLC used an "allowed charges" methodology, which is a proxy for actual costs, in a report for the West Virginia Health Information Network in July 2015.

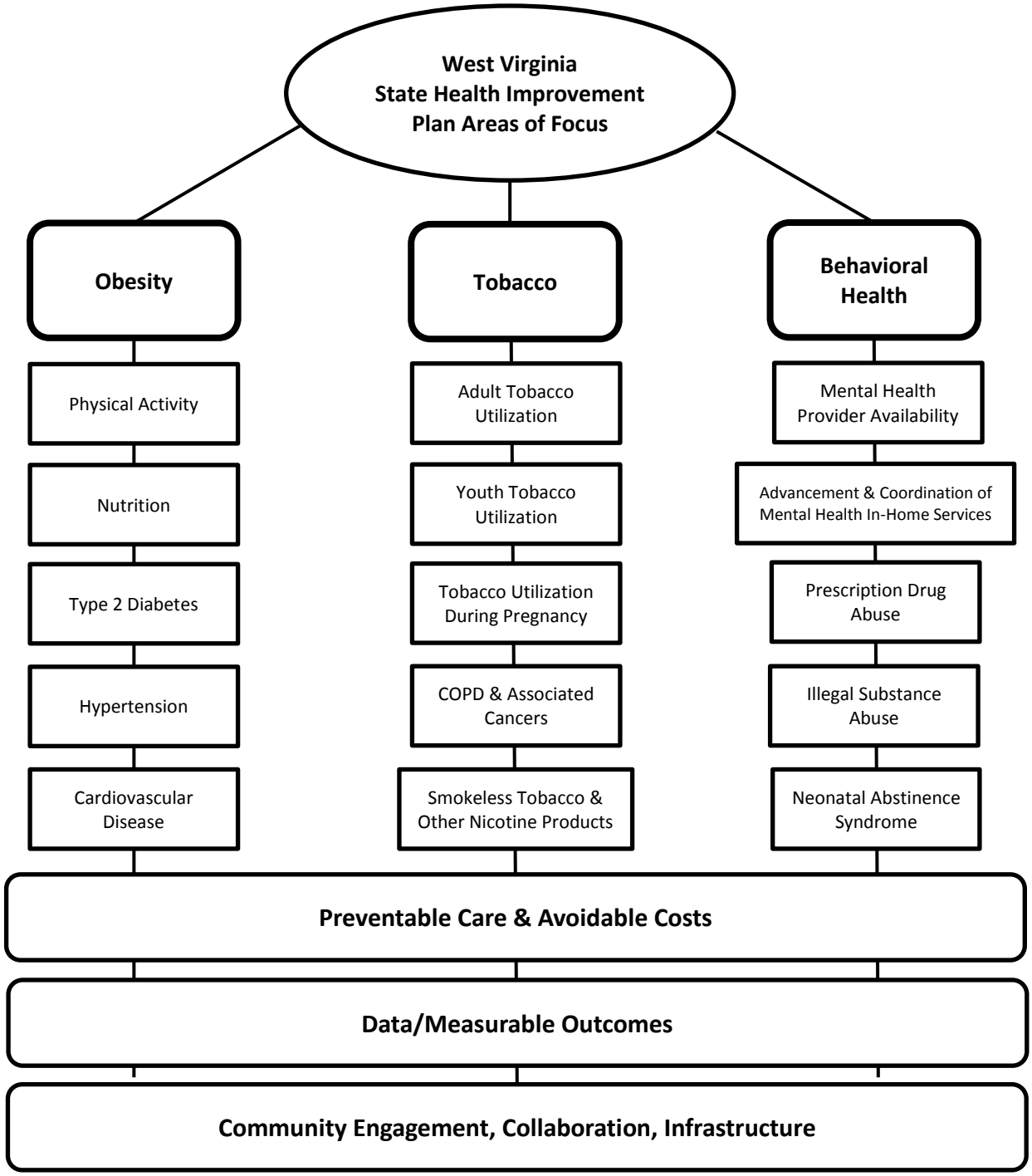

Figure 3.1 West Virginia State Health Improvement Plan Areas of Focus

First, obesity is a targeted priority as it contributes to a number of significant chronic diseases such as diabetes, hypertension and heart disease. In West Virginia, lack of physical activity and poor nutrition contribute to high rates of obesity. Second, tobacco use is another targeted area due to the high rates of use and the diseases associated with such use. Third, behavioral health issues, including substance abuse, are also targeted due to co-morbidities and avoidable consequences.

For each of the targeted conditions or behaviors, prevention, patient engagement and use of data to drive improvement are cross-cutting objectives to improve outcomes.

There is growing recognition by the U.S. Centers for Disease Control and Prevention (CDC) and others that clinical health care service delivery is only a small driver of the overall determinants of health outcomes, while health behaviors and socioeconomic factors play a significant role (see Figure 3.3). Given this complexity, the need is clear for a comprehensive approach that goes beyond traditional health improvement efforts. This approach has three "buckets," as shown in Figure 3.2.

In a learning event from August 2015, CMS applied the three buckets to the scenario of a patient with asthma.

- Bucket #1: Diagnosis, action plan, medications, clinical guidance
- Bucket #2: Home visit from community health worker who assesses triggers, counsels patient and offers limited remediation
- Bucket #3: Community standards on housing; limits to indoor and outdoor pollutants; reductions in smoking rates

Figure 3.2 Strategy Buckets for Health Improvement Efforts

The State Public Health System Assessment identified a number of social determinants, outlined underneath Figure 3.3, that strongly contribute to poor health outcomes in West Virginia. (Unless otherwise noted, the supporting figures that follow are from the U.S. Census Bureau as reported in the 2012 West Virginia State Health Profile.)[7]

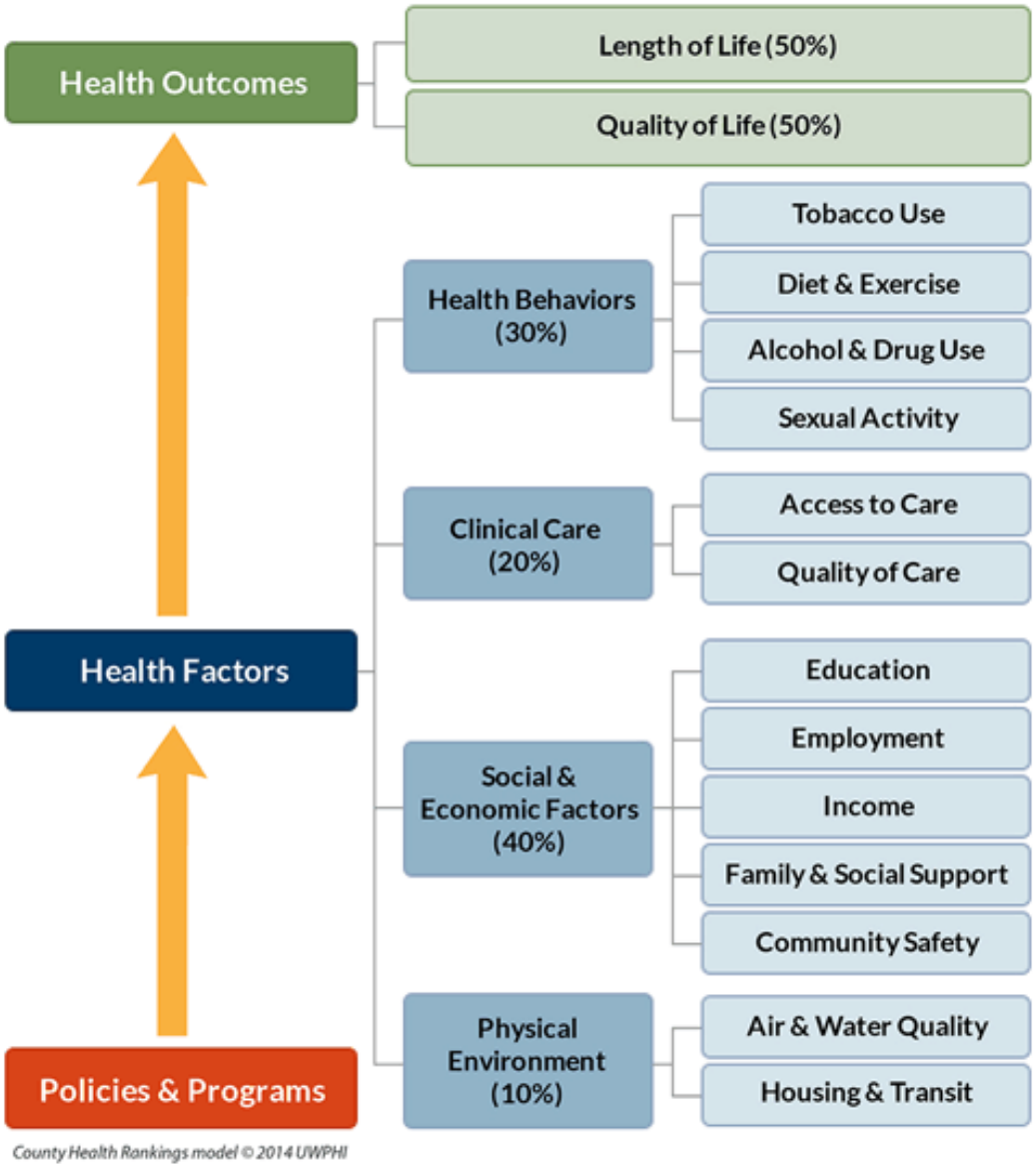

Figure 3.3 Contributing Factors to Overall Health Outcomes (Source: County Health Rankings, Robert Wood Johnson Foundation)

[7] "2012 West Virginia State Health Profile," Bureau for Public Health, West Virginia Department of Health and Human Resources. Available at http://www.dhhr.wv.gov/publichealthquality/statepublichealthassessment/Documents/2012%20State%20Health%20Profile%20Final%20May%202013.pdf.

- **West Virginia is a rural state:** The West Virginia Chamber of Commerce notes that more than 60% of West Virginians live in rural areas.[8] The majority of the state has a population density of fewer than 100 people per square mile, with a statewide average of 77.1 people per square mile.
- **West Virginia is an aging state:** West Virginia's population is among the oldest in the country, and the median age of West Virginia residents is rising, increasing from 38.9 in 2000 to 41.3 in 2010. According to the 2010 U.S. Census, West Virginia was one of only seven states with a median age above 40 and was surpassed only by Maine and Vermont with median ages of 42.7 and 41.5, respectively.
- **West Virginia has a low educational attainment:** In order, the highest education level achieved by the state population is a high school diploma, followed by some college, some high school and a bachelor's degree. The education disparity is particularly noticeable when compared to the U.S. population: Of the population 25 years and older, 18.7% of West Virginians have a bachelor's degree or higher, compared to 29.3% nationally.[9]
- **West Virginia has a high rate of poverty:** According to the CDC, West Virginia has the fourth-highest percentage in the nation of residents living in poverty, including 18% of all residents and 25.6% of those under 18.[10] From 2006 to 2010, the median household income for West Virginia's 740,874 households was $38,380, and the per capita income was $21,232.
- **West Virginia has a high disability rate:** In 2011, 18.9% of West Virginia's population reported some type of disability, compared to 12.1% of the U.S. population. Among West Virginia's population aged 18-64, 17.3% reported a disability (nationally, 10.2%), while 43.5% of the population over 65 reported some type of disability (nationally, 36.6%).

These factors are addressed in the SHSIP framework to mitigate the social determinants of health for individuals with or at high risk of developing chronic conditions and their associated avoidable complications.

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[8] "West Virginia: The Mountain State," West Virginia Chamber of Commerce. Available at http://www.wvchamber.com/.
[9] U.S. Census Bureau, QuickFacts. Available at http://census.gov/quickfacts/.
[10] "West Virginia School Health," Society for Public Health Education. Available at https://www.sophe.org/Sophe/PDF/WestVirginia2012_FINAL.pdf.

These factors also serve to illustrate the powerful interplay between social determinants and health outcomes. In that vein, West Virginia is pursuing an opportunity through CMS to explore the Accountable Health Communities (AHC) model, which emphasizes the importance of addressing social service needs through clinical and community linkages. The feasibility and impact of the AHC model delivery on health care costs and outpatient health care utilization is the focus of a five-year CMS Accountable Health Communities model funding opportunity, for which West Virginia-based entities have submitted a proposal. Sections 5.3 and 11.0 discuss the specifics of West Virginia's proposal in more detail.

3.3 Obesity and Related Chronic Conditions

At 35.7%, West Virginia has the second highest rate of adult obesity in the United States.[11] Each year the prevalence of obesity has been increasing, with the adult obesity rate in West Virginia projected to increase to 60.2% by the year 2030.[12]

Obesity can be a "comorbid" health condition, meaning the presence of more than one health condition or risk factors at the same time. Research consistently shows that obesity increases the risk of many other conditions—including cardiovascular disease, hypertension or diabetes—and significantly increases the risk of mortality from all causes.[13]

Importantly, lifestyle changes can effectively combat obesity. Studies have shown that intensive lifestyle modifications sustained over time result in a 58% reduction in new cases of diabetes[14] and a 42% reduction in new cases of hypertension.[15] Accordingly, containing or reducing the prevalence of obesity is an important health improvement objective of the SHSIP. Using HIT and

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[11] "The State of Obesity," Robert Wood Johnson Foundation and Trust for America's Health. Available at http://stateofobesity.org/states/wv/.
[12] "Adult Obesity Rates Could Exceed 60 Percent in 13 States by 2030, According to New Study," Robert Wood Johnson Foundation. Available at http://www.rwjf.org/en/library/articles-and-news/2012/09/adult-obesity-rates-could-exceed-60-percent-in-13-states-by-2030.html.
[13] "Addressing Obesity and Related Chronic Diseases," Bureau for Public Health, West Virginia Department of Health and Human Resources. Available at http://www.dhhr.wv.gov/hpcd/Documents/Obesity%20Plan%20January%202016.pdf.
[14] "Exercise and Type 2 Diabetes," the American College of Sports Medicine and the American Diabetes Association. Available at http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2992225/.
[15] Paul K. Whelton, Jiang He and Gail T. Louis. "Lifestyle Modification for the Prevention and Treatment of Hypertension."

data systems to track obesity-related trends and opportunities for improvement is an important aspect of the obesity improvement plan. Specific applications and uses of HIT and data for this objective are set forth in SHSIP Section 7.

3.3.1 Obesity Improvement Objective

Despite the widespread prevalence of obesity in West Virginia, only 21.6% of all West Virginia adults report being advised in the past year by a health care professional to lose weight. Only 12.8% of overweight West Virginia adults—and 46.7% of obese adults—report being advised to lose weight.[16] This presents a significant opportunity for improvement.

BPH estimates obesity-related health care costs in West Virginia will reach $2.4 billion annually by 2018.[17] In West Virginia, obesity accounts for 9.9% and 12% of Medicare and Medicaid spending, respectively.[18]

According to "The State of Obesity," obesity among adults in West Virginia has the following repercussions:[19]

- Obesity results in $1.4 billion to $1.8 billion in preventable direct medical costs and $5 billion in indirect costs (such as lost productivity).
- Half of these preventable costs are for Medicare and Medicaid.
- Obese adults spend 42% more on direct health care costs; morbidly obese costs are 81% greater than for normal weight adults.

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[16] "West Virginia Behavioral Risk Factor Surveillance System Report 2013," Bureau for Public Health, West Virginia Department of Health and Human Resources. Available at http://www.wvdhhr.org/bph/hsc/pubs/brfss/2013/BRFSS2013.pdf.
[17] "Addressing Obesity and Related Chronic Diseases," Bureau for Public Health, West Virginia Department of Health and Human Resources. Available at http://www.dhhr.wv.gov/hpcd/Documents/Obesity%20Plan%20January%202016.pdf.
[18] Benjamin H. Harris and Aurite Werman, "Obesity Costs Evident at the State Level," The Brookings Institution. Available at http://www.brookings.edu/blogs/up-front/posts/2014/12/12-obesity-costs-state-government-level-harris.
[19] "Addressing Obesity and Related Chronic Diseases," Bureau for Public Health, West Virginia Department of Health and Human Resources. Available at http://www.dhhr.wv.gov/hpcd/Documents/Obesity%20Plan%20January%202016.pdf.

- Obesity is associated with lower productivity while at work, costing employers $506 per obese worker per year.
- Medical claims cost $7,503 for healthy weight workers in contrast to $51,091 for obese workers.

Decreasing the prevalence rates of obesity would achieve the dual aims of improving health and lowering costs. An issue brief by the Robert Wood Johnson Foundation and Trust for America's Health estimates that if the BMIs of overweight and obese West Virginians were lowered by five percent, by 2030 the state would avoid nearly 60,000 cases of Type 2 diabetes, more than 50,000 cases of coronary heart disease and stroke, more than 40,000 cases of hypertension, 25,000 cases of arthritis and nearly 5,000 cases of obesity-related cancers. As a result, West Virginia citizens and health programs would save $1.3 billion in obesity-related health care costs by 2020 and $3.6 billion in health care costs by 2030.[20]

Change in this area requires a holistic approach, understanding that decisions that affect obesity are not made in a vacuum. In many neighborhoods, healthy, affordable foods are often expensive and scarce, while cheap processed foods are widely available. Finding safe, accessible places to be physically active can be a challenge for many. Obstacles are often higher for people with lower incomes and less education, and for racial and ethnic minorities. Where families live, learn, work and play all have a major impact on the choices they are able to make. Therefore, reversing the obesity epidemic will require individuals, families, schools, communities, businesses, government and every other sector of society to reduce barriers to healthy eating and active living—to foster a culture of health that makes healthy choices easier for all West Virginians.

The state health plan for improving obesity, "Addressing Obesity and Related Chronic Diseases," is cited extensively in this section. Section 9.2 discusses this plan in more detail and lays out its interventions for managing obesity, diabetes, hypertension and cardiovascular disease.

[20] "Bending the Obesity Cost Curve in West Virginia," Robert Wood Johnson Foundation and Trust for America's Health. Available at http://www.rwjf.org/content/dam/farm/reports/reports/2012/rwjf401517.

Two of the most significant drivers of obesity—lack of physical activity and poor nutrition habits—will be addressed in the following sections of this plan.

3.3.2 Physical Activity

West Virginia has one of the nation's highest rates of physical inactivity, with 31.4% of the adult population reporting no physical activity outside of job-related activities, compared to 26.6% for the United States.[21]

In 2013, only 12.7% of West Virginia adults met the CDC's recommended guidelines for weekly physical activity, and in 2014, approximately 12.3% of West Virginia adults reported both being obese and not exercising.[22]

3.3.3 Nutrition

Poor nutrition contributes to multiple health concerns within the SHSIP priority areas. The remainder of this sub-section is based on BPH's January 2016 report on obesity.[23]

In 2013, only 9.8% of West Virginia adults consumed five or more servings of fruits and vegetables daily, and 40.1% drank at least one sugar-sweetened beverage per day.

While lifestyle choices do influence nutrition and weight management, social determinants also play a role. According to data from the United States Department of Agriculture (USDA), about 15% of West Virginians, or about one in seven, is "food insecure," which means they have a hard time at some point throughout the year putting food on the table, whether due to lack of money, access or resources in

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[21] "West Virginia Behavioral Risk Factor Surveillance System Report 2013," Bureau for Public Health, West Virginia Department of Health and Human Resources. Available at http://www.wvdhhr.org/bph/hsc/pubs/brfss/2013/BRFSS2013.pdf.

[22] "Addressing Obesity and Related Chronic Diseases," Bureau for Public Health, West Virginia Department of Health and Human Resources. Available at http://www.dhhr.wv.gov/hpcd/Documents/Obesity%20Plan%20January%202016.pdf.

[23] "Addressing Obesity and Related Chronic Diseases," Bureau for Public Health, West Virginia Department of Health and Human Resources. Available at http://www.dhhr.wv.gov/hpcd/Documents/Obesity%20Plan%20January%202016.pdf.

general. Currently, parts of more than 40 West Virginia counties are considered "food deserts," a USDA-defined area that lacks access to fresh fruit, vegetables and other healthful whole foods. Instead of supermarkets and grocery stores, these communities may have no food access or are only served by fast food restaurants and convenience stores.

Part of the overall health improvement strategy includes policies to address these social determinants and make it easier for West Virginians to follow a healthy diet.

Targeted Interventions for Obesity, Physical Activity and Nutrition: The BPH has developed a series of recommended interventions to address the targeted conditions of obesity, lack of physical activity and poor nutrition. These recommendations are included in the SHSIP as foundational for system transformation and payment realignment to address these health improvement objectives. These interventions, as well as the others that follow throughout this section, are compiled into one table in Section 4.1.

3.3.4 Type 2 Diabetes (and Prediabetes)

In 2014, the prevalence of adult diabetes in West Virginia was 14.1%.[24] The prevalence of diabetes has been found to be highest among those aged 65 and older, those with less than a high school education, and those with the lowest income.[25] BPH estimates the number of West Virginians with diabetes is 240,626.[26] BPH also indicates that one in four individuals with diabetes is unaware they have the condition.[27] In 2014, 9.8% of adults in West Virginia had

[24] "Addressing Obesity and Related Chronic Diseases," Bureau for Public Health, West Virginia Department of Health and Human Resources. Available at http://www.dhhr.wv.gov/hpcd/Documents/Obesity%20Plan%20January%202016.pdf.
[25] "West Virginia Behavioral Risk Factor Surveillance System Report 2013," Bureau for Public Health, West Virginia Department of Health and Human Resources. Available at http://www.wvdhhr.org/bph/hsc/pubs/brfss/2013/BRFSS2013.pdf.
[26] "Diabetes in West Virginia," Division of Health Promotion and Chronic Disease, Bureau for Public Health, West Virginia Department of Health and Human Resources. Available at http://www.dhhr.wv.gov/hpcd/FocusAreas/wvdiabetes/Pages/DiabetesinWestVirginia.aspx.
[27] "The Big Picture: Diabetes in West Virginia," Bureau for Public Health, West Virginia Department of Health and Human Resources. Available at

prediabetes, meaning blood glucose levels higher than normal but below the threshold for diabetes.[28]

There is a strong correlation between diabetes and other conditions. BPH reports that 62% of West Virginia adults with high blood pressure also have prediabetes and 82% with prediabetes are overweight or obese.[29]

According to BPH, medical costs for people with diabetes in West Virginia are 2.3 times higher than for people without diabetes. Overall, the estimated direct medical cost of diabetes is $1.44 billion, with an additional $570 million of indirect cost (reduced or lost productivity, absenteeism, early death or disability) attributable to the disease, for a total cost of $2 billion to West Virginia citizens and businesses.[30]

Targeted Interventions for Diabetes and Prediabetes: As with obesity as outlined above, BPH has developed a series of recommended interventions to address the targeted conditions of diabetes and prediabetes. These recommendations are included in the SHSIP (see Section 4.1) to help coordinate efforts and align system transformation and alternative payment models to improve diabetes and prediabetes outcomes and management. Use of HIT systems and data to track outcomes, cost and improvement in the management of diabetes is an important aspect of the improvement plan, as outlined in greater detail in Section 7.

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http://www.dhhr.wv.gov/hpcd/data_reports/Documents/Big%20Picture%20WV%20Diabetes%20Infographic.pdf.

[28] "Addressing Obesity and Related Chronic Diseases," Bureau for Public Health, West Virginia Department of Health and Human Resources. Available at http://www.dhhr.wv.gov/hpcd/Documents/Obesity%20Plan%20January%202016.pdf.

[29] "Prediabetes in West Virginia," Bureau for Public Health, West Virginia Department of Health and Human Resources. Available at http://www.dhhr.wv.gov/hpcd/FocusAreas/Documents/2014%20Prediabetes%20WV%20Fact%20Sheet.pdf.

[30] "The Big Picture: Diabetes in West Virginia," Bureau for Public Health, West Virginia Department of Health and Human Resources. Available at http://www.dhhr.wv.gov/hpcd/data_reports/Documents/Big%20Picture%20WV%20Diabetes%20Infographic.pdf.

3.3.5 Hypertension

In 2013, more than 41% of the adult population in West Virginia had hypertension, or high blood pressure—ranking West Virginia second highest in the nation for the prevalence of hypertension. The prevalence of high blood pressure increases significantly with age (68.9% for West Virginians over age 65) and varies by race (higher for African-Americans than Caucasians). Additionally, education level is a factor: BPH reports West Virginia adults without a high school diploma and those with lower incomes had significantly higher hypertension prevalence than those with more education and higher incomes.[31]

The CARDIAC Project found that 22.8% of West Virginia fifth-graders who were screened through the project in 2015 were hypertensive (at or above 95th percentile for systolic and/or diastolic blood pressure). Over the course of the project's 17 years, 23.2% of the fifth-graders screened were hypertensive.[32]

Nationally, CDC and HHS have launched the Million Hearts campaign to address hypertension and heart disease. Million Hearts is a national initiative to prevent 1 million heart attacks and strokes by 2017.[33] Million Hearts offers West Virginia an opportunity to align with these national efforts focused on improved health outcomes for two of the targeted disease states in the State Health Improvement Plan. The Million Hearts campaign also contemplates the use of HIT systems and data to identify opportunities for improvement in addressing the ABCS of heart health (aspirin use, blood pressure control, cholesterol control and smoking cessation). This approach aligns with the overall SHSIP HIT and data strategies outlined in Section 7.

Targeted Interventions for Hypertension and Pre-Hypertension: As with obesity and diabetes as outlined above, BPH has developed a series of recommended interventions to address the targeted conditions of hypertension and pre-hypertension. These recommendations are included in the SHSIP (see Section 4.1) to align

[31] "West Virginia Behavioral Risk Factor Surveillance System Report 2013," Bureau for Public Health, West Virginia Department of Health and Human Resources. Available at http://www.wvdhhr.org/bph/hsc/pubs/brfss/2013/BRFSS2013.pdf.
[32] The CARDIAC Project. Available at http://www.cardiacwv.org/?pid=9.
[33] Million Hearts, U.S. Department of Health and Human Services. Available at http://millionhearts.hhs.gov.

system transformation and alternative payment models to improve control of hypertension in this population.

3.3.6 Cardiovascular Disease

In 2014, heart disease alone claimed 21.1% of lives lost in West Virginia (see Figure 3.4). The previous year, West Virginia exceeded national averages for a number of heart conditions:[34]

- **Coronary heart disease:** West Virginia ranked second highest nationally for the prevalence of coronary heart disease (angina) among adults (7.5%, compared to 4.2% nationally).
- **Heart attack:** The prevalence of heart attacks among West Virginia adults was 7.8%, compared to 4.4% for the U.S.
- **Stroke:** 3.9% of West Virginia adults reported ever being told they had a stroke, compared to 2.9% of adults nationally.
- **Cardiovascular disease:** The overall cardiovascular disease prevalence for West Virginia was the highest in the nation at 13.7% (compared to 8.6% for the U.S.).

Cardiovascular risk factors can be detected in childhood and adolescence. As noted previously, more than 22% of West Virginia fifth-graders screened by the CARDIAC Project were hypertensive in 2015. In addition to this risk factor, CARDIAC also found that 25.7% of this group had abnormal lipids.[35]

[34] "West Virginia Behavioral Risk Factor Surveillance System Report 2013," Bureau for Public Health, West Virginia Department of Health and Human Resources. Available at http://www.wvdhhr.org/bph/hsc/pubs/brfss/2013/BRFSS2013.pdf.
[35] The CARDIAC Project. Available at http://www.cardiacwv.org/?pid=9.

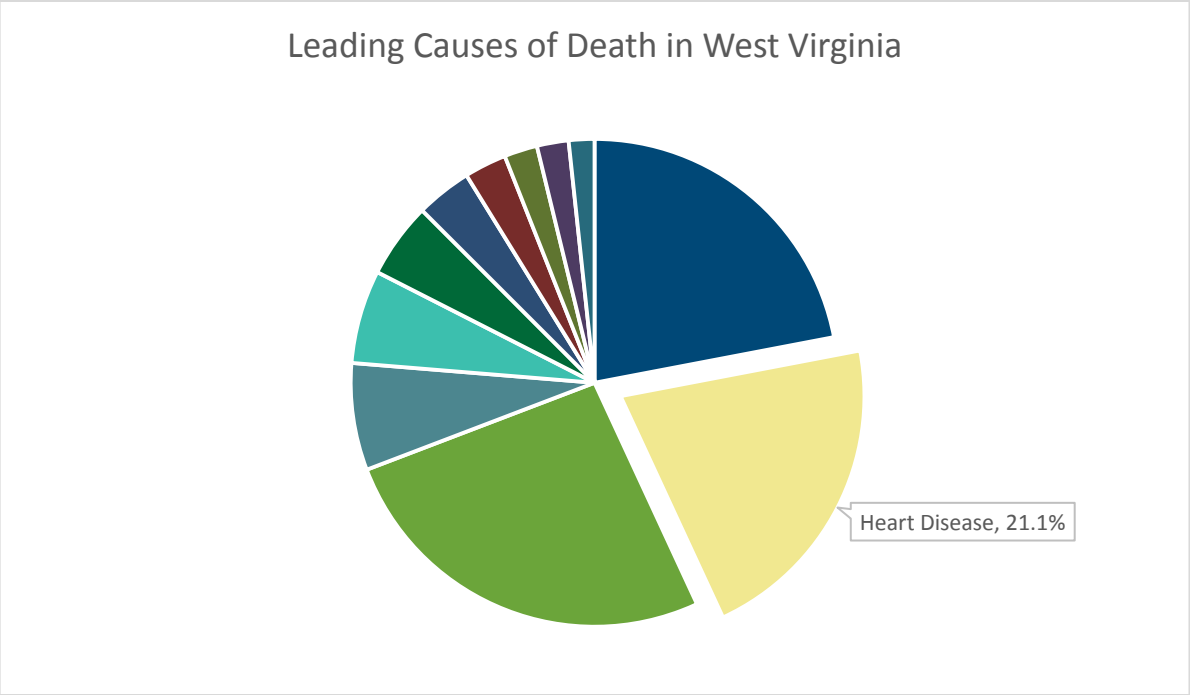

Figure 3.4 Leading Causes of Death in West Virginia (Source: Centers for Disease Control and Prevention, WISQARS Leading Cause of Death Reports, 2014)

Heart disease is a costly burden for the United States. The American Heart Association projects total direct medical costs of cardiovascular disease to triple between 2010 and 2030, soaring from $273 billion to $818 billion. In terms of lost productivity, real indirect costs will grow by 61%, from $172 billion to $276 billion.[36]

3.4 Tobacco Use and Related Conditions

Tobacco use is the number one preventable cause of premature death and disease. It significantly worsens health and can lead to a number of conditions, including cancers, chronic obstructive pulmonary disease (COPD), coronary heart disease, stroke and diabetes.

[36] Paul A. Heidenreich et al., "Forecasting the Future of Cardiovascular Disease in the United States," American Heart Association. Available at http://circ.ahajournals.org/content/123/8/933.long.

3.4.1 Tobacco Use

West Virginia continues to have the highest reported adult smoking rates among all states. The Health Statistics Center and Division of Tobacco Prevention estimate cigarette consumption in West Virginia at 573 packs per year per smoker for 2009, or about 1.5 packs per day per smoker. Projecting over a 30-year time period, the average West Virginia adult smoker may spend more than $122,000 on cigarettes.[37]

In West Virginia, the costs of tobacco use are incredibly high, in terms of both lives lost and economic costs. WVDHHR reports that almost 4,000 West Virginia residents die each year from tobacco use and secondhand smoke exposure. Economic costs are estimated to be nearly $2 billion annually, 40% from direct health care costs and 60% associated with occupational and work productivity costs.

Smoking and smoking-related illnesses are a major burden for employers, with an annual cost to West Virginia employers of $1,865 per smoker in excess medical expenses and $2,811 per smoker in lost productivity, according to WVDHHR. Absenteeism is 50% higher for smokers than for nonsmokers. Businesses pay an average of $2,189 in workers' compensation costs for smokers, compared with $176 for nonsmokers.

Finally, WVDHHR notes that, on average, each West Virginia resident aged 35 or older who has a smoking-related death loses 14.8 years of productive life, or an average of $283,000 in lost wages due to premature death.[38]

Section 9.2 details the state's plan to address tobacco use in West Virginia through BPH's Division of Tobacco Prevention (DTP). That section also discusses DTP's core programs, which are an important element of the state public health infrastructure to be leveraged through the SHSIP. As noted above, smoking and tobacco cessation is an important aspect of the Million Hearts campaign, and the use of HIT and data systems to track and coordinate tobacco cessation

[37] "What a WV Smoker Spends on Cigarettes in a Lifetime," Health Statistics Center and Division of Tobacco Prevention, West Virginia Department of Health and Human Resources. Available at http://www.dhhr.wv.gov/wvdtp/Resources/reports/Documents/summary-what-smoker-spends.pdf.
[38] "Employee Tobacco Use Is Hurting Your Business's Bottom Line," West Virginia Tobacco Cessation Program, West Virginia Department of Health and Human Resources. Available at http://www.dhhr.wv.gov/wvdtp/wvbusiness/Documents/Employee%20Tobacco%20Use2-jh2-11-15.pdf.

efforts and referrals is an important aspect of the SHSIP. Details of the HIT and data strategies for health improvement are described in Section 7.

3.4.2 Adult and Youth Tobacco Utilization

The consequences of tobacco use are well-known to West Virginians, yet residents continue to use tobacco in alarming numbers. Of West Virginia adults, 26.7% are current smokers (smoking every day or some days). National adult smoking utilization is 17.4%, ranking West Virginia the highest among all states.[39]

The Youth Risk Behavior Surveillance System (YRBSS) Report for 2013 ranks West Virginia as number two in the country for current smoking among youth (WV 19.6%; US 15.7%).[40] In 2014, a Surgeon General's report estimated that 47,000 West Virginia youths would die prematurely due to smoking and tobacco use.[41]

3.4.3 Tobacco Utilization During Pregnancy

BPH reports that 26.3% of women in West Virginia report smoking during pregnancy. This rate has stayed relatively steady over the past decade. The prevalence of smoking during pregnancy is even higher among Medicaid beneficiaries: 38.5% of female Medicaid beneficiaries in West Virginia are tobacco users, and Medicaid financed 60% of all births in 2010 in which insurance status was known.[42]

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[39] West Virginia Behavioral Risk Factor Survey, 2014. Bureau for Public Health, West Virginia Department of Health and Human Resources.
[40] "West Virginia Youth Risk Behavior Surveillance System 2013," West Virginia Department of Education. Available at http://wvde.state.wv.us/healthyschools/YRBS.htm.
[41] "The Health Consequences of Smoking—50 Years of Progress," Office of the Surgeon General, U.S. Department of Health and Human Services. Available at http://www.surgeongeneral.gov/library/reports/50-years-of-progress/full-report.pdf.
[42] "Addressing Tobacco Use Among Pregnant Women in West Virginia," West Virginia Department of Health and Human Resources. Available at http://www.dhhr.wv.gov/wvdtp/cessation/tobaccofreepregnanc/Documents/Break%20Free%20Alliance%20Expert%20Panel%20WV%20Smoking%20and%20Pregnancy%20Report%20FINAL%2012-13.pdf.

3.4.4 COPD and Associated Cancers

The 2013 Behavioral Risk Factor Surveillance System (BRFSS) found COPD prevalence in West Virginia to be the second highest in the nation (WV 10.6%; US 6.4%).[43] From 2005-2009, West Virginia's age-adjusted incidence rate for lung and bronchus cancer was 90.4 per 100,000 people, compared with the United States rate of 67.2 per 100,000. For those cancers, West Virginia's mortality rate was 67 per 100,000, compared with the national rate of 50.6 per 100,000.[44]

3.4.5 Smokeless Tobacco and Other Nicotine Products

According to the 2013 BRFSS, West Virginia adults and youth are the number one users of smokeless tobacco in the country (WV adults 9.4%; US 4.5% and WV youth 15.9%; US 8.8%).[45]

Targeted Interventions for Tobacco Use and Prevention: As with the other targeted chronic diseases and unhealthy behaviors outlined above, BPH has developed a series of recommended interventions to address tobacco use and prevention efforts in West Virginia. These recommendations are included in the SHSIP (see Section 4.1) as part of the comprehensive effort to reduce and prevent use of tobacco products as part of the overall health improvement plan.

3.5 Behavioral Health

Behavioral health is a vital part of overall health and wellness. However, evidence shows there are challenges in coordinating care for those with behavioral health issues, including timely and effective access to care and care coordination among multiple treating providers. Behavioral health disorders

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[43] "West Virginia Behavioral Risk Factor Surveillance System Report 2013," Bureau for Public Health, West Virginia Department of Health and Human Resources. Available at http://www.wvdhhr.org/bph/hsc/pubs/brfss/2013/BRFSS2013.pdf.

[44] "2012 West Virginia State Health Profile," Bureau for Public Health, West Virginia Department of Health and Human Resources. Available at http://www.dhhr.wv.gov/publichealthquality/statepublichealthassessment/Documents/2012%20State%20Health%20Profile%20Final%20May%202013.pdf.

[45] "West Virginia Behavioral Risk Factor Surveillance System Report 2013," Bureau for Public Health, West Virginia Department of Health and Human Resources. Available at http://www.wvdhhr.org/bph/hsc/pubs/brfss/2013/BRFSS2013.pdf.

are widespread—nearly universal—among the patients who most frequently utilize health care services; as such, any effort to address the high-cost/high-need population is virtually impossible without addressing behavioral health.

Research has also demonstrated a strong likelihood of co-occurrence of mental and substance abuse disorders. For purposes of this section of the SHSIP, behavioral health issues are defined to include mental health and substance use issues, including abuse of legal and illegal substances.

Mental health problems affect many, but are treated in few. Almost half of American adults in the course of a lifetime will experience mental illness.[46] However, a 2011 survey by the Substance Abuse and Mental Health Services Administration (SAMHSA) indicated that that only 38% of individuals with mental health issues have received appropriate services.[47]

One of the measures of behavioral health is self-reported poor mental health days, or the average number of days in the past 30 days that a person could not perform household tasks or other work because of mental illness. In the 2013 BRFSS, West Virginia adults were posed the question, "Now thinking about your mental health, which includes stress, depression and problems with emotions, for how many days during the past 30 days was your mental health not good?" In response, 15% said 14 or more days—marking the highest prevalence of self-reported poor mental health out of all 53 participating states and territories. Additionally, West Virginia's prevalence was significantly higher than the U.S. prevalence of 11.5%. The prevalence of reported poor mental health was significantly higher among females (17.2%) than males (12.8%).[48]

According to the National Survey on Drug Use and Health, mental illness is more prevalent in West Virginia than the nation as a whole—for both general illness (Table 3.1) and serious illness (Table 3.2).[49] As illustrated in these tables, from 2008 to 2011 adults in West Virginia reported a higher rate of

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[46] "Mental Illness Surveillance Fact Sheet," Centers for Disease Control and Prevention. Available at http://www.cdc.gov/mentalhealthsurveillance/fact_sheet.html.
[47] "Results from the 2011 National Survey on Drug Use and Health: Mental Health Findings," Substance Abuse and Mental Health Services Administration.
[48] "West Virginia Behavioral Risk Factor Surveillance System Report 2013," Bureau for Public Health, West Virginia Department of Health and Human Resources. Available at http://www.wvdhhr.org/bph/hsc/pubs/brfss/2013/BRFSS2013.pdf.
[49] "2013 West Virginia Behavioral Health Epidemiological Profile," Bureau for Behavioral Health and Health Facilities, West Virginia Department of Health and Human Resources. Available at http://www.dhhr.wv.gov/bhhf/resources/documents/2013_state_profile.pdf.

serious mental illness in the past year than did adults in the United States. In both West Virginia and the country as a whole, young adults 18-25 years old reported a higher rate of serious mental illness in the past year than those 26 and older.

Percentage of Those with Any Mental Illness in the Past Year Among Adults						
	West Virginia			United States		
Ages	2008-2009	2009-2010	2010-2011	2008-2009	2009-2010	2010-2011
18-25	32.2	30.0	29.9	30.7	30.2	30.0
26 and older	20.7	21.4	20.6	17.9	18.3	18.1
18 and older	**22.1**	**22.6**	**21.8**	**19.8**	**20.0**	**19.8**

Source: NSDUH

Note: Any Mental Illness is defined as having a diagnosable mental, behavioral, or emotional disorder, other than a developmental or substance use disorder that met the criteria found in the 4th edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV). 2008-2011 data was revised March 2012. State estimates: along with the 95 percent Bayesian confidence (credible) intervals, are based on a survey-weighted hierarchical Bayes estimation approach and generated by Markov Chain Monte Carlo techniques. US estimates: design-based (direct) estimates and corresponding 95 percent confidence intervals.

Percentage of Those with Serious Mental Illness in the Past Year Among Adults						
	West Virginia			United States		
Ages	2008-2009	2009-2010	2010-2011	2008-2009	2009-2010	2010-2011
18-25	8.4	7.5	7.6	7.4	7.6	7.7
26 and older	5.7	5.6	5.9	4.1	4.5	4.5
18 and older	**6.1**	**5.9**	**6.1**	**4.6**	**4.9**	**5.0**

Source: NSDUH

Note: Serious Mental Illness is defined as having a diagnosable mental, behavioral, or emotional disorder, other than a developmental or substance use disorder that met the criteria found in the 4th edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) and resulted in serious functional impairment. 2008-2011 data was revised March 2012. State estimates: along with the 95 percent Bayesian confidence (credible) intervals, are based on a survey-weighted hierarchical Bayes estimation approach and generated by Markov Chain Monte Carlo techniques. US estimates: design-based (direct) estimates and corresponding 95 percent confidence intervals.

Tables 3.1 and 3.2 Prevalence of Mental Illness and Serious Mental Illness in West Virginia and the U.S., 2008-2011 (Source: 2013 West Virginia Behavioral Health Epidemiological Profile)

While behavioral health issues affect people of all backgrounds, they tend to be particularly prominent in special needs populations such as homeless individuals or victims of domestic abuse. In West Virginia, 33.4% of the sheltered homeless and 52.5% of the unsheltered homeless report chronic substance abuse. Severe mental illness is prevalent in 26.2% of the sheltered and 32.8% of the unsheltered homeless.

Substance abuse is also a contributor to domestic violence; in fact, in 2012 it was identified as contributing to domestic violence in 45.7% of West Virginia Coalition Against Domestic Violence cases.[50]

3.5.1 Depression

The most common behavioral health condition is depression, which causes feelings of sadness and anxiety. Left untreated, depression is a significant health issue with adverse consequences including co-morbid mental disorders and higher rates of suicide. In fact, depressed individuals are at 25 times greater risk for suicide than the population overall.[51]

In West Virginia, according to the 2013 BRFSS, 22% of adults self-report having been told they have a depressive disorder (including depression, major depression, dysthymia or minor depression), compared to the national average of 17.7%. Adult females had a significantly higher percentage of depression than males, and the highest percentage of depression was among those 45-54.[52]

3.5.2 Suicide

West Virginia has the 17th highest suicide rate of any state in the nation, with a rate of 16.4 compared to the national average of 12.6 per hundred thousand. In 2013, there were 323 deaths by suicide in the state.[53] By comparison, the CDC reports that 320 people died in motor vehicle accidents in the same year.[54]

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[50] "2013 West Virginia Behavioral Health Epidemiological Profile," Bureau for Behavioral Health and Health Facilities, West Virginia Department of Health and Human Resources. Available at http://www.dhhr.wv.gov/bhhf/resources/documents/2013_state_profile.pdf.
[51] "Depression and Suicide Risk," American Association of Suicidology. Available at http://www.suicidology.org/portals/14/docs/resources/factsheets/2011/depressionsuicide2014.pdf.
[52] "West Virginia Behavioral Risk Factor Surveillance System Report 2013," Bureau for Public Health, West Virginia Department of Health and Human Resources. Available at http://www.wvdhhr.org/bph/hsc/pubs/brfss/2013/BRFSS2013.pdf.
[53] "Stats of the State of West Virginia," Centers for Disease Control and Prevention. Available at http://www.cdc.gov/nchs/pressroom/states/WV_2015.pdf.
[54] "State-Specific Costs of Motor Vehicle Crash Deaths," Centers for Disease Control and Prevention. Available at www.cdc.gov/motorvehiclesafety/statecosts.

According to the 2012 West Virginia State Health Profile, in 2009 nearly two-thirds of suicides were firearms-related. The average age of death for a suicide victim at that time was 46.7, and suicide was the 12th leading cause of death overall. Among the population aged 15-34, however, suicide was the leading cause of death.[55]

3.5.3 Substance Abuse

Substance abuse is a major public health issue in West Virginia and nationally that involves the misuse of legal and illegal substances, including prescription medications, alcohol and non-prescription medications and substances.

One of the most serious threats to West Virginia's health is the opioid crisis. West Virginia has the nation's highest per capita rate of deaths due to drug overdose; of those deaths, nine out of 10 are the direct or indirect result of prescription drug use.[56]

As illustrated in Figure 3.5, opiates accounted for the highest percentage of substance abuse treatment admissions in West Virginia from 2002-2010 (34.9%), which was four times higher than the national percentage (8.7%).

West Virginia ranks third in the country for the per capita number of opioid pain reliever prescriptions.[57] Some researchers believe the opioid crisis in West Virginia stems from the high number of manual labor jobs (mining, timbering, manufacturing, etc.) that expose workers to risks for injury. As a result, opioids are prescribed more

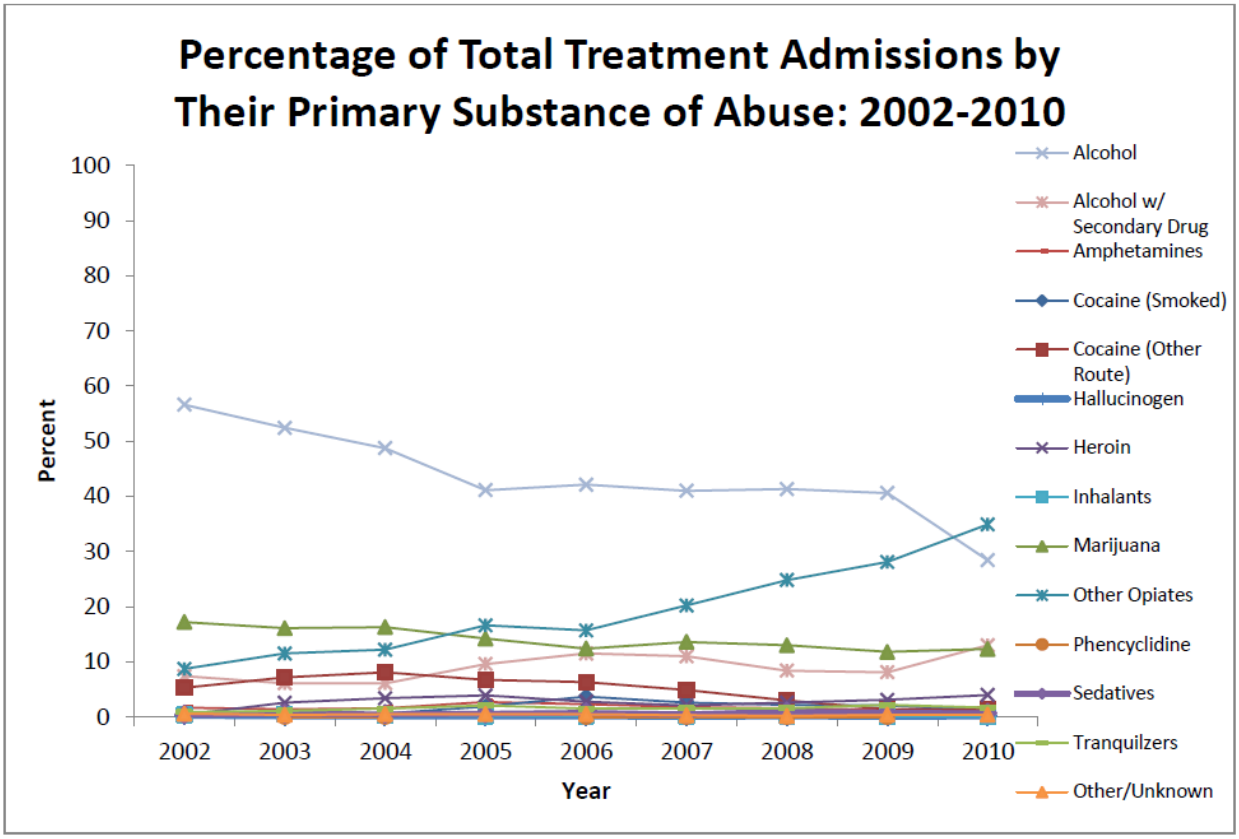
[55] "2012 West Virginia State Health Profile," Bureau for Public Health, West Virginia Department of Health and Human Resources. Available at http://www.dhhr.wv.gov/publichealthquality/statepublichealthassessment/Documents/2012%20State%20Health%20Profile%20Final%20May%202013.pdf.

[56] "A West Virginia Summit on Prescription Drug Abuse: Report and Recommendations," United States Department of Justice. Available at https://www.justice.gov/sites/default/files/usao-sdwv/legacy/2011/08/11/Summit_Report.pdf

[57] Harrison Jacobs, "The states prescribing the most painkillers aren't the ones you think," Business Insider. Available at http://www.businessinsider.com/these-are-the-states-prescribing-the-most-opioid-painkillers-2016-3.

frequently. Economic struggles and job loss in recent years have only served to compound the problem.[58]

According to the West Virginia Prescription Drug Abuse Quitline, the most common responses for where respondents indicated that they obtained their prescription drugs in 2012 were: buy on the street (86.9%), legitimate prescription (40.2%) and buying from family or friend (33.3%).



Source: TEDS

Figure 3.5 West Virginia Treatment Admissions by Primary Substance, 2002-2010 (Source: 2013 West Virginia Behavioral Health Epidemiological Profile)

It is important to note that the data displayed in Figure 3.5 are from 2010, and many drug issues in the state (particularly with heroin) have emerged within the last few years. As such, these data likely

[58] Harrison Jacobs, "Here's why the opioid epidemic is so bad in West Virginia — the state with the highest overdose rate in the US," Business Insider. Available at http://www.businessinsider.com/why-the-opioid-epidemic-is-so-bad-in-west-virginia-2016-4.

underestimate the extent of heroin abuse in West Virginia, and possibly of opiates in general.

3.5.4 Alcohol Abuse

Unless otherwise noted, the facts that follow are drawn from the WVBHEP.[59]

West Virginia's alcohol consumption remains among the lowest in the United States. According to the 2013 BRFSS, in West Virginia 66% of adults did not drink at all in the past month, compared with 47.4% nationally—ranking the state the third highest for non-consumption of alcohol.[60]

West Virginia has the lowest rate of binge drinking of any state in the nation,[61] although the intensity of binge drinking (number of drinks per occasion) is higher in West Virginia than it is nationally.[62] Similarly, according to the BRFSS, in 2011 West Virginia had a significantly lower percentage of heavy drinking compared to the United States and had the second lowest percentage of heavy drinking in the nation.[63]

However, these consumption statistics do not mean that alcohol use is not a health concern in West Virginia. According to the West Virginia Prevention Resource Center, 1,262 people died in the state due to alcohol-related causes between 1999 and 2007, and the number of alcohol-related deaths has continued to rise since 2004.[64]

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[59] "2013 West Virginia Behavioral Health Epidemiological Profile," Bureau for Behavioral Health and Health Facilities, West Virginia Department of Health and Human Resources. Available at http://www.dhhr.wv.gov/bhhf/resources/documents/2013_state_profile.pdf.
[60] "West Virginia Behavioral Risk Factor Surveillance System Report 2013," Bureau for Public Health, West Virginia Department of Health and Human Resources. Available at http://www.wvdhhr.org/bph/hsc/pubs/brfss/2013/BRFSS2013.pdf.
[61] America's Health Rankings. Available at http://www.americashealthrankings.org/WV/binge.
[62] "Prevention Status Report 2013: Excessive Alcohol Use, West Virginia," Centers for Disease Control and Prevention. Available at http://www.cdc.gov/psr/2013/alcohol/2013/wv-alcohol.pdf.
[63] "West Virginia Behavioral Risk Factor Surveillance System Report 2013," Bureau for Public Health, West Virginia Department of Health and Human Resources. Available at http://www.wvdhhr.org/bph/hsc/pubs/brfss/2013/BRFSS2013.pdf.
[64] "2012 West Virginia State Health Profile," Bureau for Public Health, West Virginia Department of Health and Human Resources. Available at

The percentage of treatment admissions for alcohol as their primary substance abuse in West Virginia was nearly double the percent of the United States from 2002 to 2009. However, in 2010 the percentage in West Virginia decreased by 12.2%, narrowing the gap from the national percentage (WV 28.4%, US 22.3%). Alcohol abuse in 2010 accounted for 28.4% of admissions for primary substance abuse and was the second highest reported primary substance abuse among treatment admissions (see Figure 3.5 in Section 3.5.3).

3.5.5 Neonatal Abstinence Syndrome

Another major issue related to alcohol use is a woman's consumption of alcohol while pregnant. According to West Virginia's Pregnancy Risk Assessment Monitoring System, in 2010 3.7% of women reported drinking alcohol during the last three months of pregnancy, the highest percentage of which were pregnant women aged 35 and over.[65]

West Virginia has a serious need for prenatal public health drug treatment and prevention resources, particularly in the southeastern region of the state. This conclusion comes from a study on neonatal abstinence syndrome prevalence in West Virginia, which found that between 2007 and 2013, the incidence rate of NAS significantly increased from 7.74 to 31.56 per 1,000 live births per year. This four-fold increase resulted in the West Virginia rate being three times the national average.[66]

3.5.6 Integration of Primary Care and Behavioral Health Services

In the conversation about transforming health care delivery, behavioral health and primary care cannot be separated. According to information from the West Virginia Medicaid program, primary care

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http://www.dhhr.wv.gov/publichealthquality/statepublichealthassessment/Documents/2012%20State%20Health%20Profile%20Final%20May%202013.pdf.

[65] "2013 West Virginia Behavioral Health Epidemiological Profile," Bureau for Behavioral Health and Health Facilities, West Virginia Department of Health and Human Resources. Available at http://www.dhhr.wv.gov/bhhf/resources/documents/2013_state_profile.pdf.

[66] Meagan E. Stabler et al., "Neonatal Abstinence Syndrome in West Virginia Substate Regions, 2007-2013," Journal of Rural Health. Available at http://www.ncbi.nlm.nih.gov/pubmed/26879950.

providers deliver more than 50% of all behavioral health care in West Virginia, and they are the largest prescribers of psychotropic medications.[67]

Even in the absence of a recognized behavioral health disorder, modifiable health behavior risk factors that can be addressed in an integrated care environment play a major role in many chronic conditions. For example, lifestyle modification is an important part of treatment for common chronic conditions such as obesity, diabetes and hypertension.

Patients with co-morbid behavioral health and chronic medical conditions often become high-cost users of health care. Effective care coordination is often absent among this population, resulting in unnecessary complications and avoidable admissions/readmissions to ERs and inpatient units.

Federal agencies such as the Agency for Healthcare Research and Quality (AHRQ), Substance Abuse and Mental Health Services Administration (SAMHSA) and Health Resources and Services Administration (HRSA) encourage integration of primary care and behavioral health services. Robert Wood Johnson Foundation's County Health Rankings reports:[68]

> There is strong evidence that integrating behavioral health into primary care practice improves mental health, especially depression symptoms. Integrating care also increases patients' adherence to treatment, improves their quality of life and increases satisfaction and engagement with health care providers. Collaborative care approaches that use case managers to organize and integrate behavioral and primary care improve response to treatment, increase remission and recovery from symptoms, and increase satisfaction with care among patients with depression in the short and long term. For patients suffering from chronic pain and substance abuse

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[67] "Integration: Primary Care & Behavioral Health," West Virginia Department of Health and Human Resources. Available at http://www.dhhr.wv.gov/bhhf/Documents/2013%20IBHC%20Presentations/Day%202%20Workshops/INTEGRATION%20BMS%20(4).pdf.

[68] County Health Rankings, Robert Wood Johnson Foundation. Available at http://www.countyhealthrankings.org/policies/behavioral-health-primary-care-integration.

disorders in addition to depression, multiple interventions in primary care settings (e.g., motivational interviewing and cognitive behavioral therapy) may more effectively improve mental health and reduce drug and alcohol use than a single intervention.

County Health Rankings also notes there are proven models that can be replicated to address the integration of services. Two examples are:

- The AIMS Center at the University of Washington: AIMS' Collaborative Care model is based on five core principles: patient-centered team care, population-based care, measurement-based treatment to target, evidence-based care and accountable care. Under this model, a core team of primary care providers, behavioral health providers or case managers, and psychiatrist consultants works together to treat depression and anxiety.[69]
- The D.I.A.M.O.N.D. program in Minnesota: In a similar collaborative fashion, the DIAMOND program treats patients with depression through a team approach: with a primary care provider working closely with a care coordinator and consulting with a psychiatrist as needed.[70]

3.5.7 Mental Health Provider Availability

Nationally, there is one mental health provider for every 566 individuals, according to Mental Health America (MHA). MHA defines "mental health provider" as psychiatrists, psychologists, licensed clinical social workers, counselors, marriage and family therapists and advanced practice nurses specializing in mental health care.

MHA ranks West Virginia 34th in the nation for access to mental health care.[71] There are 910 individuals for every one mental health provider

[69] "Collaborative Care," AIMS Center, University of Washington. Available at http://aims.uw.edu/collaborative-care.
[70] "D.I.A.M.O.N.D. Program," CentraCare Health. Available at http://www.centracare.com/services/behavioral-health/diamond-program/.
[71] "Mental Health in America - Access to Care Data," Mental Health America. Available at http://www.mentalhealthamerica.net/issues/mental-health-america-access-care-data.

in West Virginia—making mental health care more than three times less accessible when compared to the states with the best access. Within the state, access to mental health care varies widely, with provider to population ratios ranging from 1:9,010 in Mason County to 1:420 in Ohio County. Access to care is particularly scarce in many of West Virginia's rural counties, where there are a high number of individuals for each mental health provider.[72]

County Health Rankings notes that peer support specialists, workforce development programs and innovative models of integrated care such as collaborative care are possible solutions to the significant mental health workforce gap in states such as West Virginia.

Another strategy to bridge gaps in care is to effectively leverage telehealth. Project ECHO (Extension for Community Healthcare Outcomes) is one such application that is expanding access to specialty care. Originally, the project started in New Mexico for hepatitis C treatment, but has since expanded to include other regions and chronic diseases. Project ECHO uses videoconferencing technology to create knowledge-sharing networks between specialists and primary care providers in rural or underserved communities. Under this model, specialists provide best-practice education to primary care teams, enabling them to provide specialty care services in their own communities.[73] West Virginia recently started a Project ECHO clinic for hepatitis C and is developing an ECHO clinic to improve care for opioid use disorders. The state has begun to work closely with the Project ECHO team at the University of New Mexico and plans to continue expansion of this model for behavioral health and other chronic health conditions.

HIT systems and data exchange can also be used to better integrate service delivery. As noted in other sections of the SHSIP, disparate interpretations and understandings of privacy and health information securities laws and regulations, lack of interoperability among diverse EHRs and operational limitations serve as barriers that must be addressed to better leverage HIT and data tools for care integration.

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[72] County Health Rankings, Robert Wood Johnson Foundation. Available at http://www.countyhealthrankings.org/app/west-virginia/2016/measure/factors/62/map.
[73] Project Echo, University of New Mexico. Available at http://echo.unm.edu/.

3.5.8 Behavioral Health Improvement Objectives

West Virginia has been relatively progressive in transitioning from institutional care for behavioral health issues to a more comprehensive, community-based system of care. For adults with severe and persistent mental illnesses, West Virginia's behavioral health system emphasizes community integration, recovery and adaptation. The SHSIP provides an opportunity for the state to accelerate this transition and bolster behavioral health care for the West Virginia population.

As noted previously, many consumers of mental health services utilize their primary care physician for treatment, regardless of the doctor's expertise with psychiatric illnesses or emotional disorders. The next step is to strengthen linkages and integrate primary care services with more specialized behavioral health services that are patient-centered and needs-driven—building a foundation for better behavioral health care and driving health system transformation.

West Virginia adopted a series of improvement objectives for behavioral health services as part of the Healthy People 2010 plan.[74] These objectives have not been updated for Healthy People 2020 in West Virginia.

> Objective 1: Increase the reported use of crisis services provided by community behavioral health centers.
>
> Objective 2: Reduce the statewide suicide rate.
>
> Objective 3: Increase the number of individuals with serious mental illnesses who are engaged in competitive employment.
>
> Objective 4: Decrease the number of persons with mental illness who are jailed due to minor offenses as a result of their psychiatric conditions.
>
> Objective 5: Increase the number of specialized Mentally Ill and Chemical Addiction (MICA) programs for dually diagnosed consumers.

[74] West Virginia Healthy People 2010, Section 18. Available at https://www.wvdhhr.org/bph/hp2010/objective/18.htm.

Objective 6: (Developmental) Increase the approval rate of adults with serious mental illness, children with serious emotional disturbances, families of adults with mental illnesses and parents of children with serious emotional disturbances for the quality and appropriateness of care provided to them through the health care delivery system.

The national Healthy People 2020 behavioral health improvement objectives are as follows:[75]

MHMD-1: Reduce the suicide rate.

MHMD-2: Reduce suicide attempts by adolescents.

MHMD-3: Reduce the proportion of adolescents who engage in disordered eating behaviors in an attempt to control their weight.

MHMD-4: Reduce the proportion of persons who experience major depressive episodes (MDEs).

MHMD-5: Increase the proportion of primary care facilities that provide mental health treatment onsite or by paid referral.

MHMD-6: Increase the proportion of children with mental health problems who receive treatment.

MHMD-7: Increase the proportion of juvenile residential facilities that screen admissions for mental health problems.

MHMD-8: Increase the proportion of persons with serious mental illness (SMI) who are employed.

MHMD-9: Increase the proportion of adults with mental health disorders who receive treatment.

MHMD-10: Increase the proportion of persons with co-occurring substance abuse and mental disorders who receive treatment for both disorders.

[75] Healthy People 2020, Mental Health and Mental Disorders. Available at https://www.healthypeople.gov/2020/topics-objectives/topic/mental-health-and-mental-disorders/objectives.

MHMD-11: Increase depression screening by primary care providers.

MHMD-12: Increase the proportion of homeless adults with mental health problems who receive mental health services.

3.6 Identified Gaps in Care and Impact on Health Outcomes

Chronic Disease Management and Prevention

As discussed previously, chronic disease is a serious burden and threat to the overall health status of West Virginia's population. To combat this threat, the health care community must identify strategies to avoid or manage the risk for chronic disease through behavioral intervention and lifestyle modification.

Previous sub-sections of the SHSIP note that many of the chronic diseases that plague West Virginia have their root in obesity—for example, a strong relationship between obesity and diabetes, hypertension, depression, cardiovascular disease and other chronic conditions.

A particularly challenging dynamic of obesity is that many obese individuals *want* to lose weight and make healthier choices, but lack the skills, training and coping techniques to effectively self-manage and sustain their efforts. Another challenge is that physician counsel is often ineffective: Research has shown that intensive and sustained behavioral modification (through programs such as the National Diabetes Prevention Program, commercial weight loss programs or other initiatives) is more effective than mere advice from a physician to lose weight.[76] Evidence also indicates social support networks may play an important role in sustaining weight management efforts. Consequently, integrating behavioral modification resources with dieticians, social workers, peer-learning resources, community health workers and paramedicine resources may be a more effective care team approach than the current model that relies on weight loss counseling by the primary care physician.

Because of these challenges and complexities, a transformed health care delivery model must include a new approach to combating obesity: one that is

[76] "Screening for and management of obesity in adults: U.S. Preventive Services Task Force recommendation statement," U.S. Preventive Services Task Force. Available at http://www.guideline.gov/content.aspx?id=37710.

patient-centered and encompasses sustainable weight loss, regular physical activity, better nutrition habits and effective techniques to manage stress or other contributing health issues.

To ensure long-term viability of this approach, outcomes-based value payment models must also support the transformed delivery of care. Outcome measures can be expanded from the current "assess BMI" to take a more comprehensive approach—measuring the extent to which behavioral and lifestyle modification therapy has been afforded to the patient and to which the patient has attained nutrition, physical activity and weight loss or management goals as part of the patient's overall health management plan. To achieve these measures, physicians, particularly those in solo or small primary care settings of 10 or fewer physicians, may need to connect regionally or virtually to "networked" support resources. These resources can provide intensive behavioral intervention services as part of the enhanced or advanced primary care delivery model using the care team resources listed above.

This shift toward a new approach to fighting obesity may help achieve the improvement goal of decreasing the prevalence of obesity among West Virginia adults from 35.7% to 35.0% and among West Virginia high school students from 15.6% to 14.0% by 2020. BPH has recommended a blend of interventions and policies to support these obesity improvement objectives, including:[77]

- Support community food development systems (community food hubs, Farm to Table, Farm to School, Farmer's Markets, community gardens, etc.).
- Increase built environment/grassroots support to promote healthy behaviors and community policy changes.
- Enact or adopt policies and regulations to support insurance coverage for patient counseling, self-management programs and CDC-recognized lifestyle change programs (i.e., National Diabetes Prevention Program and others).
- Use alternative payment incentives for health care provider practices to implement evidence-based guidelines for chronic disease

[77] "Addressing Obesity and Related Chronic Diseases," Bureau for Public Health, West Virginia Department of Health and Human Resources. Available at http://www.dhhr.wv.gov/hpcd/Documents/Obesity%20Plan%20January%202016.pdf.

management and prevention, including the behavioral interventions supporting obesity reduction and management as outlined above.

Using the National Diabetes Prevention Program protocols, a major objective of a patient-centered approach to tackling obesity is to assist and support patients—particularly those who are obese or morbidly obese with advanced or co-morbid high-risk conditions such as diabetes, hypertension or cardiovascular disease—in their own fight against obesity. Specifically, the goal is to help them lose and sustain the loss of five to seven percent of overall weight with lifestyle modification and integrated physical activity that meet evidenced-based recommendations.[78]

With obesity, patients generally are aware of and face weight issues for years. By contrast, two conditions (diabetes/prediabetes and hypertension) are "silent" diseases—many people are unaware they have them. BPH has recommended awareness and public education, along with expanded screening and provider outreach, to identify and treat those with undiagnosed hypertension or diabetes/prediabetes. BPH also recommends increasing awareness of self-management programs (National Diabetes Prevention Program, Chronic Disease Self-Management Program, Everyone with Diabetes Counts, etc.) and increasing the number of people with prediabetes who enroll in the National Diabetes Prevention Program.[79] These interventions can help raise awareness and slow the progression of these conditions, which have significant consequences if not adequately diagnosed and treated.

Patient Engagement

A related issue for many chronic diseases is effective patient engagement, education and self-management. Patient-centered care is based on a partnership between patient (and the family or social support network of the individual), care team and payer. In this model, health decision-making is based on the patient's motivation, readiness to change, self-management skills and personal preferences, including goals and objectives. Some of the state's current poor health outcomes can be traced, at least in part, to a lack of effective patient engagement and empowerment to self-manage health through healthy choices, habits and activities.

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[78] National Diabetes Prevention Program, Centers for Disease Control and Prevention. Available at http://www.cdc.gov/diabetes/prevention/index.html.

[79] "Addressing Obesity and Related Chronic Diseases," Bureau for Public Health, West Virginia Department of Health and Human Resources. Available at http://www.dhhr.wv.gov/hpcd/Documents/Obesity%20Plan%20January%202016.pdf.

One of the current constraints on plan design is an insufficiency of incentives and penalties to motivate decisions that affect health outcomes at the patient level. This includes inappropriate use of health care resources such as the emergency department, non-compliance with recommended therapies or medication regimes, and unneeded services. Transformation efforts must include value-based benefit design at the individual participant or member level, integrating effective patient engagement, self-management and education with incentives to encourage compliance and responsible use of health resources. Patient-centered HIT and data tools are also important components of the overall patient engagement strategies. Emerging smartphone applications and integrated patient portals and web-based tools can enhance patient engagement and self-management and facilitate social support networks that improve patient compliance and efficacy in utilization of health care resources. (See Section 7 for additional information on these strategies and objectives.) These components of the SHSIP are essential tools to achieve the desired health improvement and cost containment outcomes.

Care Coordination

Another gap in the current care system is coordination of care for those with chronic conditions. Evidence shows that patients with multiple chronic conditions see multiple providers in multiple settings and may face a lack of care coordination among providers, leading to avoidable hospitalizations, readmissions and ED visits, and duplicative or unnecessary tests, treatments and interventions.[80] More effective care coordination was a recommendation of the SIM workgroups and Task Force members. It is also an expectation of the CMS alternative payment models and bundled payment demonstrations.

As highlighted in Section 3.5.6, there is also a lack of coordination and integration of primary care and behavioral health in the current delivery system—even though many of the highest-cost and most complex-care patients have tightly interwoven needs between primary care and behavioral health. Workgroup and Task Force members identified this as a high-priority need, and possible solutions are discussed in Section 5.2.

[80] "Care Coordination for People with Chronic Conditions," Partnership for Solutions. Available at http://www.partnershipforsolutions.org/DMS/files/Care_coordination.pdf.

Medical Homelessness

Finally, another challenge is the high number of "medically homeless" individuals in West Virginia. In the 2013 BRFSS, 23.3% of West Virginia adults indicated they had no usual source of health care. Over half of men between the ages of 18 and 34 reported having no regular health care provider, and 25.6% of adults reported no checkup or routine medical visit within the past year.[81] To address this medical homelessness, one of the strategies of the SHSIP is to connect every citizen with a primary care provider, or "health home." This health home will improve health in the state in two ways: by better coordinating and addressing health issues before they become chronic conditions, and by better managing already developed conditions to reduce avoidable complications and costs.

Access to Care

As noted in other sections of the SHSIP, large portions of the state have been designated health professional shortage areas (HPSAs) or medically underserved areas (MUAs), indicating that access to care is a challenge. In these rural areas, access to specialty care is also a significant challenge. To bridge these gaps in care, one strategy is to use technology to "virtually" connect patients and providers (see Section 7 for additional information). Use of paramedicine workers, community health workers, peer counselors and other community-based resources can also augment health care delivery networks in these rural areas and is included as one of the strategies to address gaps in care delivery.

Opportunity for Improvement

While there are a number of challenges with the current state of health care in West Virginia, the opportunity to close gaps in care and improve health outcomes is great. In 2015, West Virginia received a ranking of 39th in the Commonwealth Fund Scorecard on State Health System Performance for 2015, down from 34th in 2014. West Virginia moved from 45th to 50th in the Healthy Lives ranking, a composite measure of population health. Rates of smoking, obesity, premature death, poor oral health and self-reported poor health collectively contributed to this adverse ranking. West Virginia also ranked 48th on Avoidable Hospital Use and Cost, with higher than average

[81] "West Virginia Behavioral Risk Factor Surveillance System Report 2013," Bureau for Public Health, West Virginia Department of Health and Human Resources. Available at http://www.wvdhhr.org/bph/hsc/pubs/brfss/2013/BRFSS2013.pdf.

hospital admissions of Medicare beneficiaries for ambulatory sensitive conditions, readmissions and ED visits.[82]

These measures illustrate the tremendous room for improvement in the state's health. In addition, they provide a benchmark for gaps in care compared to health systems in other states, and they serve as a reference point for the SIM health system improvement objectives.

3.7 Health Disparities

A major area of health disparity is race and ethnicity. In the 2012 West Virginia State Health Profile, BPH noted that the state's black population had significantly higher rates of obesity (39.5%, compared to 32.1% among whites and 29.7% among Hispanics in 2011) and high blood pressure (44.7%, compared to 32.4% of whites and 33.7% of Hispanics in 2009). Diabetes rates also vary by race and ethnicity, as 15.2% of the non-Hispanic black population is diabetic, compared to 11.8% of the white population and 11.7% of the Hispanic population. Disparities exist in other chronic disease rates as well, including cardiovascular disease (5.9% of the white population reported having had a heart attack, compared to 7.2% of the black population).[83]

Identifying these disparities and formulating innovative strategies to eliminate disparities is a key part of population health improvement. Thus, the SHSIP includes coordination among providers, payers, policymakers and community resources to address health disparities among minority populations.

In addition to racial disparities, the State Health Profile also notes higher rates of chronic disease among socioeconomically disadvantaged and rural populations, which, in many areas of West Virginia, tend to coincide. Addressing these and other social determinants of health as part of the overall

[82] "Commonwealth Fund Scorecard on State Health System Performance, 2015," The Commonwealth Fund. Available at http://www.commonwealthfund.org/~/media/Files/2015%20State%20Scorecard/Best_State_profile_2015_WestVirginia.pdf.

[83] "2012 West Virginia State Health Profile," Bureau for Public Health, West Virginia Department of Health and Human Resources. Available at http://www.dhhr.wv.gov/publichealthquality/statepublichealthassessment/Documents/2012%20State%20Health%20Profile%20Final%20May%202013.pdf.

health improvement strategy is an important aspect of the SHSIP and is a strong recommendation of the SIM workgroups and Task Force.

In particular, two geographic regions of West Virginia have higher than average adverse health outcomes and health factors. The southern coalfields area (Boone, Lincoln, Logan, McDowell, Mingo, Wayne and Wyoming counties) and the central highlands region (Calhoun, Clay, Fayette, Nicholas, Roane and Webster counties) are high-potential areas for health improvement based on health outcomes and social determinants of health.[84]

3.8 Preventable Consequences of Disease and Avoidable Costs—Underlying Cost Drivers

From the discussion of chronic diseases in this section, it is clear that West Virginia experiences a high rate of chronic conditions that are major drivers of poor health and overall health care costs in the state.

Chronic conditions are closely tied to a phenomenon called "super-utilization" of health care services, which will be discussed in greater detail in Sections 5 and 12. Overall health care spending is highly concentrated, with a disproportionate share of spending driven by a relatively small proportion of patients—or "super-utilizers"—with multiple chronic conditions, behavioral health issues and social needs.

Many chronic conditions or associated complications and costs are potentially avoidable through healthier choices (nutrition, physical activity or smoking cessation) or improved health care delivery and coordination (addressing avoidable hospitalizations, preventable readmissions and inappropriate ER use). However, it is important to note that some outcomes and costs are not preventable: Even if the health care delivery system were to operate at an optimal level, individuals would continue to age and experience disease, trauma and the need for health care services.

Through this lens, Section 12 estimates the costs to the state of chronic disease and the potential savings from SHSIP interventions.

[84] County Health Rankings, Robert Wood Johnson Foundation. Available at http://www.countyhealthrankings.org/app/west-virginia/2016/overview.

3.9 Social Determinants of Health

Health status is heavily influenced by factors beyond the health care delivery system itself. Factors like poverty, quality of housing, employment and neighborhood safety extend beyond the traditional health care delivery sector to shape the health of individuals and communities.

As discussed in Section 3.2, many factors—only one of which is clinical care—shape and determine health outcomes. Integration of the social determinants of health (SDH) is a critical element of the overall SHSIP. To effectively transition to a patient-centered system of care, providers must take a more holistic approach to health management and improvement—going beyond the patient to encompass his or her family, social support system and the greater community health infrastructure. Strong linkages to local public health organizations and school- and workplace-based health initiatives are important keys to integration of SDH into an overall population health improvement plan.

Some of the social determinants of health—in particular, education and income—are worse in West Virginia than the United States as a whole (see Table 3.3).[85]

Determinant	West Virginia	United States
Education		
Adults aged 25 and over who have completed high school	84.4%	86.3%
Adults aged 25 and over with bachelor's degree or higher	18.7%	29.3%
Income		
Median household income	$41,576	$53,482
People living in poverty	18.3%	14.8%
Employment Status		
Unemployment	6.2%	4.7%

Table 3.3 Social Determinants of Health in West Virginia and the United States (Sources: U.S. Census Bureau; Bureau of Labor Statistics, U.S. Department of Labor)

[85] "Addressing Obesity and Related Chronic Diseases," Bureau for Public Health, West Virginia Department of Health and Human Resources. Available at http://www.dhhr.wv.gov/hpcd/Documents/Obesity%20Plan%20January%202016.pdf.

Social determinants of health are integrated into the SHSIP population health improvement plan using the three "buckets" listed in Section 3.2: traditional clinical approaches; innovative, patient-centered care and/or community linkages; and community-wide strategies. Community health scorecards, such as America's Health Rankings developed by the Robert Wood Johnson Foundation and the University of Wisconsin, provide useful benchmarks in assessing overall community and population health and measuring the results of population health improvement efforts.

One of the challenges of integrating the social determinants of health into a transformed health care delivery system is the nature of the current system: It is focused on problems and procedures, reinforced by the fee-for-service payment model that encourages and rewards clinical interventions. In the traditional physician-centered delivery model, time is in great demand. In one study of physician service capacity, researchers found the average primary care physician's panel size too large to allow for consistent, high-quality care. In fact, they estimated a primary care physician would need to spend 21.7 hours each day to provide all recommended acute, chronic and preventive care for a panel of 2,500 patients. (The average U.S. panel size is about 2,300.) Importantly, the researchers noted, providers do not have the option of simply reducing their panel size to allow for more time, as the country faces a physician shortage that will only increase as providers continue retiring. As a result, the study estimated, patients receive only 55% of recommended chronic and preventive services.

One of the ways to maximize physician time is through delegation. The authors of the study found that—assuming non-clinicians could provide large portions of routine chronic care services—physicians could delegate 75% of their time for patients in good control and 33% of their time for patients in poor control, for a total of 47% of effort delegated.[86]

Sharing care responsibilities among physicians and non-physicians is one component of a team-based approach to care—an approach that is essential to addressing SDH and to managing the health of populations. To effectively address SDH, well-rounded care teams must:

[86] Justin Altschuler, David Margolius, Thomas Bodenheimer and Kevin Grumbach, "Estimating a Reasonable Patient Panel Size for Primary Care Physicians With Team-Based Task Delegation," Annals of Family Medicine. Available at http://www.annfammed.org/content/10/5/396.full.

- Encourage and facilitate team members working to the top of licensure and training.
- Use standardized protocols and actionable and accurate data to drive patient care.
- Coordinate or integrate with available community and social resources to provide patient-centered services.
- Effectively use HIT systems, data sharing and electronic patient engagement tools (such as patient portals, personal health records and personal health management applications and devices) to coordinate health among the patient, support network and care team.

In addition to team-based care, community-based strategies are needed to address SDH. BPH has incorporated a number of community-based strategies into the population health improvement objectives that have been integrated into the SHSIP:[87]

- Support and promote breastfeeding, including uses of evidence-based curriculums, especially during home visits.
- Increase the number of early child education centers that develop and/or adopt policies to increase physical activity.
- Increase the number of early child education centers that develop and/or adopt policies to implement food service guidelines/nutrition standards, including sodium (cafeterias, vending machines, snack bars, etc.).
- Provide evidence-based professional development/technical assistance to schools and administrators on physical education policies and physical activity.
- Provide evidence-based professional development/technical assistance to schools and administrators on creating a healthy school nutrition environment.
- Support and strengthen school nutrition environments.
- Increase the number of worksites that develop and/or adopt policies to increase physical activity.
- Increase the number of worksites that develop and/or adopt policies to implement food service guidelines, including sodium (cafeterias, vending machines, snack bars, etc.).

[87] "Addressing Obesity and Related Chronic Diseases," Bureau for Public Health, West Virginia Department of Health and Human Resources. Available at http://www.dhhr.wv.gov/hpcd/Documents/Obesity%20Plan%20January%202016.pdf.

- Increase redemption rates for Farmer's Market Nutrition Program among WIC recipients.
- Increase built environment/grassroots support to promote healthy behaviors and community policy changes.

3.10 Individual Engagement, Social Networks and Community Collaboration to Improve Population Health

Research has demonstrated that patient and family engagement is a vital part of health system transformation. As one expert noted, patient- and family-centered care and shared decision-making both reflect and accelerate the shifting roles of patients and families in health care as they become more active, informed and influential. Additionally, patient engagement can drive improvements in health outcomes, quality, patient safety and cost control.[88]

For patient-centered transformation to take hold, health care teams must be taught and encouraged to integrate patient and family engagement as part of their approach to care delivery. To ensure accountability, measures of the effectiveness of engagement must be integrated into the value measurement process, and incentives should be included as part of the early alternative payment models.

3.11 Data and Measurement of Population Health Indicators

There are a number of sources of data and measures for the health of West Virginia's population and subpopulations. Many of these sources are included in the SHSIP in other sections; for example, Table 3.4—excerpted from a BPH report—notes the prevalence of certain risk factors for obesity.[89]

Externally generated scorecards and rankings also provide a benchmarking framework for the targeting of health improvement efforts. One such ranking is the Commonwealth Fund Scorecard on State Health System Performance,

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[88] Kristin L. Carman et al., "Patient And Family Engagement: A Framework For Understanding The Elements And Developing Interventions And Policies," Health Affairs. Available at http://content.healthaffairs.org/content/32/2/223.full.

[89] "Addressing Obesity and Related Chronic Diseases," Bureau for Public Health, West Virginia Department of Health and Human Resources. Available at http://www.dhhr.wv.gov/hpcd/Documents/Obesity%20Plan%20January%202016.pdf.

which ranked West Virginia as follows in Table 3.5 for 2015. Each of the categories represents a composite scoring of several component measures.[90]

A second important scorecard is the County Health Rankings published by the Robert Wood Johnson Foundation. Table 3.6 captures West Virginia's 2016 measures in health outcomes and health factors.[91]

[90] "Commonwealth Fund Scorecard on State Health System Performance, 2015," The Commonwealth Fund. Available at http://www.commonwealthfund.org/~/media/Files/2015%20State%20Scorecard/Best_State_profile_2015_WestVirginia.pdf.

[91] "2016 County Health Rankings: West Virginia," County Health Rankings, Robert Wood Johnson Foundation. Available at http://www.countyhealthrankings.org/sites/default/files/state/downloads/CHR2016_WV.pdf.

Table 4: Prevalence and Ranking of Obesity and Related Risk Factors Among West Virginia Adults						
Risk Factor	**West Virginia Prevalence**		**United States Prevalence**		**West Virginia Ranking***	
Year	**2013**	**2014**	**2013**	**2014**	**2013**	**2014**
Obesity	35.1	35.7	28.2	28.9	1	2
Consumption of less than 5 servings of fruits and vegetables daily**	90.2	--	82.9	--	3	--
Daily consumption of sugar-sweetened beverages	40.1	--	NA	NA	NA	NA
No leisure time exercise**	31.4	28.7	26.6	23.9	9	5
Did not meet physical activity recommendations of 150 minutes of aerobic activity and 2 days of muscle strengthening activity	87.3	--	80.6	--	3	--
Inadequate sleep**	40.0	37.4	35.6	34.8	5	11

Data Source: West Virginia Health Statistics Center, Behavioral Risk Factor Surveillance System
*among 50 states, D.C., and territories
** West Virginia significantly higher than US
-- data not collected in "even" years

Table 3.4 Sample Measure of Population Health Indicators: Prevalence of Obesity in West Virginia (Source: Bureau for Public Health)

Ranking Summary	2015 Scorecard	2014 Scorecard[a]
OVERALL	**39**	**34**
Access & Affordability	26	29
Prevention & Treatment	21	25
Avoidable Hospital Use & Cost	48	48
Equity[a]	31	14
Healthy Lives	50	45

Change in Performance	2015 Scorecard	
	count	percent
Indicators with trends	36	100%
State rate improved[b]	11	31%
State rate worsened[b]	5	14%
No change in state rate[b]	20	56%

Percentage of Indicators for Which This State Ranked in the:	2015 Scorecard	
	count	percent
Total indicators	42	100%
Top 5 states	3	7%
Top quartile	5	12%
2nd quartile	9	21%
3rd quartile	11	26%
Bottom quartile	17	40%
Bottom 5 states	15	36%

Table 3.5 Sample Measure of Population Health Indicators: Commonwealth Fund Scorecard on State Health System Performance, 2015 (Source: The Commonwealth Fund)

2016 *COUNTY HEALTH RANKINGS*: MEASURES AND NATIONAL/STATE RESULTS

Measure	Description	US Median	State Overall	State Minimum	State Maximum
HEALTH OUTCOMES					
Premature death	Years of potential life lost before age 75 per 100,000 population	7,700	9,700	6,100	20,200
Poor or fair health	% of adults reporting fair or poor health	16%	22%	17%	32%
Poor physical health days	Average # of physically unhealthy days reported in past 30 days	3.7	4.8	4.1	6.2
Poor mental health days	Average # of mentally unhealthy days reported in past 30 days	3.7	4.7	4.3	5.5
Low birthweight	% of live births with low birthweight (< 2500 grams)	8%	9%	6%	13%
HEALTH FACTORS					
HEALTH BEHAVIORS					
Adult smoking	% of adults who are current smokers	18%	24%	19%	31%
Adult obesity	% of adults that report a BMI ≥ 30	31%	34%	27%	41%
Food environment index	Index of factors that contribute to a healthy food environment, (0-10)	7.2	7.3	5.6	8.5
Physical inactivity	% of adults aged 20 and over reporting no leisure-time physical activity	28%	32%	22%	41%
Access to exercise opportunities	% of population with adequate access to locations for physical activity	62%	58%	5%	98%
Excessive drinking	% of adults reporting binge or heavy drinking	17%	11%	9%	15%
Alcohol-impaired driving deaths	% of driving deaths with alcohol involvement	31%	33%	0%	75%
Sexually transmitted infections	# of newly diagnosed chlamydia cases per 100,000 population	287.7	277.0	44.6	528.2
Teen births	# of births per 1,000 female population ages 15-19	40	45	14	94
CLINICAL CARE					
Uninsured	% of population under age 65 without health insurance	17%	17%	13%	22%
Primary care physicians	Ratio of population to primary care physicians	1,990:1	1,290:1	4,690:1	640:1
Dentists	Ratio of population to dentists	2,590:1	2,030:1	11,780:1	880:1
Mental health providers	Ratio of population to mental health providers	1,060:1	910:1	9,010:1	420:1
Preventable hospital stays	# of hospital stays for ambulatory-care sensitive conditions per 1,000 Medicare enrollees	60	81	54	197
Diabetic monitoring	% of diabetic Medicare enrollees ages 65-75 that receive HbA1c monitoring	85%	84%	75%	92%
Mammography screening	% of female Medicare enrollees ages 67-69 that receive mammography screening	61%	58%	40%	71%
SOCIAL AND ECONOMIC FACTORS					
High school graduation	% of ninth-grade cohort that graduates in four years	86%	82%	71%	98%
Some college	% of adults ages 25-44 with some post-secondary education	56%	53%	27%	72%
Unemployment	% of population aged 16 and older unemployed but seeking work	6.0%	6.5%	4.4%	12.9%
Children in poverty	% of children under age 18 in poverty	23%	25%	13%	46%
Income inequality	Ratio of household income at the 80th percentile to income at the 20th percentile	4.4	4.9	3.5	7.0
Children in single-parent households	% of children that live in a household headed by a single parent	32%	33%	17%	43%
Social associations	# of membership associations per 10,000 population	13.0	13.1	4.3	21.5
Violent crime	# of reported violent crime offenses per 100,000 population	199	311	33	813
Injury deaths	# of deaths due to injury per 100,000 population	74	93	52	192
PHYSICAL ENVIRONMENT					
Air pollution – particulate matter	Average daily density of fine particulate matter in micrograms per cubic meter (PM2.5)	11.9	13.2	12.9	14.1
Drinking water violations	Indicator of the presence of health-related drinking water violations. Yes - indicates the presence of a violation, No - indicates no violation.	NA	NA	No	Yes
Severe housing problems	% of households with overcrowding, high housing costs, or lack of kitchen or plumbing facilities	14%	11%	6%	16%
Driving alone to work	% of workforce that drives alone to work	80%	82%	74%	89%
Long commute – driving alone	Among workers who commute in their car alone, % commuting > 30 minutes	29%	33%	19%	61%

Table 3.6 Sample Measure of Population Health Indicators: County Health Rankings, 2016 (Source: County Health Rankings, Robert Wood Johnson Foundation)

These internally and externally generated indicators shaped the development of the SHSIP to drive the targeted areas of improvement. As the SHSIP is implemented, these measures will be tracked to evaluate the effectiveness of the interventions and to identify areas where strategies or plans need to be modified to meet the improvement objectives. See Section 7 for additional details about the HIT and data strategies to support the population health improvement objectives.

3.12 Health Insurance Coverage and Access to Care

As a result of West Virginia's decision to expand Medicaid under the Affordable Care Act (ACA), the health insurance coverage landscape has changed—and continues to change.

Medicaid makes up the largest share of the health insurance market, followed by Medicare and commercial insurers. Figure 3.6 summarizes coverage in the state as a percentage of total individuals.

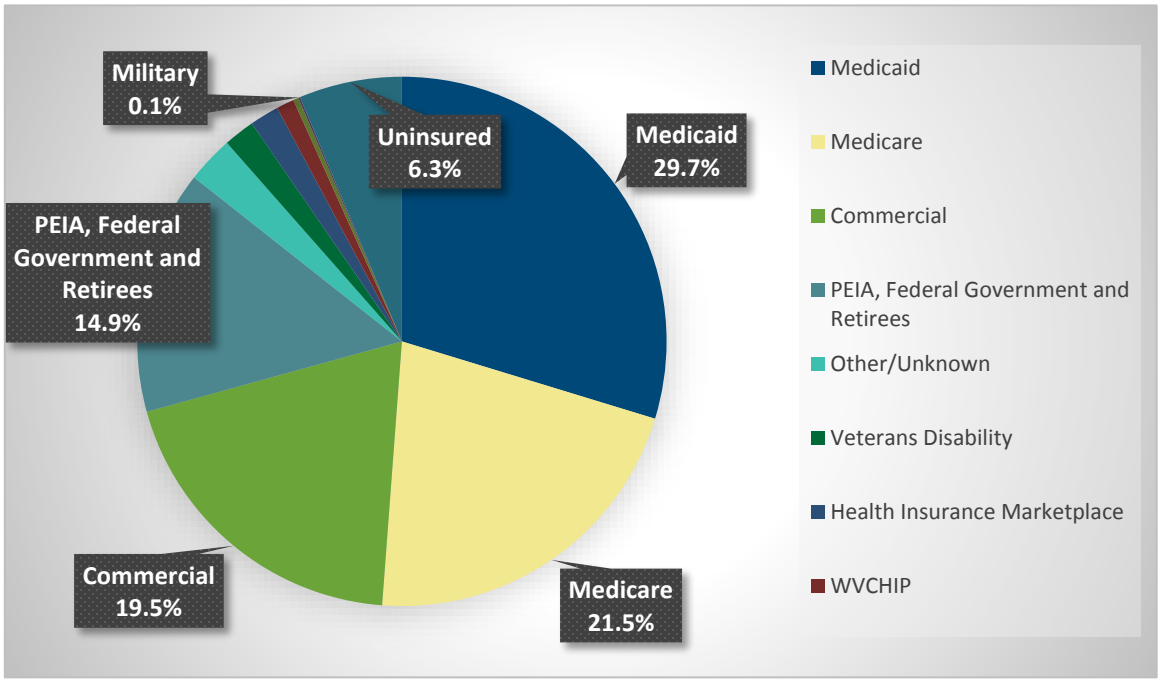

Figure 3.6 Health Insurance in West Virginia as a Percentage of Total Individuals (Sources: West Virginia Offices of the Insurance Commissioner, West Virginia Department of Health and Human Resources)

Within Medicaid, as of March 2016 the program covered approximately 150,000 individuals in fee-for-service and 371,244 in managed care contracts. Tables 5.2 and 5.3 in Section 5.1 provide more detail on the Medicaid managed care population and the state's payer mix as a whole.[92]

3.12.1 Prevalence of Fee-for-Service, Cost-Based and Other Payment Models and Alternative Payment Models

One of the central components of the SHSIP is the formation of the West Virginia Health Transformation Accelerator (WVHTA), outlined in extensive detail in Section 5. This body will lead transformation efforts in the state, continuing the momentum generated by the SIM process and providing a structure for continued collaboration between stakeholder groups.

After its formation, one of the initial tasks of the WVHTA will be to assess the current prevalence of traditional and alternative payment models across the state. To do this, the WVHTA will develop or deploy a tool or mechanism to survey the state, determining a baseline rate of value-based payments. Specific goals for increasing this baseline are outlined in Section 14.

3.13 Current Health Care Delivery Environment

While economists anticipate some slight growth in health care employment for 2016 and 2017, projected growth is low (under two percent for the rest of the decade) as health system and payment transformation creates expectations of cost efficiencies.[93] (SHSIP Section 8 covers the current and future state of the West Virginia health care workforce in more detail.)

Health system transformation can only take root fully if health care resources are available and if the workforce is engaged and committed to the vision of a

[92] Note that the state's payer mix is not static, but rather changes frequently due to population growth and decline and churn in insurance coverage. The figures provided throughout the SHSIP are derived from various sources and represent snapshots of insurance coverage at different moments in time. Therefore, numbers may not reach the same totals throughout the document and should be understood as estimates rather than exact calculations.

[93] "2016 West Virginia Economic Outlook," West Virginia University College of Business and Economics. Available at http://www.be.wvu.edu/bber/outlook_pdfs/WV-Economic-Outlook-2016.pdf.

redesigned health care system. Because of the projected low growth for the remainder of the decade, it is imperative to retrain the existing workforce on transformed delivery models.

Table 3.7 summarizes the number and types of institutional providers providing care in West Virginia.[94] The sub-sections that follow further delineate the availability and distribution of health care resources by types of care.

Number of Providers by Service			
Type of Provider	**FY 2012**	**FY 2013**	**FY 2014**
Hospitals	**61**	**61**	**61**
General Acute	32	31	29
Critical Access	18	19	20
Long-term Acute	2	2	2
Psychiatric	4	4	5
Rehabilitation	5	5	5
Nursing Homes	**106**	**107**	**107**
Behavioral Health Centers	**102**	**105**	**107**
Behavioral Health Centers	80	83	85
Comprehensive Centers	13	13	13
Methadone Treatment	9	9	9
Primary Care Centers	**32**	**32**	**32**
Home Health Agencies	**63**	**62**	**60**
Hospice Agencies	**20**	**20**	**20**
Renal Dialysis Centers	**33**	**34**	**34**
Ambulatory Surgery Centers	**11**	**11**	**9**
Total	**428**	**432**	**430**

Table 3.7 Number of Institutional Providers in West Virginia by Type of Provider (Source: West Virginia Health Care Authority)

3.13.1 Primary Care

The 2016 County Health Rankings show West Virginia with a primary care physician to population ratio of 1:1,290—better than the national median of 1:1,990. However, primary care physician to population ratios vary dramatically throughout the state, from 1:4,690 at worst to

[94] "2015 Annual Report," West Virginia Health Care Authority. Available at http://www.hca.wv.gov/data/Reports/Documents/AnnualRp2015/AnnualRp2014.pdf.

1:640 at best.[95] (These ratios will be discussed further in Section 8.2.1.)

Included in these primary care statistics are the 32 federally qualified health centers (FQHCs) operated in 29 West Virginia counties during fiscal year 2014. These FQHCs operate more than 200 service sites, including approximately 100 school-based health centers.[96]

Primary care is integral to a patient-centered model of care delivery; however, the entire country faces a primary care physician shortage. As it pertains to West Virginia, the Robert Graham Center evaluated the primary care needs of the state's residents from 2010-2030, accounting for three significant drivers of increased demand: an aging patient population, population growth and a larger number of insured patients under the ACA. As a result of this analysis, the Center concluded that West Virginia would require an additional 190 primary care physicians by 2030—a 14% increase from the state's workforce of 1,330 primary care physicians in 2010.[97] (Section 8.2.2 will cover projected provider shortages in more detail.)

3.13.2 Tertiary Care

Tertiary care is provided through a network of 61 hospitals in West Virginia. Hospitals are regulated by the West Virginia Health Care Authority (WVHCA) and are required to provide detailed information about operations and finances to the WVHCA. WVHCA publishes annual reports on these hospital operations; the annual report for 2015 is the basis for the analysis of hospital employment and utilization in this section.[98]

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[95] "2016 County Health Rankings: West Virginia," County Health Rankings, Robert Wood Johnson Foundation. Available at http://www.countyhealthrankings.org/sites/default/files/state/downloads/CHR2016_WV.pdf.
[96] "2015 Annual Report," West Virginia Health Care Authority. Available at http://www.hca.wv.gov/data/Reports/Documents/AnnualRp2015/AnnualRp2014.pdf.
[97] "West Virginia: Projecting Primary Care Physician Workforce," Robert Graham Center. Available at http://www.graham-center.org/content/dam/rgc/documents/maps-data-tools/state-collections/workforce-projections/West%20Virginia.pdf.
[98] "2015 Annual Report," West Virginia Health Care Authority. Available at http://www.hca.wv.gov/data/Reports/Documents/AnnualRp2015/AnnualRp2014.pdf.

For fiscal year 2014, West Virginia hospitals employed 40,225 full-time equivalent employees, with wages and benefits totaling slightly more than $2.7 billion.

According to the WVHCA, spending on hospital services makes up more than 40% of total spending on health care in West Virginia. In fiscal year 2014, West Virginia hospitals had 8.1 million outpatient visits, provided inpatient care for more than 250,000 people and performed nearly a quarter of a million surgeries. They also had more than 1 million emergency room visits. During the same time period, West Virginia hospitals had 8,689 total licensed beds and 7,925 staffed beds. General acute hospitals made up 78.7% and 77.6%, respectively, of the total licensed and staffed beds. Figure 3.7 highlights the distribution of beds by hospital type.

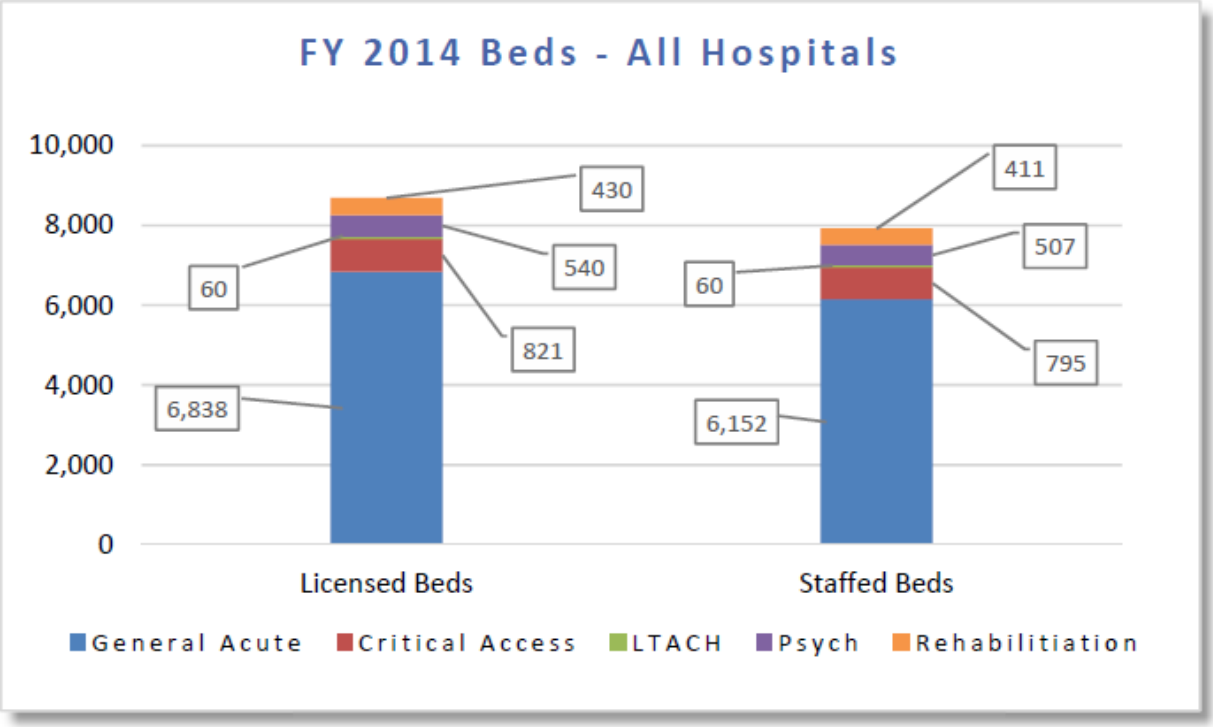

Figure 3.7 Licensed and Staffed Hospital Beds by Hospital Type, FY 2014 (Source: WVHCA)

In fiscal year 2014, the overall occupancy rate for all licensed beds was 54.2%, but varied significantly among hospital types, as illustrated in Figure 3.8.

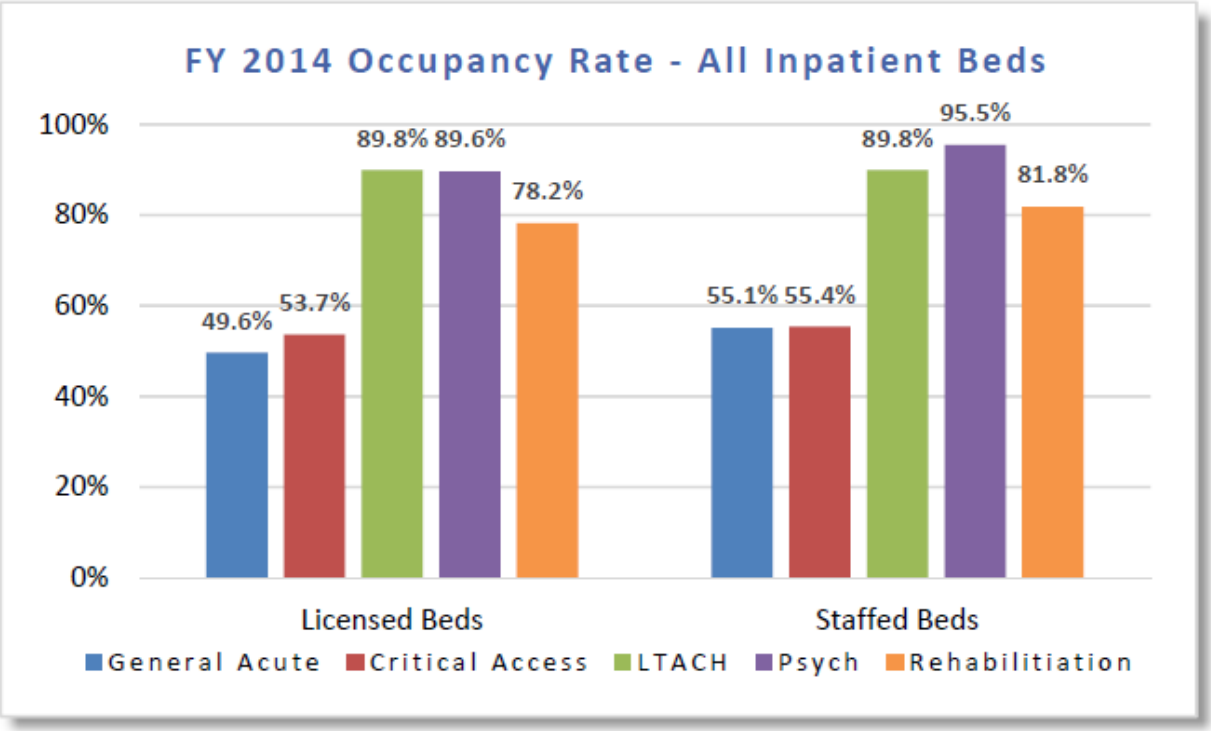

Figure 3.8 Occupancy Rate of Inpatient Beds by Hospital Type, FY 2014 (Source: WVHCA)

There are 12 counties in West Virginia that lack hospitals, but may be served by hospitals located in adjacent counties. Figure 3.9 reflects the distribution of hospitals across the state.

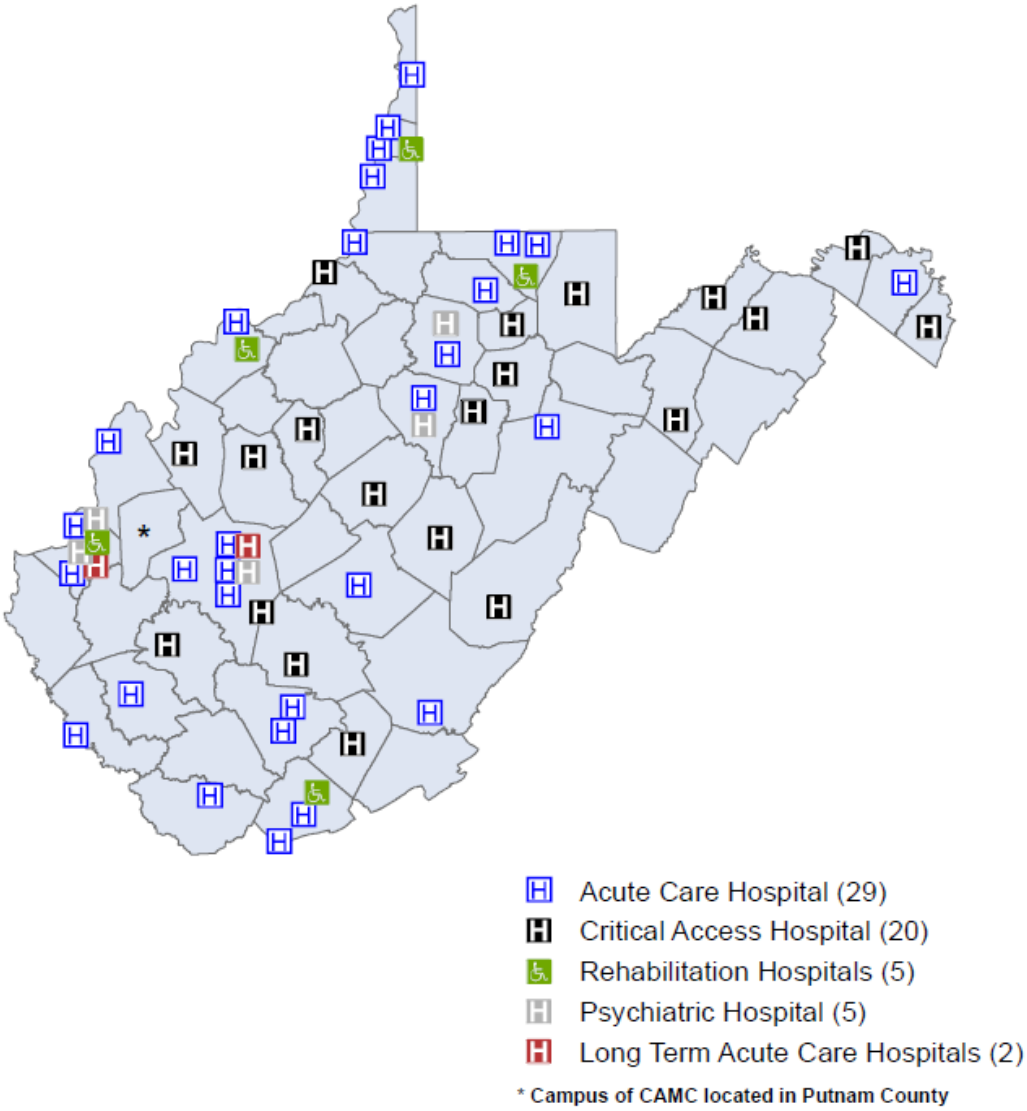

Figure 3.9 Hospitals in West Virginia (Source: WVHCA)

3.13.3 Specialty Care

Primary care is not the only medical discipline facing a physician shortage. While many medical students are pursuing non-primary care specialties, specialty physician shortages still exist, particularly in rural areas of the state.

The WVRHA Data Portal indicates there are 2,268 specialists actively practicing in West Virginia.[99] WVRHA has identified eight physician

[99] West Virginia Rural Health Association Health Data Portal. Available at http://wvrha.org/.

specialty areas as representing possible shortages relative to demand for these services: cardiology, nephrology, gastroenterology, orthopedic surgery, psychiatry, oncology, general surgery and endocrinology. In its workforce analysis report, WVRHA has built maps to highlight the availability of these specialties in each county, revealing a striking shortage of these services in most rural areas of the state.[100]

3.13.4 Distribution and Access to Health Care Services

A major concern with the landscape of health care in West Virginia is the distribution of providers relative to citizens in the urban versus rural areas of the state.

Most of the state's health care providers are situated in the more urban areas of West Virginia that have the greatest concentrations of population, teaching hospitals and specialty care (primarily Charleston, Huntington and Morgantown). However, 60% of the state's residents live in rural areas.[101] As a result, many of the rural counties have provider to population ratios that are worse than national and regional averages.[102]

These shortages and misdistribution of providers cause a number of problems for the state. First, they create issues around residents' ability to access the care they need. They also contribute to the designation of certain parts of the state as medically underserved areas (MUAs) or health professional shortage areas (HPSAs). Finally, they place a significant burden on rural and remote communities to recruit and retain health professionals. Given all these challenges, in order to successfully drive health care transformation in the state, strategies must be considered and implemented to address the urban-rural divide within the state's health care system.

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[100] "Health Care in West Virginia: A Workforce Supply and Demand Analysis Report," West Virginia Rural Health Association, 2015. Available at http://wvrha.org/wp-content/uploads/2015/12/2015-Draft-WV-Workforce-9-28-15.pdf.
[101] "West Virginia: The Mountain State," West Virginia Chamber of Commerce. Available at http://www.wvchamber.com/.
[102] County Health Rankings, Robert Wood Johnson Foundation. Available at http://www.countyhealthrankings.org/app/west-virginia/2016/overview.

4.0 Design Elements of Population Health Improvement Plan

The West Virginia Bureau for Public Health has developed a series of recommended interventions to address a number of targeted chronic diseases and unhealthy behaviors. Through these intervention strategies, BPH aims to advance the health of the entire state population as part of overall health care transformation efforts.

As discussed in Section 3.1, these strategies originated through BPH's process to develop targeted priorities for the State Health Improvement Plan. The intervention strategies are aimed at addressing:

- Obesity, physical activity and nutrition;
- Diabetes and prediabetes;
- Hypertension and pre-hypertension; and
- Tobacco use and prevention.

As the SIM grant concludes, West Virginia is embarking on its statutorily mandated process to develop a State Health Plan. Led by the West Virginia Health Care Authority, this process will complement the efforts of BPH and SIM, augmenting the interventions and strategies that follow. It is the hope of the SIM team that the next iteration of the State Health Plan reflects BPH's targeted priorities listed above, in addition to the behavioral health needs that are essential to comprehensive population health improvement.

4.1 Interventions and Strategies

In Table 4.1, each strategy correlates with one of three "strategy buckets." This bucket classification system—introduced in Section 3.2—follows a CDC-recommended approach to addressing population health, creating a holistic framework to improving health beyond traditional clinical interventions.

- Bucket #1: Traditional clinical approaches
- Bucket #2: Innovative, patient-centered care and/or community linkages
- Bucket #3: Community-wide strategies

Table 4.1 includes baseline and target measures for many of the SHSIP interventions. Many state data points are based on the West Virginia Behavioral Risk Factor Surveillance Survey (BRFSS), Youth Risk Behavior Survey (YRBS) and the National Immunization Survey (NIS). In some cases,

BPH is working with collaborative partner organizations and contractual agencies in specific geographical areas to implement interventions; some of the baseline measures in Table 4.1 are using those local data points.

Table 4.1 Targeted Interventions for Population Health Improvement

Improvement Objectives	Targeted Improvement	Improvement Strategies	Strategy Bucket
Obesity, Physical Activity and Nutrition			
Increase the percentage of West Virginia citizens that follow healthy nutrition and physical activity recommendations.	Decrease the prevalence of obesity among West Virginia adults from 35.7% to 35.0% (BRFSS) and among West Virginia high school students from 15.6% to 14.0% by 2020 (BRFSS).	Increase the proportion of practices that have adopted evidenced-based protocols for the assessment, treatment and management of obesity; that utilize or refer to behavioral interventionists for counseling to equip patients to adopt healthy lifestyles; and that coordinate with community resources to address social determinants of obesity.	#2: Innovative, patient-centered care and/or community linkages
Train and equip all citizens with the knowledge and skill to follow healthy eating and lifestyle practices.	Increase the proportion of people in targeted settings who have at least one encounter in a recognized Self-Management program.	Increase the proportion of providers who effectively advise/counsel patients on weight management and risk factors for obesity (Baseline: 21.6% BRFSS) and use motivational interviewing or 5-A framework for patient goal-setting.	#2: Innovative, patient-centered care and/or community linkages

Improvement Objectives	Targeted Improvement	Improvement Strategies	Strategy Bucket
Increase the prevalence of West Virginia adults and children who practice daily energy balance where calories consumed do not exceed calories expended.	Increase referrals to evidence-based programs.	Increase the proportion of practices that teach energy balance, portion control, label-reading and use of calorie-tracking tools to patients.	#2: Innovative, patient-centered care and/or community linkages
For those overweight, obese or morbidly obese, provide supported and sustained behavioral and lifestyle modification counseling and training.	Increase referrals to evidence-based programs.	Increase the proportion of providers who offer, refer to or are linked to resources who can provide Intensive Behavioral Therapy for Obesity, NDPP intervention or equivalent.	#1: Traditional clinical approaches
Increase the prevalence of West Virginia adults and children who follow dietary recommendations for consumption of nutrient-dense foods within and across the food groups, especially whole grains, fruits, vegetables, low-fat or fat-free milk or milk products, and lean meats and other protein sources.	Increase the prevalence of consumption of five or more servings of fruits and vegetables daily among West Virginia adults from 9.8% to 10.3% and increase the average number of servings of fruits and vegetables per day among West Virginia adults from 2.9 to 3.5 by 2020 (BRFSS). Increase the prevalence of consumption of five or more servings of fruits and vegetables daily among West Virginia high school	Increase the proportion of providers who offer, refer to or are linked to resources who can provide nutrition therapy or counseling services or the equivalent as needed.	#1: Traditional clinical approaches

Improvement Objectives	Targeted Improvement	Improvement Strategies	Strategy Bucket
	students from 21.1% to 30.0% by 2019 (YRBS).		
Increase the prevalence of West Virginia adults and children that limit intake of foods high in saturated and trans fats, cholesterol, added sugars, sodium (salt) and alcohol.	Decrease the prevalence of daily consumption of sugar-sweetened beverages among West Virginia adults from 40.1% to 36.0% by 2020 (BRFSS) and among West Virginia high school students from 38.0% to 30.0% by 2019 (YRBS).	Increase the proportion of providers who offer, refer to or are linked to resources who can provide nutrition therapy or counseling services or the equivalent as needed.	#1: Traditional clinical approaches
Increase the prevalence of leisure-time activity among adults and youth.	Increase the prevalence of leisure-time exercise among West Virginia adults from 71.3% to 75.0% by 2020 (BRFSS).	Increase the proportion of providers who offer, refer to or are linked to resources who can prescribe exercise plans and assist in the development of an appropriate physical activity plan.	#1: Traditional clinical approaches
Increase the prevalence of West Virginia adults meeting weekly physical activity recommendations of 150 minutes of aerobic activity and two days of muscle-strengthening.	Increase the prevalence of West Virginia adults who meet the 2008 Physical Activity Guidelines for Americans from 12.7% to 14.0% by 2020 (BRFSS).	Increase the proportion of providers who can track patient achievement of physical activity goals and provide continuing process to follow up to reset or affirm goals and progress.	#2: Innovative, patient-centered care and/or community linkages

Improvement Objectives	Targeted Improvement	Improvement Strategies	Strategy Bucket
Increase the prevalence of West Virginia youth meeting recommendations for 60 minutes or more of physical activity daily.	Increase the prevalence of daily physical activity for at least 60 minutes among West Virginia public high school students from 31.0% to 45.0% by 2019 (YRBS).	Increase the proportion of providers who can track patient achievement of physical activity goals and provide continuing process to follow up to reset or affirm goals and progress.	#2: Innovative, patient-centered care and/or community linkages
Increase the prevalence of infants meeting breastfeeding recommendations.	Offer evidence-based provider training for breastfeeding; promote breastfeeding using evidence-based curriculums, especially during home visits. Increase the percentage of infants ever breastfed from 59.3% to 64% by 2020 (NIS). Increase the percentage of infants breastfed exclusively at six months from 12.2% to 17% by 2020 (NIS).	Promote, educate and train on breastfeeding using evidence-based materials, especially during office or home visits.	#2: Innovative, patient-centered care and/or community linkages
Diabetes and Prediabetes			
Reduce risks of developing diabetes in those with prediabetes or those with risk factors such as family history, obesity or advanced age.	Decrease the prevalence of diabetes in adults from 14.1% to 13% in 2020 (BRFSS).	Provide awareness and screening as part of health education and outreach program; engage persons with pre-diabetes in prevention programs.	#2: Innovative, patient-centered care and/or community linkages

Improvement Objectives	Targeted Improvement	Improvement Strategies	Strategy Bucket
Increase control rates for those with diabetes.	Decrease the proportion of persons with diabetes in targeted settings with A1c > 9 (BPH measure).	Provide care management, nutrition counseling and behavioral modification and medication adherence support for care teams through regional and statewide support networks.	#2: Innovative, patient-centered care and/or community linkages
Increase the number of persons with diabetes and pre-diabetes that achieve weight reduction.	Increase the number of persons enrolled in the National Diabetes Prevention Program in targeted settings who achieve 5-6% weight loss.	Increase the number of Diabetes Self-Management Education programs (ADA; AADE; DSMP; EDC; Baseline=30) and recognized NDPP programs.	#2: Innovative, patient-centered care and/or community linkages
Increase identification of those with prediabetes and linkage to evidence-based self-management and prevention programs (NDPP).	Decrease the prevalence of prediabetes in adults from 8.6% to 8% in 2020 (BRFSS).	Increase the proportion of health care providers that have policies/practices to screen and refer patients at risk to the NDPP or similar evidence-based intervention.	#2: Innovative, patient-centered care and/or community linkages
Hypertension and Pre-Hypertension			
Increase the number of persons with hypertension and pre-hypertension that achieve blood pressure control through sodium reduction.	Increase the number of patients who have been advised by their health care provider to reduce sodium consumption (Baseline: 24.7% BRFSS) and increase the proportion of West Virginia	Increase the proportion of providers who offer, refer to or are linked to resources who can provide nutrition therapy or counseling services or the equivalent as needed and integrate the DASH diet or	#1: Traditional clinical approaches #2: Innovative, patient-centered care and/or community linkages

Improvement Objectives	Targeted Improvement	Improvement Strategies	Strategy Bucket
	adults who are watching or reducing sodium or salt intake (Baseline: 46.4% BRFSS).	similar dietary guidance as part of a hypertension self-management program.	
Increase the number of individuals with hypertension or pre-hypertension who are diagnosed and treated for the disease.	Increase the proportion of adults with high blood pressure in targeted settings who have achieved blood pressure control (Baseline: 93,082 in 2013; Target: 109,956 in 2017; BPH measure).	Provide awareness and screening as part of health education and outreach program; engage persons with pre-hypertension in prevention programs.	#2: Innovative, patient-centered care and/or community linkages
Increase the number of individuals with hypertension and pre-hypertension that achieve blood pressure control through medication adherence.	Increase the proportion of patients with HBP in targeted settings in adherence to medication regimens (Baseline: 102,139 in 2013; Target: 177,349 in 2017; BPH measure).	Provide care management, nutrition counseling and behavioral modification and medication adherence support for care teams through regional and statewide support networks and include pharmacy resources as part of the network.	#2: Innovative, patient-centered care and/or community linkages
Increase the number of individuals with hypertension and pre-hypertension that can effectively manage and control	Increase the proportion of patients with high blood pressure in targeted settings who have a self-management	Provide care management, nutrition counseling and behavioral modification and medication adherence support	#2: Innovative, patient-centered care and/or community linkages

Improvement Objectives	Targeted Improvement	Improvement Strategies	Strategy Bucket
the condition.	plan (Baseline: 57,131 in 2013; Target: 145,426 in 2017; BPH measure).	for care teams through regional and statewide support networks, including evidence-based patient self-management programs and use of community health workers as needed for community support.	
Increase the number of individuals with hypertension and pre-hypertension that achieve blood pressure control.	Increase the proportion of adults with high blood pressure in targeted settings who have achieved blood pressure control (Baseline: 93,082 in 2013; Target 109,956 in 2017; BPH measure).	Enhance diagnosis, treatment and self-management of hypertension; offer additional care team and patient support for non-control and resistant hypertension cases.	#1: Traditional clinical approaches
Tobacco Use and Prevention			
Keep adult non-smokers from starting and provide engagement and self-management support for adult smokers to cease using tobacco products.	Decrease the prevalence of current cigarette smoking among West Virginia adults from 27.3% to 24.5% by 2020; increase the prevalence of never-cigarette smoking among West Virginia adults from 48.3% to 50% by 2020 (<3% based on BRFSS); and increase the prevalence of	Create regional and statewide networks to support clinician and provider education and training in proven tobacco cessation treatment; expand West Virginia Tobacco Cessation Quitline services availability for all who want to quit; integrate provider reminder systems and	#1: Traditional clinical approaches #3: Community-wide strategies

Improvement Objectives	Targeted Improvement	Improvement Strategies	Strategy Bucket
	West Virginia adults currently using tobacco who were advised by a doctor/allied health professional to quit tobacco use from 65.4% in 2014 to 70% in 2020 (>7% based on WVATS).	information on referral to effective patient quit services in EHRs and HIE; utilize Regional Tobacco Prevention Specialists Network for all counties and communities; and expand regional, community-specific tobacco cessation efforts.	
Keep high school age individual non-smokers from starting and provide engagement and self-management support for smokers to cease using tobacco products.	Decrease the prevalence of current cigarette smoking among West Virginia high school students from 18.6% to 14.7% by 2020; increase the prevalence of never-cigarette smoking among West Virginia high school youth from 53.2% to 63.7% by 2020 (<19% based on WVYTS); and increase the prevalence of high school age individuals currently using tobacco who were advised by a doctor/allied health professional to quit tobacco use or non-users who are counseled not to use tobacco products.	Create regional and statewide networks to support clinician and provider education and training in proven tobacco cessation treatment for teens; expand West Virginia Tobacco Cessation Quitline services availability for all who want to quit; integrate provider reminder systems and information on referral to effective patient quit services in EHRs and HIE; utilize Regional Tobacco Prevention Specialists Network for all counties and communities; expand and integrate tobacco-free youth education programs in schools and	#1: Traditional clinical approaches #3: Community-wide strategies

Improvement Objectives	Targeted Improvement	Improvement Strategies	Strategy Bucket
		communities and enhance enforcement of tobacco-free policies in public schools; and expand Raze and youth tobacco prevention education programs.	
Keep young adult non-smokers from starting to use tobacco products.	Increase the prevalence of never-cigarette smoking among West Virginia young adults (age 18-24) from 57.7% to 59.5% by 2020 (<3% based on BRFSS); increase the prevalence of young adults who were counseled by a doctor/allied health professional not to use tobacco products.	Establish tobacco-free policies on college/university campuses; expand tobacco-free education programs for young adults in schools, worksites and communities; integrate provider training for inclusion of counseling on avoiding tobacco use for young adults.	#2: Innovative, patient-centered care and/or community linkages #3: Community-wide strategies
Keep child-bearing age women non-smokers from starting and provide engagement and self-management support for pregnant mothers to avoid or cease using tobacco products.	Reduce the prevalence of cigarette smoking among West Virginia women of childbearing age (age 18-44) from 34.7% to 33% by 2020 (<4% based on BRFSS); reduce the prevalence of cigarette smoking during pregnancy from 26.1% to 23% by 2020 (<11% based on WVVSS); and	Create regional and statewide networks to support clinician and provider education and training in proven tobacco cessation treatment for child-bearing age women and expectant mothers; expand West Virginia Tobacco Cessation Quitline services availability for all who want to	#1: Traditional clinical approaches #3: Community-wide strategies

Improvement Objectives	Targeted Improvement	Improvement Strategies	Strategy Bucket
	increase the prevalence of women who smoked during pregnancy who were advised by a doctor/allied health professional to quit smoking from 67% in 2012 to 75% in 2020 (>11% based on WVATS).	quit; integrate provider reminder systems and information on referral to effective patient quit services in EHRs and HIE; utilize Regional Tobacco Prevention Specialists Network for all counties and communities; and expand regional, community-specific tobacco cessation efforts; integrate outreach with payers, including Medicaid MCOs.	
Keep youth from using tobacco products and engage and support those who use tobacco products (including smokeless and vapor products) in cessation efforts.	Increase the prevalence of never-tobacco use among West Virginia high school youth from 46.1% to 57% by 2020 (<23% based on WVYTS) and reduce the prevalence of current smokeless tobacco use among male high school youth from 25% to 23.6% by 2020 (<5% based on WVYTS).	Use of same strategies as for youth and young adult smoking; also adopt and enforce policies to restrict minors' access to all tobacco products and expand collaborative tobacco prevention efforts with all local health departments.	#3: Community-wide strategies
Reduce risks of developing complications of diseases associated with tobacco use.	Reduce the prevalence of current cigarette smoking among West Virginia adults with kidney disease from 25.3% to 22.1% by 2020 (<12%	Use of same strategies as for adult tobacco use; also encourage coverage of tobacco cessation efforts and integration of cessation	#3: Community-wide strategies

Improvement Objectives	Targeted Improvement	Improvement Strategies	Strategy Bucket
	based on BRFSS) and reduce the prevalence of current cigarette smoking among West Virginia adults with COPD from 45.9% to 37.1% by 2020 (<18% based on BRFSS).	support as part of care management and coordination by care teams; integrate and coordinate tobacco cessation efforts among all care providers and use EHRs and HIE to coordinate efforts.	

5.0 Delivery System Redesign and Payment Reform Methodologies

Context Concerning Delivery and Payment System Transformation in West Virginia

- West Virginia's state government faces extreme budgetary and human resource difficulties, leaving public-private partnerships largely responsible for health care delivery and payment system transformation.

- West Virginia seeks to pursue CMS' vision for value-based transformation by setting the goal of having 85% of its health insurance market payments as value-based by 2025, with 80% of payments being value-based by 2021.[103]

- West Virginia, in large part due to Medicaid expansion, is in the top quartile of states for rates of health insurance coverage. Only about seven percent of the state's population remains uninsured.[104] Having individuals insured and in the health care system provides a leverage point to achieve a key part of the Triple Aim—improving the health of the population.

- West Virginia has a unique opportunity to use its health care system to protect and promote the health of children. More than 97% of West Virginia children have health insurance coverage, ranking the state fourth in the United States (including the District of Columbia) for the lowest rates of uninsured children.[105] This high level of insurance coverage is an excellent starting point for delivery and payment reform in the child population, and it permits linking children into a holistic health model similar to the Accountable Health Communities.

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[103] The state's health insurance market includes (public and commercial) individual, small group, large group, fully insured, self-funded and exchange/marketplace business. Note: This excludes Medicare. It should also be noted that West Virginia recognizes that value-based payment transformation cannot be mandated for fully insured and self-funded plans, especially in light of the recent U.S. Supreme Court ruling in *Gobeille v. Liberty Mutual Insurance Company*.

[104] Melissa Majerol, Vann Newkirk and Rachel Garfield, "The Uninsured: A Primer," The Henry J. Kaiser Family Foundation. Available at http://files.kff.org/attachment/primer-the-uninsured-a-primer-key-facts-about-health-insurance-and-the-uninsured-in-the-era-of-health-reform.

[105] Joan Alker and Alisa Chester, "Children's Health Insurance Rates in 2014: ACA Results in Significant Improvements," Georgetown University Health Policy Institute. Available at http://ccf.georgetown.edu/wp-content/uploads/2015/10/ACS-report-2015.pdf.

- Per capita, West Virginia is in the top five of states with citizens age 65 or older. The age of West Virginia's population presents specific health care challenges to be addressed, including but not limited to long-term care, care transitions and geriatrics. Relatedly, the state's older population also increases the role that Medicare plays in delivery and payment transformation efforts. In fact, approximately 23% of West Virginians are covered by Medicare, tying the state with Maine for the highest proportion of Medicare coverage nationally.[106]

- A fundamental challenge to achieving better health outcomes is that West Virginians often do not take personal responsibility for their health and unhealthy behaviors. To combat this challenge, West Virginia recognizes that health care consumers must be engaged, educated and empowered to make appropriate and cost-effective health choices. Throughout this section, a common tactic to address all goals and strategies will be to activate and mobilize health care consumer groups in the state to facilitate that engagement, education and empowerment process.

- Public health stakeholders identified West Virginians' culture of poor health and sense of fatalism and hopelessness about improving socio-economic status and health outcomes as key roadblocks to the state achieving positive population health.[107] West Virginia believes it must combat that perception through community-based partnerships, media and information campaigns that foster a positive public image and demonstrate that a healthy West Virginia is possible. In fact, progress is already being made at the grassroots level through community-based programs such as Try This West Virginia.

Historic Flooding in West Virginia Could Impact SHSIP Implementation

- Heavy rains and flash flooding in late June 2016 resulted in at least 23 deaths and federal disaster declarations for Clay, Fayette, Greenbrier, Jackson, Kanawha, Lincoln, Monroe, Nicholas, Pocahontas, Roane, Summers and

[106] "Medicare Beneficiaries as a Percent of Total Population," The Henry J. Kaiser Family Foundation. Available at http://kff.org/medicare/state-indicator/medicare-beneficiaries-as-of-total-pop/.
[107] The SIM Better Health Workgroup, using a Likert Scale from one (strongly disagree) to 10 (strongly agree), was surveyed using Qualtrics about attitudes toward public health based on comments made by participants in the initial Better Health Workgroup meeting. The culture of poor health statement received an 8.15 score, and the sense of fatalism and hopelessness statement received an 8.09 score. The response rate for the survey was 46%. Workgroup membership at the time (July 2015) was 74 individuals.

Webster counties in West Virginia. Weather officials described the flooding as a once-in-a-millennium event, with some locations receiving six to 10 inches of rain during a 24-hour period.

- Preliminary assessments by West Virginia officials list the damage as at least 1,500 homes and 125 businesses destroyed, with another 4,000 homes damaged. State officials later revised the initial estimate downward to 2,500 homes damaged by the flooding. The flooding caused more than $40 million in damage to roads statewide. Additionally, initial assessments indicate that 25 schools sustained flooding damage, with eight extensively damaged by water and mud.

- Flood recovery efforts have commenced and will take a significant period of time. State and local officials are coordinating relief efforts with federal agencies, and these efforts are a focused priority within West Virginia. Some health care providers have also been affected by the flooding, and health system transformation efforts in the affected areas will need to await restoration and recovery of basic services, school and road repair and relocation of affected families.

- This tragedy underscores the extent to which unforeseen circumstances can impact the plans and timelines set forth in this SHSIP. In all cases such as this, resources and attention should be focused on meeting the pressing needs of the citizens, which may delay the implementation of certain aspects of this plan. The mitigation strategy is to modify the timelines and resource allocation models to accommodate these unforeseen events.

Party Responsible for Achieving Delivery and Payment System Modernization and Transformation in West Virginia

- The SIM design process brought together a diverse set of public and private stakeholders representing payers, providers and consumers and created a framework for continued dialogue and partnership.

- Due to the trust and collaboration that was solidified through SIM, all stakeholders have the buy-in to continue health transformation efforts from design into implementation. West Virginia encourages these stakeholders to continue working together to develop the data, analytic, reporting and

management infrastructure necessary for population health management and, ultimately, meaningful reductions in health care costs and utilization.

- Executing the goals and strategies set forth in this section demands a central coordinating entity to provide leadership and a venue for collaboration. This entity, the West Virginia Health Transformation Accelerator (WVHTA), is noted throughout this section as the party ***primarily responsible*** for SIM design plan implementation. The WVHTA will coordinate and collaborate on implementation with various state agencies, bureaus and departments, as well as private stakeholders and related mission-driven organizations.

5.1 Context and Recommendations of the Workgroups and Task Force

Several contextual considerations influence the goals and design of West Virginia's approach to payment reform and health system transformation. First, state and local government agencies are under extraordinary financial pressures due to reliance on the energy industry as a major driver of employment and tax revenue. Energy industries such as coal mining and natural gas drilling have historically been major employers and contributors to the state and local governments through severance taxes. The energy sector, especially coal, has been in rapid decline in recent years and therefore is unlikely to generate substantial additional revenues to enable investments in health care capacity building or new services.

Current budget shortfalls constrain the ability of public payers to sustain continued growth in health care expenditures for the Medicaid program, PEIA and public health services. Cost pressures also have affected the state's human assets and bandwidth in health services-related agencies—likely leaving the state government unable to lead the change necessary to transform the state's health care system. As a result, the strategies outlined in this plan rely heavily on a public-private partnership approach, with a disproportionate share of responsibility falling on the private sector to fund, resource and catalyze change.

In light of the convergence of these economic factors, the SHSIP has been developed under the assumption that these budget pressures will continue for the foreseeable future, leaving little new money available from state or local government sources for the public financing of health system transformation or to incentivize providers under alternative payment models. The SHSIP also presumes that the current pronouncements from CMS regarding a lack of additional SIM testing funding will continue as West Virginia seeks to implement its plan. Instead of state funding, the SHSIP goals will be implemented using a combination of other federal funds (through grant applications), private contributions and foundation support and internally generated savings and efficiencies through health care cost containment and system improvement efforts.

The SHSIP assumes that the Medicaid MCOs and commercial payers will continue to face significant challenges in effectively managing the trends and costs associated with the managed care population, including the Medicaid expansion authorized by the ACA. Initial claims experience for this population

indicates higher costs than for the Temporary Assistance for Needy Families (TANF) population due to an older average age of participants in the expansion population, as well as a higher than expected pharmaceutical spend. Likewise, commercial payers, including those such as Highmark Blue Cross Blue Shield of West Virginia, which is participating in the health insurance marketplace, have experienced adverse claims to premium ratios (particularly for the marketplace coverage group) that place additional pressure on cost and health operations efficiencies. West Virginia's aging population, with its underlying socioeconomic factors and legacy of adverse health outcomes and behaviors, creates a growth trend in projected future health costs that is not sustainable. These increasing cost trends are applying pressures to the budgets of public payers and are straining the affordability of employer-sponsored and individually purchased health insurance products.

The payer community has expressed interest in supporting transformation efforts and movement to alternative payment models—if it is possible to demonstrate that the new models and delivery innovations create a positive return on investment. This cautious approach within the West Virginia health care environment has necessitated a pragmatic, incremental approach in the development of the health system transformation and alternative payment model aspects of the SHSIP. Nonetheless, the SHSIP assumes the continuation of CMS' efforts and timeline for implementing a movement to value-based health care as articulated in CMS pronouncements, its design for implementation of MACRA and lessons learned from various CMS pilot and demonstration projects for value-based care delivery models.

Another constraint that dictates an incremental approach is the fragile and fragmented nature of the current health care delivery system in West Virginia. West Virginia hospitals face scheduled reductions in reimbursement as part of the ACA and other legislative or policy changes. Changing utilization patterns and pressure to reduce avoidable admissions, readmissions and emergency department visits continue to challenge the ability of hospitals, particularly the smaller rural and critical access hospitals, to respond to the changing health care environment in a positive and timely fashion. Costs of adding electronic health records systems and connecting to local health care providers place additional demands on margins and resources.

Physicians are likewise under market pressures, facing potential cuts in reimbursement under MACRA, demands under health IT meaningful use expectations, compliance costs for HIPAA and regulatory requirements, ICD-

10 implementation costs and diverse reporting expectations under multiple payer health improvement programs. A significant number of West Virginia providers, particularly in rural and underserved areas, are at or nearing retirement age. Transformation efforts that are not paced appropriately to the capacity of the health care system could overwhelm it and adversely affect access to and quality of health care services. The state's public health system is under similar stress and is facing challenges to maintain adequate funding and services.

Another factor that inhibits West Virginia from engaging in rapid health care change is the risk aversion of the state's political leaders, largely associated with significant budget problems. Additionally, a disparate provider community comprised of many rural, small-practice settings makes collaboration and access to services challenging. However, these two confounding factors may create an opportunity for West Virginia: The resource-constrained environment inspires a resolve/will for change and innovation driven out of necessity.

The state has not been idle during the national dialogue regarding health care reform. There have been numerous efforts to explore alternative models of health care delivery and payment in West Virginia.

- West Virginia benefitted from Medicaid Transformation Grants that enabled it to conduct PCMH pilots, care coordination pilots and a multi-payer shared savings pilot.
- Payers have funded PCMH pilots, pay-for-performance models and shared savings initiatives. There are value-based reimbursement programs already in existence in West Virginia, including a shared savings pilot supported by PEIA, as well as several Medicare accountable care organizations.
- West Virginia demonstrated its ability to execute a public-private partnership model with its Regional Health Information Extension Center (REC) funded by the Office of the National Coordinator for Health Information Technology. The West Virginia REC exceeded its recruitment and Meaningful Use attainment goals and was recognized by ONC for meeting the national aims of the program.
- There are several examples of innovation and quality in West Virginia that have been recognized on a national level. Charleston Area Medical Center, one of the state's largest hospital systems, was awarded the 2015 Malcolm Baldrige National Quality Award for its

sustained excellence in clinical care. Community Care of West Virginia, an FQHC system, was recently recognized by CMS as an exemplar high-performing practice in its newly launched Transforming Clinical Practice Initiative and is contributing to the development of the national change package for the initiative. Cabin Creek Health Systems, an FQHC system, was recognized by The Robert Wood Johnson Foundation as one of 30 practices in the Learning from Effective Ambulatory Practices Initiative and contributed to that national learning.

- West Virginia tested the efficacy of using community-based care managers/coordinators to improve health outcomes through the Medicaid Transformation Grants, as well as with the Tri-State Children's Health Improvement Collaborative, in partnership with the states of Alaska and Oregon.

Table 5.1 presents a summary of previous efforts to explore value-based models in West Virginia, aligning with the framework for alternative payment models developed by the Health Care Payment Learning and Action Network (HCPLAN).

	Category 1	**Category 2**	**Category 3**	**Category 4**
	Fee-for Service (FFS) with No Link to Quality & Value	*FFS Linked to Quality & Value*	*APMs Built on FFS Architecture*	*Population-Based Payment*
Medicaid Transformation Grant	X	X		
PEIA	X		X	
Highmark Blue Cross Blue Shield of West Virginia	X	X		
Traditional Medicaid (excluding specific managed care organizations)	X	Primary Care Case Management Model; Managed Care Contract Quality Withhold		

Table 5.1 Previous Alternative Payment Model Efforts in West Virginia

These examples demonstrate the will of West Virginia to explore and experiment with new models of health care delivery and payment. However, despite successes by individual exemplars, the state has been unable to bring high-performing best practices to scale or demonstrate reimbursement models that can be scaled up quickly. For example, payers have invested in isolated projects focused on PCMH capacity building. There are now exemplar models of National Committee for Quality Assurance (NCQA) Level 3 PCMH-recognized health care providers in the state; specifically, as of March 2016, 355 clinicians or clinical locations have attained some level of PCMH recognition by NCQA. Regrettably, payers largely have not developed these payment models beyond the initial pilots. This is unfortunate, as there is significant evidence that provider transition to a PCMH model requires resources for training, labor, technology and, above all, time. Without payer funding for those resources, the widespread adoption of the PCMH model is proving challenging in West Virginia, which could delay this innovation from becoming mainstream and a best practice.

Lessons Learned and Precedent Conditions for Payment Reform

West Virginia has learned several key lessons from its journey to date, and these lessons frame the context for the SHSIP. The first is that changes in the reimbursement model without the readiness of the provider system to use data and population health methods will not yield reductions in health care costs and utilization. A further constraint is the evaluative and analytic capacity to demonstrate cost savings. Similarly, changes in the health care delivery system absent changes in the reimbursement model will not spread or be sustained. Therefore, core to the state's strategy is continued capacity building around population health. Payers and providers are encouraged to form partnerships to develop the data, analytic, reporting and management infrastructure for population health management before the state can achieve meaningful reductions in health care cost and utilization.

The second lesson is that current-generation EHR systems implemented in West Virginia do not sufficiently incorporate population management tools, such as chronic disease registries and predictive analytics, or do not have these functions activated. These tools are essential to determining future health care super-utilizers and those experiencing or at risk of developing multiple chronic conditions. Even when data is accessible, though, it is often not in an actionable format—most West Virginia providers do not have the ability to analyze or translate data into interventions at a point of care and/or

population health level.

A third lesson concerns HIE. West Virginia is interconnected for statewide HIE via the West Virginia Health Information Network (WVHIN), a public-private partnership housed at the state Health Care Authority. Achieving a sustainable business model for the WVHIN has remained elusive—putting it in jeopardy of being disbanded. The WVHIN's limited technical and staff resources and lukewarm interest from the payer/provider communities were only a part of the problem; equally important were the absence of capacity to execute on data management and a reimbursement environment that did not support the use of data to drive health care improvement.

An example of the challenges of data management intersecting with the state's lagging health IT environment is the Medicaid Transformation Grant PCMH shared savings pilot. This pilot was a multi-payer demonstration that started with more than 20,000 patients. By the end of the pilot, fewer than 2,500 patients could be attributed to individual payers for the pilot period. This result was due to beneficiaries going on and off insurers' rolls and the lack of a master patient index with interoperability to facilitate reconciliation of beneficiary attribution.

A fourth lesson extant nationally and especially relevant in West Virginia are the barriers to sharing information and data among providers generally and specifically among primary care, behavioral health and long-term/post-acute care providers. Data sharing among primary care and behavioral health care providers is further complicated by a lack of interoperability among current-generation EHRs and certain West Virginia laws that afford additional protections beyond those provided under HIPAA and 42 CFR Part 2. These constraints create information silos that should not exist yet represent a barrier to integration that must be overcome.

The fifth and final lesson is that West Virginia's provider community has been challenged with multiple, large-scale competing priorities during the past several years. These priorities include the race to automation, achievement of meaningful use, competition from consolidation of health care systems, recruiting and retaining qualified health professionals in rural areas, the transition to the health insurance marketplace and a fee-for-service insurance system that limits innovation by a lack of reimbursement for certain services (e.g., care management). These combined factors have overly taxed the provider community and represent barriers to rapid migration to value-based

reimbursement and advanced models of health care delivery. Conversely, West Virginia's provider community is more aware than ever of the Triple Aim of health care advocated by CMS via the SIM grant, MACRA and other relevant federal projects, laws, regulations and rules. The state's providers and payers are beginning—albeit modestly and slowly—to venture away from fee-for-service and toward value-based payment and delivery.

The Payer Market and Leverage Points for Change

West Virginia opted to expand Medicaid under the ACA starting on January 1, 2014. Since 1996, West Virginia has operated under a 1915(b) Medicaid Managed Care Waiver that permits it to enroll beneficiaries in managed care. The state decided to enroll its Medicaid expansion population into managed care on July 1, 2015. As of March 2016, four MCOs serve West Virginia's Medicaid beneficiaries. Medicaid insures approximately 521,000 West Virginians, of which 150,000 are in traditional fee-for-service (about 29%) and 371,244 (about 71%) in Medicaid managed care, as shown in Table 5.2. Table 5.3 provides the state's total payer mix and uninsured population.

	TANF Population	Expansion Population	Total Population
UniCare – *Anthem*	89,581	37,601	127,182
CoventryCares – *Aetna*	75,727	46,023	121,750
The Health Plan – *Nonprofit Insurer*	37,596	30,771	68,367
West Virginia Family Health – *Highmark Blue Cross Blue Shield*	12,432	41,513	53,945

Table 5.2 West Virginia Medicaid Managed Care by MCO (Source: West Virginia Bureau for Medical Services; as of January 2016)

Payer	Population*
Medicaid (FFS and Managed Care)	548,000
Medicare	396,000
Commercial	360,000
PEIA, Federal Government and Retirees	275,000
Veterans Disability	35,000
Health Insurance Marketplace	33,000**
WVCHIP	20,000
Prison and Jail	6,000
Military	2,000
Total Insured Population	**1,675,000**
Uninsured	**116,000**
Other/Unknown	53,000

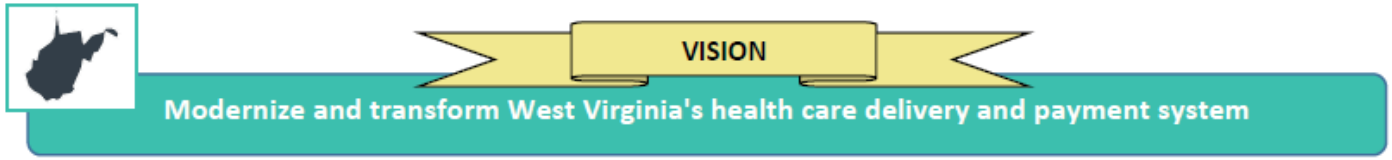
*Figures rounded for presentation purposes
**86% of participants qualified for premium subsidies.

Table 5.3 West Virginia Total Payer Mix and Uninsured (Sources: West Virginia Offices of the Insurance Commissioner, West Virginia Department of Health and Human Resources, as of December 2015; Medicaid.gov)

Medicaid, Medicare, PEIA and WVCHIP combined represent approximately 74% of West Virginia's population of covered lives and therefore create a major leverage point for change. To bring these payer forces together, West Virginia proposes the following plan.

5.2 Proposed Plan and Driver Diagram

West Virginia is setting the goal of 85% of its health insurance market payments as being value-based by 2025, with 80% of the state's health insurance market payments as value-based by 2020. The driver diagram on the following page depicts the focus areas planned to achieve these goals. It is important to stress the interdependence of the drivers. For example, capacity building focused on the PCMH, data management and population health management are precedent conditions to be able to perform in a value-based reimbursement environment.



DRIVERS	GOALS	STRATEGIES
Driver 1: Ensure all West Virginians are connected to a primary care provider and, where appropriate, have access to advanced primary care delivery systems	Ensure every West Virginian is connected to a PCP and patients with complex or multiple chronic conditions are affiliated with an advanced primary care delivery system	- Coordinate efforts to identify individuals without a regular connection to a PCP and connect such individuals to a PCP - Pursue ACA Section 2703 regarding health homes or encourage health home look-alikes by collaborating with the Medicaid MCOs - Encourage reimbursement models that reward advanced primary care delivery systems - Launch a shadow TCPI initiative - Promote reimbursement models that facilitate the integration of community health workers with primary care programs and the use of related approaches to addressing psycho-social risks, patient engagement and self-care
Driver 2: Accelerate population health management	Implement the CDC's scaled intervention approach to improve population health	- Focus on projects/programs to address super-utilizers - Link community-based health and social support resources to the health care delivery system - Build on successful community-wide health improvement programs and develop specific initiatives to address obesity - Promote the integration of behavioral health and primary care
Driver 3: Leverage data and information management capacity	Enable patients, providers and payers to share and analyze data in an open, transparent and collaborative fashion	- Encourage providers to continue training staff in data management and analytics - Leverage the Medicaid data warehouse - Align quality measures across payers - Develop a standardized provider scorecard - Optimize an HIE to enable sharing of timely health care information, including behavioral health information
Driver 4: Advance value-based reimbursement models	Encourage the adoption of value-based payment models, progressing based on risk readiness	- Set a vision for a value-based system through the state's public payer contracts - Encourage payers to migrate toward value-based reimbursement - Establish regional self-organized health communities
Driver 5: Better address the unique needs of aging West Virginians	Reduce spending on long-term care and strengthen the delivery of care to older adults	- Emphasize lower-cost, better-care settings - Establish geriatric medical homes - Identify and implement best practices to improve care transitions - Develop a consultative peer network for rural PCPs

DRIVER ONE

Ensure all West Virginians are connected to a primary care provider and, where appropriate, have access to advanced primary care delivery systems

GOAL ONE

Every West Virginian should be connected to a primary care provider (PCP) responsible for monitoring his or her health and facilitating access to quality health care. Additionally, patients with complex or multiple chronic conditions should be affiliated with an advanced primary care delivery system, such as a patient-centered medical home (PCMH), to proactively address health care needs.

A foundational goal of health care transformation is for every West Virginian to be connected to a source of primary care: at minimum a PCP, and for patients with more advanced needs, an advanced primary care delivery system. Close connection to a source of primary care is crucial for population health improvement, chronic disease management and prevention, and overall health care system transformation.

Coordinate Efforts to Identify Individuals without a Regular Connection to a PCP and Connect Such Individuals to a PCP

Recognizing that primary care is the lynchpin to successfully preventing and managing chronic disease and improving health status, West Virginia will coordinate efforts by providers, payers and other stakeholders to identify individuals without a regular connection to a PCP and connect such individuals to a PCP. The WVHTA will work with payers and providers to identify individuals without a connection to a PCP, focusing initially on super-utilizers who likely use the ED excessively for primary care. Education and outreach efforts, including efforts through providers themselves, to patients

seen only for acute care will emphasize the importance of having a PCP.

A recently finalized CMS rule for Medicaid MCOs can also further bolster PCP affiliation and member engagement/education efforts concerning the importance of accessing a usual place of care. For MCO contracts starting on or after July 1, 2018, the rule requires states to establish an independent beneficiary support system to serve potential MCO members, as well as current members interested in switching plans. This system has four key duties, which must be offered online, by phone and in person:

1. Personalized choice counseling;[108]
2. Assistance with understanding managed care;
3. Assistance with using long-term services and supports; and
4. Reviewing and providing oversight of data to guide the state in identifying and resolving LTSS systemic issues.

Furthermore, care coordination requirements of the new rule obligate MCOs to make their best effort to conduct health risk assessments with new members within 90 days of their enrollment with the MCO and to make subsequent follow-up attempts to reach members if the initial attempt is unsuccessful. This requirement provides yet another outreach avenue to explain how the managed care system works and the importance of the PCP system; this requirement goes into effect for MCO contracts beginning on or after July 1, 2017.[109]

One of the ways West Virginia will identify unconnected patients is through the creation of voluntary, HIE-based patient registries where patients can elect to declare a PCP. Cross-referencing the patient registries with payer member lists would help identify patients who have not registered a PCP and who should be targeted for outreach efforts. One of the important tools to facilitate this identification is the use of patient attribution guidelines and provider directories to assure patients are properly linked to the appropriate PCPs.

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[108] This role is similar to a health marketplace navigator under the ACA. The counseling provided is meant to answer the Medicaid beneficiary's questions and identify factors to consider when choosing among plans. This counseling does not include making a recommendation for or against enrollment in a specific plan.
[109] Julia Paradise and MaryBeth Musumeci, "CMS's Final Rule on Medicaid Managed Care: A Summary of Major Provisions," The Henry J. Kaiser Family Foundation. Available at http://files.kff.org/attachment/CMSs-Final-Rule-on-Medicaid-Managed-Care.

Social determinants of health—particularly in underserved areas of the state—may cause barriers to access of primary care. Through initiatives such as the Accountable Health Communities funding opportunity and other community-based resources, the WVHTA will identify social determinant barriers to primary care and craft strategies to dismantle those barriers. Community-based connection points such as workplaces and social support services will be leveraged to reach unconnected individuals—for example, those who have opted out of health insurance coverage and who only access the health care system when sick.

Pursue ACA Section 2703 regarding Health Homes, Encourage Health Home Look-Alikes

For the most costly Medicaid beneficiaries with qualifying conditions, West Virginia should pursue ACA Section 2703 regarding health homes to leverage the 90-10 federal match rate or encourage health home look-alikes by collaborating with the Medicaid MCOs. The state currently operates one 2703 health home for beneficiaries with bipolar disorder and hepatitis B/C or who are at risk of contracting hepatitis B/C. Upon termination of eight quarters of the 90-10 match for this current program, the state should systematically evaluate the program, including conducting a root-cause analysis of the weaknesses of its health home and recapping its successes and achievements.[110] This information is essential to planning future health homes in West Virginia. Under these PCMH or health home models, it is possible that the provider relationship with a patient might be in a setting other than primary care, such as a long-term care facility or a behavioral health setting.

Encourage Reimbursement Models that Reward Advanced Primary Care Delivery Systems

In West Virginia, there is a small group of entities that are conveners for health care providers that are in the position of serving as PCMHs. These include such entities as the West Virginia Primary Care Association, the West Virginia Medical Institute, academic medical centers and payer and provider networks, such as Partners In Health Network. Payers should pursue reimbursement models that reward advanced primary care delivery systems and related core competencies, such as pay-for-performance approaches

[110] The last quarter for the 90-10 match concluded on June 30, 2016.

based on improved outcomes and per-member, per-month enhanced payments for affiliated services (e.g., care coordination and targeted case management).

Launch a Shadow Transforming Clinical Practice Initiative (TCPI)

West Virginia clinicians are not explicitly covered in any of the Practice Transformation Networks established under the TCPI effort recently launched by CMS. Thus, there are opportunities to support West Virginia providers through the Support and Alignment Network (SANs) and Practice Transformation Networks (PTNs) that CMS has established. West Virginia agrees with the approaches of TCPI, which encourages practices and providers to:

- Use a patient- and family-centered care focus and accommodate cultural diversity.
- Integrate PCMH/health home aspects into clinical and administrative operations and integrate coordinated primary care/behavioral health aspects.
- Use patient activation, engagement and self-management processes and goal-setting.
- Adopt a population health management model (use of patient panels and formal attribution of patients to PCMH/health homes).
- Integrate the use of care teams and link to community-based health resources (to address social determinants of health).
- Progress toward meaningful use and integration of health information technology and HIE to assist in health improvement efforts.
- Use population health-level data for risk stratification, targeting high-risk subpopulations and assessing levels of intervention and care management.
- Establish and implement formal written care coordination and management agreements to help guide and facilitate care coordination across care settings.
- Coordinate, track and monitor effectiveness and cost of specialty care referrals and partners (pursuant to formal care coordination agreements).
- Use evidence-based clinical algorithms and protocols.
- Integrate patient experience and care team/health care organization feedback into continuous quality improvement processes and link to

outcome/performance incentives.
- Develop expanded capacity to accomplish and sustain population health improvement objectives.
- Develop and enhance capacity to engage in value-based reimbursement models, including two-sided risk and global budget/payment models.

As it relates to TCPI and tertiary care specifically, CMS' objectives are to:

- Align with the approaches listed above and meet quality objectives, including reductions in avoidable admissions, readmissions, adverse outcomes and ED visits.
- Coordinate care on discharge to enhance post-discharge outcomes.
- Assess admissions, readmissions and ED visits to link to a PCMH and address gaps in care.

Broadly, CMS' objectives for all sectors as it relates to TCPI are to:

- Improve population health.
- Improve the patient experience of care and the ability to self-manage care, including becoming better informed health care consumers that can use health care resources appropriately.
- Contain overall health care costs and a high capture rate of opportunities for avoidance or prevention of health care costs.

If West Virginia's efforts are not appropriately coordinated, the state risks fragmentation in its approach to achieving these worthwhile goals. To support the state's providers, West Virginia proposes a shadow coordinated initiative based on the TCPI framework (and leveraging SANs and PTNs nationally). This strategy establishes a peer-learning environment, while driving toward transformation using a common set of performance metrics and national best practices. The shadow initiative proposed in West Virginia will seek private and foundation support for the centralized learning network and will strive to leverage the provider community and community-based partners in a collaborative approach to achieve the goals of the program.

Promote Reimbursement Models that Facilitate the Integration of Community Health Workers with Primary Care Programs and the Use of Related Approaches to Addressing Psycho-Social Risks, Patient Engagement and Self-Care

Integral to the PCMH model is engaging and empowering patients to self-manage their own health. Health literacy, engagement and activation are closely related concepts important in reducing health care utilization and improving health outcomes. In fact, a March 2016 study demonstrated that a patient's "activation score" actually helps predict whether he or she will become a health care super-utilizer—that is, a patient who disproportionately uses health care services such as ED visits.[111]

Improving the capacity of individuals to be self-activated is often accomplished through the use of community health workers as care team extenders. A systematic review of literature published in April 2016 found that these workers are "effective compared with alternatives and also cost-effective for certain conditions, particularly when partnering with low-income, under-served, and racial and ethnic minority communities."[112] These community health workers include health navigators, health educators, peer counselors and community outreach workers, among other professionals and para-professionals.

West Virginia has several ongoing and promising community health worker pilots and demonstrations. Williamson Health and Wellness Center, an FQHC, in partnership with Marshall University and Duke University, received a CMS Innovation Center Health Care Innovation Awards grant to deploy a community health worker model to serve patients with uncontrolled diabetes in southern West Virginia. The project received additional funding from the U.S. Health Resources and Services Administration (HRSA) to expand the model to address other chronic conditions (e.g., cardiovascular disease and chronic obstructive pulmonary disease) rampant in West Virginia. A coalition of health care providers also secured private foundation funding to deploy the model in their service catchment area in West Virginia's Mid-Ohio River Valley.

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[111] Jessica Greene, Judith H. Hibbard, Rebecca Sacks, Valerie Overton and Carmen D. Parrotta, "When Patient Activation Levels Change, Health Outcomes and Costs Change, Too," Health Affairs.
[112] Kyounghae Kim et al., "Effects of Community-Based Health Worker Interventions to Improve Chronic Disease Management and Care Among Vulnerable Populations: A Systematic Review," American Journal of Public Health.

Unfortunately, the traditional fee-for-service model does not support innovative care delivery models like these. West Virginia should advocate for reimbursement models that facilitate the use of such innovative care delivery models through enhanced care management fees or per-member, per-month payments. Development of training programs, standardized curricula and peer-learning networks should be promoted to support workforce development in these areas.

Proliferation of PCMHs and related care delivery models, as well as movement of providers to value-based reimbursement approaches, will demand increased care management, including care coordination, case management and complex case management. These services are examples of important tools not typically reimbursed in the fee-for-service environment. West Virginia intends to promote care management by fostering models that leverage shared resources. However, one of the challenges of a rural state with many small primary and specialty care practice environments is that there is insufficient demand for services to warrant full-time care management staff at the individual practice level. This makes it difficult to recruit and retain the workforce needed to meet practice demands—a key lesson learned in the Medicaid Transformation Grant care coordinator pilot. To address this challenge, West Virginia will encourage care management resources that are shared across organizations, such as care teams or virtual care teams.

DRIVER TWO

Accelerate population health management

GOAL TWO

Following the U.S. Centers for Disease Control and Prevention's (CDC) "buckets approach" (see Section 3.2), which includes traditional clinical, innovative clinical and community-wide methods, West Virginia's approach to population health has historically aligned with the former two methods. West Virginia recognizes that impacting population health will require inclusion of community-wide interventions in addition to current clinical strategies.

West Virginia uses a definition of population health similar to the one set forth by David Kindig and Greg Stoddart in the American Journal of Public Health: "The health outcomes of a group of individuals, including the distribution of such outcomes within the group."[113] The state approach to improving the health of its population is through analysis, use of data and targeted interventions involving collaboration between the health care delivery system, payers and community partners. Moreover, the state supports the CDC's "three buckets" approach to population health and prevention, as introduced in Section 3.2 and illustrated in Figure 5.1.[114]

[113] David Kindig and Greg Stoddart, "What Is Population Health?" American Journal of Public Health. Available at http://ajph.aphapublications.org/doi/pdf/10.2105/AJPH.93.3.380.
[114] John Auerbach, "The 3 Buckets of Prevention," Journal of Public Health Management & Practice.

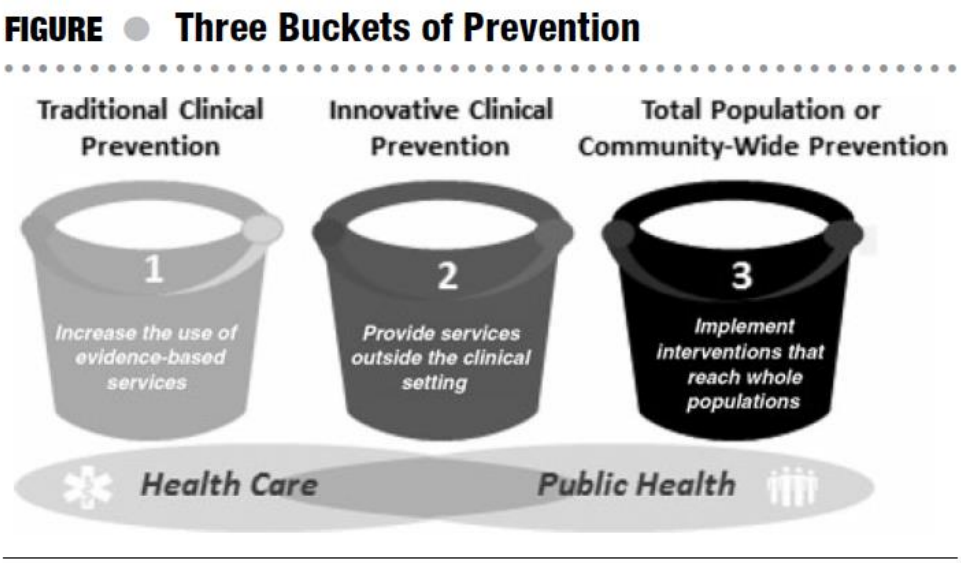

Figure 5.1 Three Buckets of Population Health and Prevention (Source: Journal of Public Health Management & Practice)

Traditional and innovative clinical means of prevention have been discussed at length in prior sections of the SHSIP, yet West Virginia is consciously looking to move toward impacting the total population or deploying community-wide prevention efforts to reach whole populations. Examples of important community resources to achieve this aim include religious organizations and houses of worship, schools, civic organizations, social service organizations and the criminal justice system, all of which play a vital role in population health. Improving population health needs to occur at the point of service, but will also require collaboration among the aforementioned parties to address broader community and social determinant of health challenges.

There are four proposed areas of focus in West Virginia's intended effort to accelerate population health strategies.

Focus on Projects/Programs to Address Super-Utilizers

For the purposes of the SHSIP, the SIM Task Force defined super-utilizers as *patients who experience complex physical, behavioral and social determinants of health that are not well met through the current fragmented health care system. These patients would receive better care at a lower cost if they were identified and provided coordinated care.* This definition is a combination of

two definitions: one used by The Robert Wood Johnson Foundation/The Camden Coalition of Healthcare Providers and another used by the National Governors Association Medicaid Complex Care Program.

Concurrent with the SIM grant, West Virginia joined an initiative focusing on super-utilizers through the National Governors Association. The state and its four largest health care providers—Charleston Area Medical Center, Cabell Huntington Hospital/Marshall Health, Partners In Health Network and West Virginia University Health System—are participating in the initiative and learning collaboratively with the states of Alaska, Colorado, Connecticut, Kentucky, Michigan, Rhode Island, Wisconsin and Wyoming. The initiative involves collaboration with payers, health care providers and community organizations.

West Virginia believes focusing on super-utilizers offers the greatest immediate ROI, among other opportunities:

- Accelerates collaboration between payers and health service providers
- Facilitates sharing of data between stakeholders
- Builds population health management capacity across the state
- Derives cost savings more quickly for the participating stakeholders
- Improves readiness to participate in value-based reimbursement

There are multiple approaches and opportunities to address super-utilizers, including centers of excellence models and the use of Project ECHO for telehealth and virtual care team collaboration.[115] These opportunities allow providers and payers to partner for the management of targeted super-utilizer populations—building on the lessons learned and successes of the four aforementioned participating health care providers.

Community Paramedicine Demonstration Projects

During the 2016 legislative session, a rule (§64-48-12) was approved to allow the director of the BPH Office of Emergency Medical Services (OEMS) to authorize up to six community paramedicine demonstration projects. Beginning July 1, 2016, using an application and approval process that is yet to be determined, the OEMS director can authorize demonstrations that

[115] Project ECHO is a model for lifelong medical learning and collaborative practice that links front-line primary care clinicians with specialist care teams at academic medical centers to manage patients who have chronic conditions requiring complex care.

utilize emergency medical service personnel—specifically paramedics—to perform episodic patient evaluation, advice and care aimed at preventing or improving a particular medical condition. All services provided by the paramedic that are outside normal emergency response and transport roles must be under the direction of a physician.

The goal of these demonstrations is twofold: 1) to reduce unnecessary use of ED services and 2) to enhance access to primary care for underserved and rural populations. These demonstrations will last for two years, and at the conclusion, a final report will be submitted to the BPH Commissioner with specific data regarding utilization, quality improvement and reductions in health care costs. The BPH Commissioner, in concert with BPH OEMS, will then determine how to further develop community paramedicine and decide whether to expand its scope.

West Virginia University Health System

West Virginia University Health System is developing a pilot to improve care for Medicaid patients with complex needs and high utilization.[116] The pilot will focus on patients residing in the Morgantown region (e.g., Marion, Monongalia, Preston and Taylor counties) who access care at the health system's main clinical sites in Monongalia County, where the organization has a fully integrated EHR and care coordination infrastructure.

The patients targeted by the pilot are those who meet at least one of the following three criteria:

- Ten or more ED visits in the last year
- Five or more ED visits in the last six months
- Four or more hospitalizations (inpatient or observation) in the last year

The exact intervention(s) for identified super-utilizers are being finalized; however, data provided by the health system and WVDHHR indicate more than 350 patients meet one of the aforementioned criteria.

[116] Patients with advanced cancer, end-stage renal failure on dialysis or end-stage liver failure (e.g., hepatorenal syndrome) or affiliated with hospice are excluded from the pilot, as any intervention would likely not have impact on those conditions/circumstances.

Partners In Health Network (PIHN)

PIHN is comprised of providers based mostly in central and southern West Virginia. PIHN has completed a preliminary study of patients who were identified as super-utilizers of ED services among PIHN members. The study—under the direction of PIHN's Enhanced Care Committee—involved a variety of facilities in central and southern West Virginia, including a tertiary care medical center, several critical access hospitals, FQHCs, rural health centers, a free clinic, a free-standing behavioral health hospital and two behavioral health outpatient centers. The characteristics of the patient population included:

1) Each was an adult West Virginia Medicaid beneficiary.
2) Each had 12 or more ED visits in a 12-month period.
3) Eight-five percent of the patients had multiple (three or more) complex chronic illnesses.

The next phase of the PIHN study will implement a research protocol designed to evaluate the effectiveness of comprehensive case management interventions in eight PIHN primary care sites. The goal is to reduce unnecessary ED visits among identified super-utilizer patients and shift their care to a primary care model. Additionally, PIHN will evaluate the costs associated with care for these patients, pre- and post-intervention. PIHN will obtain patient charge data from West Virginia Medicaid MCOs for ED charges, primary care charges, hospitalization charges and 30-day readmission charges. Secondly, PIHN will evaluate the costs associated with providing comprehensive case management for each clinical site. These items include: direct time spent with each patient, telephone time spent with each patient, administrative time spent for each patient and travel costs associated with providing or coordinating services.

Link Community-Based Health and Social Support Resources to the Health Care Delivery System

West Virginia seeks to link community-based health and social support resources to the health care delivery system. This will help address social determinants of health through a patient-centered, holistic model of health promotion and management.

West Virginia health care providers and social service organizations are pursuing a funding opportunity through CMS to demonstrate Accountable

Health Communities. Track 2 of this funding opportunity, which is being pursued by a consortium including Charleston Area Medical Center, Partners In Health Network and the West Virginia University Center for Excellence in Disabilities, will provide community navigation services to assist high-risk Medicare and Medicaid beneficiaries with accessing social services—creating a more holistic health care delivery system. Furthermore, the funding opportunity will permit the state to map social service resources and identify logical self-identified communities willing to collaborate to improve the health of their respective population and geographic region.

Once the mapping of community assets is completed and Accountable Health Communities are established, the state will pursue a model similar to the states of Minnesota and Wisconsin, in which resources from across invested stakeholders can be used to balance interventions with prevention in a strategic approach. In later years, West Virginia intends to explore a model similar to Oregon in which the health care needs of regional populations could be managed by consortia of collaborators including payers, providers and community-based organizations.

In sum, West Virginia recognizes that medical-only models of care are insufficient to meet the full needs of its citizens, especially its super-utilizer population. Whole-health, holistic care models, such as the Accountable Health Communities, are required to curb unhealthy behaviors, promote healthy lifestyles, address chronic diseases and ultimately achieve the Triple Aim.

If West Virginia does not receive Accountable Health Communities funding, a secondary option to achieve this strategy would be through the Medicaid health homes. Using this approach, West Virginia would better leverage care coordination and navigation services as part of the infrastructure supporting Medicaid health homes. Yet, a challenge in this scenario is that the population served through the Medicaid health homes is, of course, limited to the Medicaid population as well as to certain chronic conditions.

Other entities in the state, including WVU, are independently considering social determinants of health and ways to address them for the West Virginia population. In the absence of Accountable Health Communities funding, West Virginia will consider ways to leverage this work underway in addition to the Medicaid health homes.

In seeking to address social determinants of health, West Virginia joins a

other states—including other SIM states—aiming to improve health disparities by investing in community health for underserved populations. These models in Connecticut, Delaware, Maryland and Rhode Island overlap with the strategies proposed by West Virginia in the SHSIP to address disparities and advance health equity.[117]

Build on Successful Community-Wide Health Improvement Programs and Develop Specific Initiatives to Address Obesity

A targeted initiative focused on healthy eating, exercise and reductions in drinking and smoking could have a substantial impact on the overall health of the West Virginia population. An existing initiative, Try This West Virginia, has demonstrated the impact of community-based social change to improve health.

Try This West Virginia advances evidence-based, practical health improvement projects that are grounded in the socio-ecological model of health promotion. The program has demonstrated through 99 community projects since its inception in 2014 that people can make healthy changes in their lifestyles more easily if healthy choices are available in their community. Try This West Virginia has also received incredible buy-in, as it has leveraged $7 for every $1 provided for the 99 community projects it has funded.[118]

Section 3.3 identified obesity as a major public health issue in West Virginia and a driver of much of the disease burden in the state, including diabetes and cardiovascular disease. The modifiable issues contributing to obesity derive from social determinants of health stemming from cultural traditions, lifestyle and access to healthy foods and go far beyond what any single stakeholder segment can possibly tackle alone. Reshaping the culture of the state around healthy eating and lifestyles will require the participation of all stakeholders in a statewide collaboration that includes the public and private sectors, as well as community-based organizations. West Virginia, building on the success of programs such as Try This West Virginia, proposes a community health improvement initiative—starting with a Health Improvement Steering Workgroup—that will leverage the following design principles:

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[117] Amy Clary, "In the Zone: State Strategies to Advance Health Equity by Investing in Community Health," National Academy for State Health Policy. Available at http://www.nashp.org/wp-content/uploads/2016/06/In-the-Zone-Brief.pdf.

[118] Highlighted projects and affiliated materials for Try This West Virginia are available at www.trythiswv.com.

- Encourage a local Accountable Health Communities model with engagement and ownership by local champions in communities.
- Create regional centers of excellence in the management of obesity as a resource to medical providers in bringing the best evidence-based approaches to complex obesity cases.
- Use the resources of Try This West Virginia to help educate local health workers, health officers, health care providers and others on CDC-approved projects and familiarize them with West Virginia-specific models.
- Collaborate with Try This West Virginia to spread statewide awareness of the many successful community health projects from other states not yet implemented in West Virginia.
- Use telehealth, supplemented by Project ECHO learning, to educate providers on ways they can refer patients to community activities and engage in community-wide efforts to build population health, as well as participate in case-based collaboration to develop novel health interventions for their panels of patients.
- Reinvigorate state efforts focused on the pediatric medical community in a galvanized effort to focus on obesity.
- Leverage a campaign-like health improvement collaborative borrowing from lessons learned in the Healthy Weight Collaborative previously sponsored by HRSA.
- Partner with Try This West Virginia in its efforts to identify, train and support citizen, community-based health leaders and multi-sector teams in their efforts to advance CDC-approved local projects and strategies for improved population health.
- Align public and private state resources to best leverage a long-term systematic campaign regarding obesity.

Promote the Integration of Behavioral Health and Primary Care

West Virginia recognizes that behavioral health-related issues are major drivers of healthy or unhealthy choices and have an impact on the burden of illness. Behavioral health conditions are also major contributors to avoidable utilization of health care services and other inefficiencies in the health care system. Moreover, West Virginia—like many rural states—suffers from an inadequate and asymmetric supply of behavioral health professionals.

To address these behavioral health challenges and strategize for effective

behavioral health and primary care integration, the West Virginia SIM Project Management Team held a specialized ad hoc workgroup.[119] The group adopted the following principles to combat West Virginia's behavioral health challenges and to achieve behavioral health and primary care integration:

- Continue to promote collaboration between the primary care and behavioral health communities that fosters integration of behavioral health into primary care and ensures that persons cared for in behavioral health settings are getting optimal primary care support. Examples of this collaboration are occurring throughout West Virginia, including the SHARE Program at FMRS Health Systems, Inc., which incorporates the principles of integration along with a focus on population health and emotional wellbeing.[120]
- Broaden support for and remove barriers to using telehealth.
- Implement Project ECHO and similar models using telehealth to make specialist expertise more broadly available throughout West Virginia with an initial focus on opioid and other types of substance abuse.
- Promote the collaborative care/consulting psychiatrist model to improve treatment of common, less serious behavioral health disorders in primary care.
- Broaden the use of community health workers, health educators, peer coaches for substance abuse disorders and peer services for mental health; standardize training and certification.
- Revise academic curricula for health professions to support team-based models that integrate behavioral health and primary care.
- Continue to participate and encourage greater involvement in behavioral health demonstrations and pilots that put the state at the forefront of new types of delivery and payment models.[121]

To help combat the scourge of opioid substance abuse in West Virginia, an additional guiding principle is to align with federal efforts to revise academic curricula with CDC prescription guidelines that encourage providers to

[119] To guide and support this workgroup, the Project Management Team contracted with subject-matter expertise in behavioral health.
[120] FMRS is a comprehensive mental health center located in Beckley.
[121] For example, two West Virginia hospitals, Highland Hospital in Charleston and River Park Hospital in Huntington, participated in the Medicaid Emergency Psychiatric Demonstration. This demonstration served as a key justification for changing rules that prohibited Medicaid from paying for adults to receive inpatient treatment at an institution for mental disease (IMD). The recently released Medicaid MCO rules permit states to make monthly capitation payments to health plans for adults ages 21-64 who receive inpatient treatment for up to 15 days in an IMD.

voluntarily try alternative treatment for patients instead of opioids. Leaders from two of the state's three academic health science centers, Marshall University and West Virginia University, have publically announced that their medical schools will revise academic curricula to incorporate the new CDC opioid prescribing and use guidelines. In June 2016, West Virginia University announced its adoption of CDC guidelines and further details about its approach to opioid prescribing, including a "start low and go slow" principle, an emphasis on functional goals rather than pain severity and regular patient follow-up.[122]

Relatedly, by the end of 2016, PEIA will implement a policy to limit the total amounts of opioid prescriptions that its members can receive by morphine milligram equivalent and require them to be connected with a single prescriber and one pharmacy with a controlled substances contract. PEIA is hoping to continue to cover members needing these medications, yet discourage inappropriate use of opioids and to reduce any potential for diversion of opioids.

West Virginia Governor Earl Ray Tomblin has made addressing substance abuse a key priority for his administration. Since 2011, per Executive Order No. 5-11, the Governor's Advisory Council on Substance Abuse (GACSA) has convened at least quarterly and provided written recommendations and tracked progress annually regarding issues related to opioid misuse and illicit drugs. Additionally, in May 2016, separate from GACSA, West Virginia Attorney General Patrick Morrisey unveiled draft best practices aimed at reducing prescription drug abuse in the state. The draft best practices for prescribers and dispensers are available at the attorney general's website.

[122] "WVU Medicine adopts CDC opioid prescribing guidelines," WVU Medicine. Available at http://wvumedicine.org/news/article/wvu-medicine-adopts-cdc-opioid-prescribing-guidelines/.

DRIVER THREE

Leverage data and information management capacity

GOAL THREE

West Virginia understands that transitioning to mature value-based systems—including achieving the goals described in this section of the SHSIP—will require, at a minimum, having, sharing and analyzing data about health status, utilization of services and environmental determinants.

The third driver for West Virginia's health care delivery and payment transition is building capacity for data and health information management analytics. Data and information management is foundational to supporting population health, driving improved outcomes and reducing costs; without it, almost none of the SHSIP goals regarding health care delivery and payment transition can be achieved. Providers desperately need population health management tools and at least basic analytic capabilities if they are to be effective in managing care.

West Virginia has five central areas of proposed focus for this driver.

Encourage Providers to Continue Training Staff in Data Management and Analytics

West Virginia will encourage health care providers to continue efforts to train staff in data management and analytics for the purpose of supporting population health approaches and driving improvements in health outcomes. This strategy includes aligning training programs in the health professional societies, the academic medical centers, West Virginia Medical Institute, West Virginia Primary Care Association, West Virginia Behavioral Healthcare

Providers Association and other groups.

Leverage the Medicaid Data Warehouse as a Repository for Claims Data

Significant investments have been made in a centralized multi-payer data warehouse sponsored by Medicaid. Consistent with the dictates of the Medicaid Information Technology Architecture (MITA) framework of CMS, West Virginia's Medicaid data warehouse was designed to facilitate the exchange of Medicaid, Medicare, WVCHIP, PEIA and Highmark Blue Cross Blue Shield of West Virginia payer claims to provide population-level analytics for improvement purposes. This core group of payers represents the covered lives of the majority of the state's population, and other payers should be encouraged to join and participate. West Virginia Medicaid has been challenged with internal capacity and inadequate bandwidth to optimize this data warehouse. Consequently, West Virginia Medicaid has been unable to provide systematic analysis of data and/or to push out actionable reports to participating provider networks on their panels of patients.

West Virginia Medicaid, in partnership with the WVHTA, will establish a workgroup focused on accelerating the optimization of the data warehouse. The workgroup will consistent mainly of subject matter experts from key stakeholder groups, including payers, West Virginia Medical Institute and the state's academic medical centers. The workgroup will serve as a resource to Medicaid in data analytics and data governance and in resolving interoperability issues between state and private systems. The workgroup will also encourage more payers, including commercial payers, to contribute data to the warehouse.

Align Quality Measures Across Payers

Inconsistent metrics and reporting requirements present benchmarking challenges and create an additional burden on health care providers. Often payers require providers to report different measures for the same diseases and change measures in the middle of a reporting period. West Virginia strongly believes that quality measures must influence collective behaviors of patients, providers and payers and be aligned among governmental payers and commercial payers, to the extent possible. West Virginia is able to align measures through the quality withhold provisions in its Medicaid MCO contracts. PEIA and WVCHIP have also expressed willingness to adopt quality measures that are consistent with Medicaid's quality withhold measures.

CMS is leading the efforts to align measures nationally through its Core Quality Measures Collaborative. West Virginia will use the measures of that collaborative as a starting point to begin aligning quality measures. Specifically, the state will utilize the West Virginia Health Innovation Collaborative (WVHIC), a pre-existing public-private partnership used to share health care best practices in a "grand rounds" fashion, to publically vet the Core Quality Measures Collaborative's quality measures. As a partner with the state, the WVHTA will provide support in quality measure vetting and promote quality measure alignment across payers.

Develop a Standardized State-Based Provider Scorecard

As measures are aligned and the data warehouse is optimized, an anticipated output of this process will be a standardized provider scorecard similar to what the state of Delaware has developed. Payers could and should use this scorecard in value-based programs. The scorecard should also be accessible through a portal so that providers can view their performance and benchmark across peers. Finally, health care consumers should be permitted to access the scorecards to make informed health care choices based on provider quality and outcomes.

Optimize an HIE

As noted previously in this section, West Virginia, like other states, has made strides in establishing a statewide HIE. The utilization and long-term sustainability of the state HIE has been hindered by a lack of interoperability, technical and cost barriers to connectivity of major electronic health record vendors, and a lack of readily implementable business use cases for HIE. As provider groups move into shared savings and other alternative payment models (including those with penalties for poor outcomes), managing care transitions becomes increasingly critical. For example, CMS has made hospital readmissions a major quality improvement initiative, and it is also pursuing bundled payments for targeted procedures such as joint replacements. As a result, West Virginia strongly supports HIE to share timely admission, discharge and transfer alerts and pertinent health care information for targeted super-utilizers and all patients.

Establishment of local HIE is also important to data sharing in West Virginia. An example is emergency department information exchange (EDIE). In Washington, hospitals and a technology vendor expanded EDIE to address

avoidable ED visits after the state's Medicaid program proposed a three ED-visit maximum rule banning reimbursement for conditions that were considered potentially treatable in alternative settings. EDIE integrates into existing EHRs, or functions as a solo solution, to push basic information about resource utilization to providers, such as past visit dates and chief complaints. Additionally, EDIE includes a prescription management program to check for drug interactions and screen out drug-seekers. The West Virginia Hospital Association has been instrumental in encouraging adoption of EDIE in the state. Roane General Hospital, a critical access hospital in central West Virginia, is the state's first adopter of EDIE.[123]

As previously mentioned in this section, there are obstacles to sharing information and data among providers; in particular, there is reluctance by behavioral health providers to share data with primary care providers. There is confusion among providers in interpreting and applying the provisions of certain West Virginia laws in concert with HIPAA, 42 CFR Part 2 and other relevant federal laws, regulations and rules. There are also real challenges with ensuring the proper documentation of consent when exchanging data related to substance abuse treatment. These real and perceived issues substantially limit information sharing between behavioral health and primary care providers. The WVHTA will have a key role to play in better educating providers about personal health information data sharing as it relates to state privacy laws, HIPAA, 42 CFR Part 2 and other relevant regulations and rules.

[123] Jesse Pines, Nathan Schlicher, Elise Presser, Meaghan George and Mark McClellan, "Washington State Medicaid: Implementation and Impact of 'ER is for Emergencies' Program," The Brookings Institution. Available at http://www.brookings.edu/~/media/Research/Files/Papers/2015/05/04-emergency-medicine/050415EmerMedCaseStudyWash.pdf?la=en.

DRIVER FOUR

Advance value-based reimbursement models

GOAL FOUR

West Virginia—in concert with CMS' push at the national level—views now as the time to accelerate the transition to value-based payment models—specifically increasing performance risk sharing such that some portion of a negotiated payment is at risk for defined outcomes. As providers become more sophisticated and mature in their capacity to manage population health and readiness to participate, West Virginia will encourage adoption of shared savings models. For systems ready to accept actuarial risk, West Virginia encourages payers to create flexible models that include global budgeting under a consortia approach (e.g., collaboration between hospitals, physicians and community-based organizations).

West Virginia has begun to move, although with trepidation, in the direction of value-based reimbursement, as evidenced by existing shared savings programs and ACOs. West Virginia can expect to see the full spectrum of value-based models deployed in the state as CMS and the private market direct and influence this transition. Now is the time to ramp up value-based transitions; still, the ability of West Virginia providers to accept or bear performance risk varies widely, and few are ready to accept actuarial risk.[124]

As noted above, West Virginia will encourage different value-based payment models based on providers' readiness for risk and their progression toward population health management.

[124] "Performance risk" refers to category 3 of the HCPLAN framework: APMs built on a fee-for-service architecture, such as bundled payments, episode-based payments, etc. with upside gainsharing only or upside gainsharing and downside risk. "Actuarial risk" refers to HCPLAN category 4: capitated payments for specific conditions, population-based payments or global budgets.

The State Sets the Vision for Value-Based Delivery and Payment by Leveraging its Health Care Purchasing Power

The state, as a major health care purchaser, should accelerate efforts toward a value-based system by setting the vision and outcomes for that system in its contracts with insurers, but permitting flexibility to determine how they achieve those outcomes. Learning from experiences of (and communicating with) other states, the WVHTA will assist the state on ways to make its contracts more in line with value-based principles, such as better utilizing the Medicaid MCO quality withhold to drive quality improvement or requiring that a certain percentage of payments by Medicaid MCOs to providers have a link to value.[125]

Encourage Payers to Migrate Toward Value-Based Reimbursement

All payers will be encouraged to continue to support pilot valued-based programs and expand programs that are demonstrating results. These programs will include categories 2 to 4 in the HCPLAN framework on the following page.

Establish Regional Self-Organized Health Communities

As the state matures in its experience with management of high-cost super-utilizers and gains sophistication in population health methods and data management, it will be positioned to establish regional Accountable Health Communities-like organizations capable of managing health care needs. This approach should be based on the consortia model that has evolved in Oregon, North Carolina and Washington, and what is envisioned in CMS' Next Generation ACO model. Efforts will be made to seek alignment between West Virginia Medicaid and MCOs, Medicare, PEIA, WVCHIP and the commercial payers, ensuring a critical mass of covered lives in targeted regions to make this approach viable.

[125] A recently released CMS rule for Medicaid MCOs clarifies that states, through contracts, have the authority to require MCOs to implement value-based purchasing models, as noted in this section. Any such requirements must be based on the utilization and delivery of services and must align with the state's managed care quality strategy, which is discussed as a policy lever in Section 10.

Alternative Payment Models (APM) Framework

Category 1 Fee for Service – No Link to Quality & Value	Category 2 Fee for Service – Link to Quality & Value				Category 3 APMs Built on Fee-for-Service Architecture		Category 4 Population-Based Payment	
Fee-for-Service	A Foundational Payments for Infrastructure & Operations	B Pay for Reporting	C Rewards for Performance	D Rewards and Penalties for Performance	A APMs with Upside Gainsharing	B APMs with Upside Gainsharing/ Downside Risk	A Condition-Specific Population-Based Payment	B Comprehensive Population-Based Payment
Traditional FFS	Foundational payments to improve care delivery, such as care coordination fees, and payments for investments in HIT	Bonus payments for quality reporting	Bonus payments for quality performance	Bonus payments and penalties for quality performance	Bundled payment with upside risk only	Bundled payment with up- and downside risk	Population-based payments for condition-specific care (e.g., via an ACO, PCMH, or COE)	Full or percent of premium population-based payment (e.g., via an ACO, PCMH, or COE)
DRGs Not linked To Quality		DRGs with rewards for quality reporting	DRGs with rewards for quality performance	DRGs with rewards and penalties for quality performance	Episode-based payments for procedure-based clinical episodes with shared savings only	Episode-based payments for procedure-based clinical episodes with shared savings and losses	Partial population-based payments for primary care	Integrated, comprehensive payment and delivery system
		FFS with rewards for quality reporting	FFS with rewards for quality performance	FFS with rewards and penalties for quality performance	Primary care PCMHs with shared savings only	Primary care PCMHs with shared savings and losses	Episode-based, population payments for clinical conditions, such as diabetes	Population-based payment for comprehensive pediatric or geriatric care
					Oncology COEs with shared savings only	Oncology COEs with shared savings and losses		
					3N Risk-based payments NOT linked to quality		4N Capitated payments NOT linked to quality	

= example payment models will not count toward APM goal.

= payment models in Categories 3 and 4 that do not have a link to quality and will not count toward the APM goal.

HCP LAN
Health Care Payment Learning & Action Network

DRIVER FIVE

Better address the unique needs of aging West Virginians

GOAL FIVE

In the years ahead, the demand for long-term and geriatric care in West Virginia and across the nation will soar, as generational aging pushes the baby boomer population into long-term care settings. At nearly one-third of total West Virginia Medicaid spending—and poised to continue to grow—long-term care is a major cost driver for the state. To handle the demands of the future, West Virginia must implement strategies to reduce its spending on long-term care and strengthen its delivery of care to older adults.

As the baby boomer generation continues to age—and as medical advances continue to support longer living—the health care system must be prepared for a tremendous influx of demand for long-term and geriatric care. By 2050, the number of Americans 65 and older is projected to more than double, and those 85 and older will more than triple.[126] Specifically, West Virginia has the third largest population per capita, of citizens age 65 or older in the United States, including the District of Columbia and Puerto Rico. Eighteen percent of the state's population is 65 or older.[127]

[126] Erica L. Reaves and MaryBeth Musumeci, "Medicaid and Long-Term Services and Supports: A Primer," The Henry J. Kaiser Family Foundation. Available at http://kff.org/medicaid/report/medicaid-and-long-term-services-and-supports-a-primer/.
[127] "A Profile of Older Americans: 2015," U.S. Administration on Aging. Available at http://www.aoa.acl.gov/Aging_Statistics/Profile/2015/docs/2015-Profile.pdf.

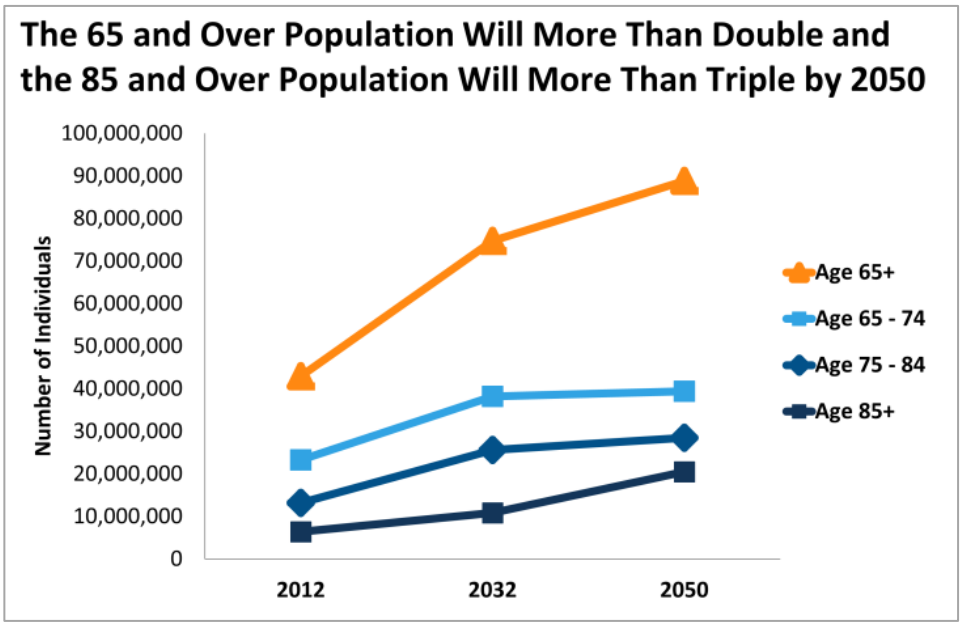

Figure 5.2 Projected Growth of Elderly Population in the U.S. by 2050 (Source: Kaiser Family Foundation)

Long-term care is a major cost driver for the health care system. The setting in which care is provided dramatically impacts costs, with "institutional" settings (i.e., nursing homes, residential facilities, etc.) costing far more than home- and community-based settings (HCBS). Last year, the median annual cost for nursing facility care was more than $91,000, compared to $45,000 for home health services and about $18,000 for adult day care.[128]

Specific West Virginia data show a stark difference in cost between institutional care and HCBS. In the state's 2015 fiscal year,[129] Medicaid spent $661.8 million on institutional care, with 13,315 individuals receiving services in long-term care institutional settings. The per capita cost for Medicaid beneficiaries receiving institutional care was $49,703. Conversely, Medicaid's HCBS costs were $546.4 million during that same time, with 19,024 individuals served. HCBS services in West Virginia include those on the Aged and Disabled Waiver, the Intellectual Developmental Disabilities Waiver, the Traumatic Brain Injury Waiver and personal care services. The per capita cost for Medicaid beneficiaries receiving HCBS was $28,720, or

[128] Erica L. Reaves and MaryBeth Musumeci, "Medicaid and Long-Term Services and Supports: A Primer," The Henry J. Kaiser Family Foundation. Available at http://kff.org/medicaid/report/medicaid-and-long-term-services-and-supports-a-primer/.
[129] July 1, 2014, to June 30, 2015.

nearly $21,000 less than the cost of institutional care while serving almost 6,000 more individuals.[130]

Given West Virginia's expansion of Medicaid under the ACA and the impending spike in demand for services, the cost trajectory for long-term care will continue to grow. Because the older adult population constitutes a significant proportion of super-utilizers, it is essential for West Virginia to implement strategies to improve the delivery of care to older adults at a reduced long-term cost to the system. However, this is not just a cost-containment issue: research and longitudinal evaluations have also consistently shown that patients prefer home- and community-based settings for care.[131]

Emphasize Lower-Cost, Better Care Settings

To reduce costs and improve the patient experience with care, it is imperative that West Virginia encourage the use of lower-cost settings: in patients' homes or communities, rather than institutions such as nursing homes. The ACA provided a number of avenues for states to support this shift by expanding HCBS services under Medicaid. West Virginia has adopted one of these avenues, called the Money Follows the Person (MFP) Rebalancing Demonstration Grant.

The MFP initiative offers enhanced federal funding for long-term care services in HCBS to help states reduce their reliance on long-term care settings. West Virginia's MFP program is Take Me Home, West Virginia, which enlists "transition navigators" to support qualified Medicaid beneficiaries in moving from a nursing home, hospital or other long-term care institutions to a home- or community-based setting. To be eligible for the program, individuals must:

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[130] The West Virginia Bureau for Medical Services provided the data and statistics cited in this paragraph.

[131] Mathematica Policy Research is the independent evaluator of the Money Follows the Person Demonstration Grant. In its evaluations, Mathematica has annually surveyed a sample of participants in the demonstration, and it has consistently found statistically significant superior ratings in seven quality of life measures for patients in community-based settings versus other care settings. Additionally, these ratings have been generally sustained one and two years after transitioning back to the community. The seven quality of life measures are: 1. Overall Life Satisfaction, 2. Mood Status, 3. Satisfaction with Care, 4. Any Unmet Need for Personal Care, 5. Respect and Dignity, 6. Satisfaction with Living Arrangements and 7. Barriers to Participating in the Community. Please see https://www.mathematica-mpr.com/-/media/publications/pdfs/health/mfpannualrpt_es_2014.pdf for the most recent evaluation, specifically page 68 of the report concerning quality of life measures.

- Live in a nursing facility, hospital, institution for mental disease or a combination of any of the three for at least 90 days (excluding Medicare rehabilitation days).
- Be eligible to receive Medicaid benefits on the last day prior to transitioning from the long-term care facility to the community.
- Choose to move to a "qualified residence."

The individual must also qualify for and access one of the following Medicaid home- and community-based service programs upon his or her return to the community:

- Aged and Disabled Waiver
- Traumatic Brain Injury Waiver
- State Plan Personal Care Program

In addition, the program works to expand HCBS options in the state, coordinate short- and long-term housing needs and monitor quality and drive quality improvement.

The goal of Take Me Home, West Virginia is to transition as many eligible West Virginians as possible from long-term care facilities to their own homes or communities by the end of 2017. As of May 2016, the state has successfully transitioned 158 individuals from nursing facilities to the community. Of that number, 76 have successfully completed the program (i.e., spent at least a year in the community without a re-institutionalization to a long-term care facility for more than 30 days). Presently, 104 individuals have been determined eligible for Take Me Home, West Virginia services, but have not yet transitioned to the community.[132]

Following the end of the MFP demonstration period, West Virginia will implement its sustainability plan to continue the work of Take Me Home, West Virginia without federal grant support. Beginning in 2018, West Virginia plans to incorporate two key transition services into its existing HCBS delivery system:

1) Transition coordination: One-on-one support from a transition coordinator to develop individualized needs assessments and transition plans

[132] The statistics cited in this paragraph were provided in an email from Take Me Home, West Virginia Director Marcus Canaday on May 26, 2016.

2) Community transition support: Support for initial transition expenses, such as security deposits, furnishings, utility set-up fees, assistive technology and equipment, etc.

West Virginia plans to add these transition services to two of its Medicaid 1915(c) waivers—specifically its Aged and Disabled Waiver and Traumatic Brain Injury Waiver—for HCBS services, as part of the MFP sustainability plan approved by CMS in 2015.

An important tool in coordination of geriatric care is the effective use of HIT systems and data to address gaps in care and care transitions. A number of tools have been developed to use data and electronic tracking registries to help care teams, patients and support members, such as family and community-based caregivers, to more effectively manage the complex needs of fragile seniors. Remote monitoring tools can also be leveraged to reduce hospitalizations, readmissions and ED visits, which can lead to the need for long-term care. Use of sensors, electronic medication systems and other technology applications can help maintain independence for seniors who wish to remain at home. See Section 7 for additional discussion of these tools.

Establish Geriatric Medical Homes

West Virginia should establish geriatric medical homes to ensure continuity of care and reduce unnecessary utilization of emergency and institutional settings.

While continuity of care is an important tenet of care delivery across all age groups, it is particularly vital for elderly patients to have a continuous relationship with a provider or small team of providers who know their often complex health status and history. However, this relationship must go beyond the office visit and into the patient's own home. Through regular touch points with the patient or patient's caregiver, a designated care team member can develop an understanding of the patient's life and routine and identify behavioral changes or deviations from the routine that may be early indicators of a health problem.

Because of cost limitations, it is impractical for physicians or advanced practice or registered nurses to perform regular check-ins with geriatric patients. Instead, medical assistants or community health workers should adopt this role. It is essential for this designated care team member to have quick access to the patient's PCP so that when a problem has been identified,

the provider can be quickly engaged. By recognizing behavioral changes and intervening early to address health problems, these care teams will help prevent costly hospital or nursing home utilization.

The Benedum Foundation provided grant funding for the testing and deployment of a new care coordination model for dual eligibles. This project was called the Triple Arrow for the Triple Aim. During 2012, three rural FQHCs—Cabin Creek Health System, New River Health Association and Southern West Virginia Health System—identified 200 dual eligibles each for the project. Those dual eligibles with hospitalizations received more frequent care coordinator contacts, and those on more than 15 chronic medications had drug utilization reviews by a pharmacist with recommendations made to PCPs.

Out of 556 identified patients, 502 were contacted and enrolled in the project. Sixty-five percent of participating patients were female. The median age was 69 years, with a range of 29 to 93 years. Nineteen percent of patients were on 15 or more medications, 56% on psychotropic medication and 33% on chronic opiates.

One site showed reductions of 34% in hospitalizations and 25% in ED visits during the intervention year for the participating patients. For all sites combined, there was a 5.5% reduction in total medications and a 14.8% reduction in Beers List medications. The ultimate conclusion from Triple Arrow for the Triple Aim was that a modest investment in care coordination and clinical pharmaceutical review can produce significant reductions in hospitalization and harmful polypharmacy for community-based dual eligibles.[133]

The WVHTA will convene a group to study expansion of this and other successful Benedum Foundation-funded projects and encourage adoption by practices across the state.

Identify and Implement Best Practices to Improve Care Transitions

Transitions among care sites—a hospital, a nursing home, physician's office or patient's home—are particularly difficult for geriatric patients and often

[133] Daniel Doyle, Mary Emmett, Amber Crist, Craig Robinson and Michael Grome, "Improving the Care of Dual Eligible Patients in Rural Federally Qualified Health Centers: The Impact of Care Coordinators and Clinical Pharmacists," Journal of Primary Care & Community Health. Available at http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4794360/pdf/nihms-753748.pdf.

result in complications, hospital readmissions or disruptions that hinder recovery. Using best practices, West Virginia will improve the transitions among care sites for geriatric patients to create seamless flow and minimize disruption for patients.

CMS, other federal agencies and health researchers have undertaken numerous studies and initiatives to examine transitions and develop evidence-based models for reducing negative outcomes. The WVHTA will convene a specialist group to study national best practices and develop an educational module for safe and successful transitions. This team should embark on an educational tour of clinics, hospitals, nursing homes and physician offices around the state to share the module and educate care teams on transition best practices. The team could also consider building the module online to allow care teams across the state to access it digitally. The module should be incorporated into academic curricula for students in the health care field and in training for residents in health care professions.

Develop a Consultative Peer Network for Rural PCPs

As described in Section 3.5.7, Project ECHO has been successful in developing knowledge-sharing networks in which specialists conduct videoconference clinics to educate and assist PCPs in rural and underserved communities.[134]

With more than half the state's population living in a rural community, West Virginia is particularly troubled by a lack of access to specialty care (see Section 3.13.4). Therefore, West Virginia will implement a Project ECHO for rural PCPs who often see elderly patients at their practices, enabling consultation with specialists and peers on geriatric issues. Such a model would allow specialists, including geriatricians and neurologists, to provide their knowledge on topics such as fall prevention and Alzheimer's and dementia care to rural PCPs in a low-cost fashion to produce better patient outcomes.

In partnership with one or more West Virginia academic medical centers, the WVHTA will assist in creating the geriatric Project ECHO, including identifying experts to develop curriculum and recruiting specialists and PCPs to participate.

[134] Project ECHO, University of New Mexico. Available at http://echo.unm.edu/.

5.3 Implementation Range and Number of Health Care Professionals and Organizations Involved

West Virginia is fortunate that health care providers in the state tend to be aligned with a relatively small number of entities:

- West Virginia University; West Virginia University Health System and School of Medicine and School of Public Health
- Marshall University and its School of Medicine (and its practice plan, Marshall Health)
- The West Virginia School of Osteopathic Medicine (and its statewide campus)
- Partners In Health Network
- Charleston Area Medical Center
- Community Care of West Virginia
- Greenbrier County Health Alliance
- Kanawha Coalition for Community Health Improvement
- Mid-Ohio Valley Rural Health Alliance
- West Virginia Primary Care Association (FQHCs)
- West Virginia Hospital Association
- West Virginia Behavioral Healthcare Providers Association

These networks of providers and delivery systems represent the majority of both Medicaid beneficiaries and the generally insured population. As these entities adopt new approaches and practices, they serve as guides and examples for the rest of the state's health care system. The SHSIP, therefore, focuses on these primary entities as West Virginia's high-leverage collaborators for transforming the state's health care system.

Beneficiaries Impacted

The SHSIP will have a direct impact on approximately 65% of the total West Virginia population, or 1,212,000 covered lives (i.e., Medicaid, Medicare, PEIA and WVCHIP). As Highmark Blue Cross Blue Shield of West Virginia and other commercial payers collaborate and support the plan, another 360,000 lives will be included—bringing the total impact to more than 1,504,000, or 85% of the state's total population.

Range of Social Determinants of Health

Delivery and payment reform efforts alone will not be effective without

simultaneously addressing underlying social determinants of health, including poverty, geographic isolation and lifestyle choices such as tobacco use, etc. Accordingly, West Virginia's belief in the Accountable Health Communities model will help establish the foundation of local community resources that can be leveraged to systematically tackle social determinants of health.

Summary

West Virginia's strategy for improving the health of its citizens relies heavily on capacity building, improved data management and reimbursement reform. All three components must occur hand-in-hand to truly realize the state's vision. In addition, West Virginia recognizes that it needs to move to a point where consortia of local stakeholders, including payers, providers and community-based organizations, collaborate and take ownership for health care needs and the social determinants of health that drive those needs.

5.4 Infrastructure Needed to Support Transformation

West Virginia has attempted various government-led and government-facilitated collaborative efforts to achieve health care coordination and transformation, including but not limited to the West Virginia Governor's Office of Health Enhancement and Lifestyle Planning (GOHELP) and WVHIC. The nature of these agencies/bodies presents challenges to achieving and sustaining meaningful health care transformation, as they are subject to political influence; lobbying efforts; budgetary constraints and cuts; and inadequate staffing, among other issues. In 2009, for instance, GOHELP was established at the urging of health care policy expert Dr. Kenneth E. Thorpe in his "Roadmap to Health Project" for the West Virginia Legislature's Select Committee D. Several of GOHELP's goals were remarkably close to those generally applicable to SIM, including:

- Serving as a resource to coordinate and facilitate evaluation of health policy activities and initiatives and assist with the coordination of implementation of federal, state and local health initiatives
- Convening meetings of health stakeholders and the GOHELP Advisory Council to develop recommendations about health system improvements and health policies
- Offering recommendations to the governor and state agencies regarding strategies that could make the state's health system more

effective, timely, patient-centered and sustainable
- Providing advice and recommendations on emerging health issues through the GOHELP Advisory Council and by convening stakeholder meetings

As discussed in Section 3.0, the duties of GOHELP were absorbed by WVDHHR officially after the 2015 legislative session. WVDHHR devised the WVHIC in the spirit of the abovementioned goals, but it does not have the administrative and financial support to fully lead health care transformation efforts in the state.

The SHSIP planning process, especially the SIM Task Force and workgroups, was effective in bringing together stakeholders for substantive dialogue and to develop a rational plan for addressing the health care needs of the state. Now, one of the opportunities before the state is to consolidate multiple planning efforts taking place in parallel. For example, in addition to the SIM design grant process, the West Virginia Health Care Authority has started the statutorily mandated State Health Plan development process, and West Virginia Medicaid is devising a statewide HIT plan and State Medicaid HIT Plan (SMHP). These efforts are all well-intended and involve many of the same players, each representing their own stakeholders.

These complementary efforts should be aligned and folded into one consolidated planning and execution vehicle. Furthermore, it is proposed that the entity be a vehicle that can accept grants, as well as federal cooperative agreements and contracts. The vehicle should be unencumbered by state bureaucracy and contracting limitations. To that end, it is proposed that a non-profit entity be created or an existing relevant non-profit be reconfigured under a new name and board of directors to lead these efforts. As a working title, this organization will be called the West Virginia Health Transformation Accelerator (WVHTA). In terms of governance, the WVHTA will be overseen by a board of directors that is representative of West Virginia's health care stakeholder community.

The SIM Task Force developed the general mission statement for the WVHTA: "The West Virginia Health Transformation Accelerator builds statewide collaboration to advance improvement in the health of West Virginians through public-private partnerships." Tentatively and subject to the direction of an appointed board of directors and hiring of a leader, the WVHTA would have the following general duties, as illustrated in Figure 5.3.[135]

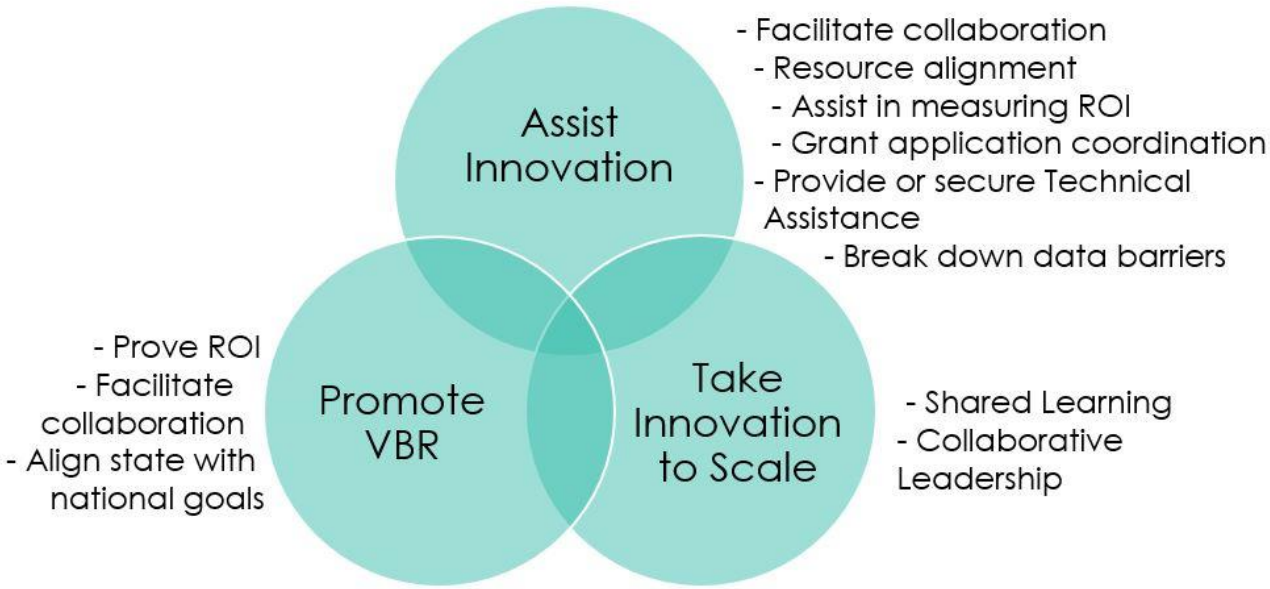

Figure 5.3 General Duties of the West Virginia Health Transformation Accelerator

Listed below are specific but tentative duties of the WVHTA:

- Oversee the execution and evaluation of the SIM SHSIP, especially Section 5 and Section 14.
- Coordinate and sustain various super-utilizer initiatives.
- Support telehealth/tele-education programs such as Project ECHO and related efforts.
- Support the state in quality measurement alignment and data management.
- Foster community-based improvement efforts addressing social determinants of health, such as Accountable Health Communities and Try This West Virginia.

[135] Note that ROI stands for return on investment, and VBR stands for value-based reimbursement.

- Monitor and launch improvement efforts related to the integration of behavioral health and primary care.

The entity will likely be launched and then supported with membership fees from participating organizations, such as providers, payers and regional foundations. Other groups, specifically the state, local health departments, consumer advocacy organizations, etc., are not expected or able to directly fund the entity (at this time). The state and such groups bring legitimacy, resources and policy and regulatory authority to help achieve the WVHTA's general duties. As such, these entities will be key stakeholders and actively involved in the launch and ongoing operation of the WVHTA.

A SIM Implementation Grant would greatly expedite the process and role the WVHTA can play in moving West Virginia's health care delivery and payment system toward value. Sustainability could be migrated to a per-member, per-month fee charged to payers and providers and funded with a portion of savings realized through the initiatives promoted by the organization. It is expected that the WVHTA will have a key coordination role to play in local (city and county), state (i.e., West Virginia Medicaid, WVCHIP, PEIA, BPH, BBHHF, among others) and federal (i.e., CMS, CMMI, HRSA, AHRQ, CDC, ONC, SAMHSA, among others) efforts. The entity could also benefit from collaborating with national groups such as the Network for Regional Healthcare Improvement Collaboratives and a neighboring regional health improvement collaborative, the Pittsburgh Regional Health Initiative.

6.0 SHSIP Development Process

Overview: The SIM project team recognized the undeniable importance of having a comprehensive, diverse group of health care stakeholders at the table throughout the design process. To that end, the team developed a stakeholder engagement and communication plan whose goal was to afford SIM stakeholders the opportunity to:

- Participate in the model development.
- Review model materials when available.
- Provide feedback and recommendations for modifications on all model elements prior to final model approval.

The SIM project team developed an inclusive and transparent engagement approach to achieve the following engagement aims:

- Identify and engage a broad range of SIM stakeholders in a variety of levels in the model development process.
- Explain the purpose and future planning related to the SIM.
- Identify and expand on the potential implications of the SIM related to health care quality, delivery and cost in West Virginia.
- Identify and expand on the potential implications of the SIM related to the use of health information technology, data stewardship, governance and exchange.
- Compare, contrast and finalize health care processes, programs and policies that are viewed as most appropriate for the SIM from the majority of stakeholders.
- Employ cohesive outreach tools and messages across stakeholders and allow for refinements tailored to each stakeholder's expertise.
- Link SIM engagement efforts to related planning efforts throughout the state, where appropriate.

Participants & Structure: Various entities were enlisted in the SIM design process. Outlined in detail in the sections that follow, they include:

- SIM Steering Committee
- Project Management Team
- Task Force
- Workgroups
- Advisory Groups

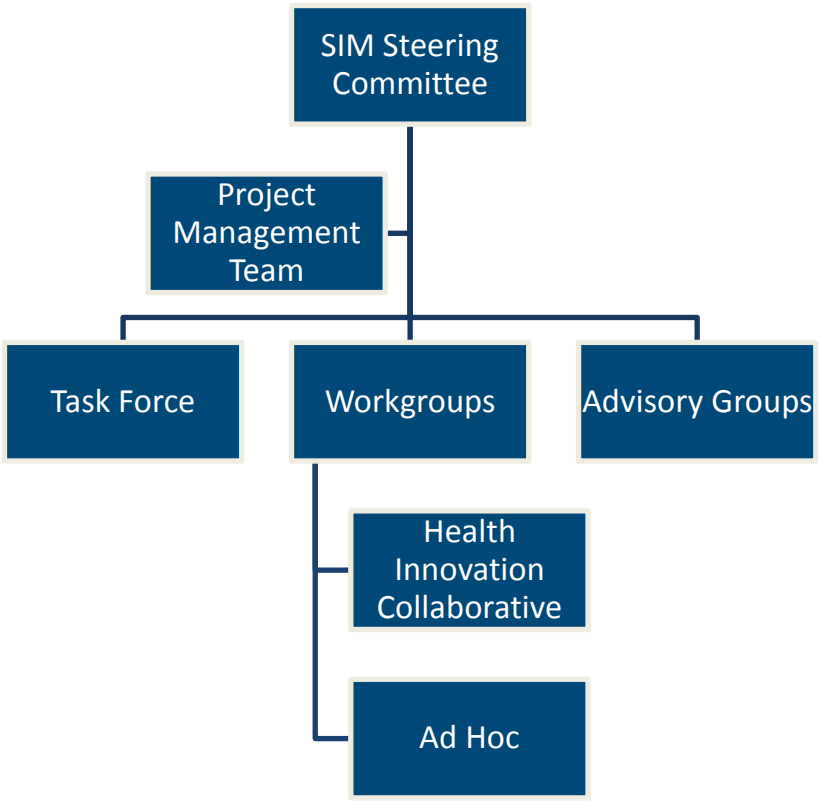

Figure 6.1 Organizational Structure Supporting SIM Design

Evolution & Phases of Development: As the SIM design work evolved, so, too, did the organizational structure supporting the project. This evolution can be delineated in two phases.

From July to September 2015, Phase I of the SIM design centered on the responsibility of five workgroups to develop the model content and details—working within the stated goals and objectives—and provide recommendations to the overall Steering Committee. This bottom-up methodology was strategically selected and employed by the Steering Committee to enable grassroots-driven stakeholder engagement.

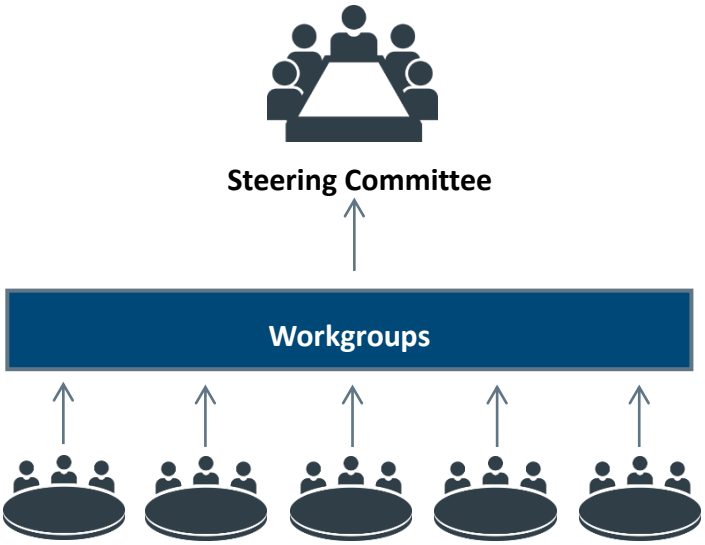

Figure 6.2 Phase I SIM Design

After three months of workgroup meetings, the Project Management Team determined that to effectively meet the goals for the project, all stakeholders would be better served by a single, streamlined and targeted Task Force that would develop specific models for a redesigned health care delivery and payment system. The Project Management Team proposed the appointment of a Task Force to the Steering Committee, and in October 2015, the Steering Committee approved the creation of this Task Force of 21 individuals, including payer, provider and consumer representatives.

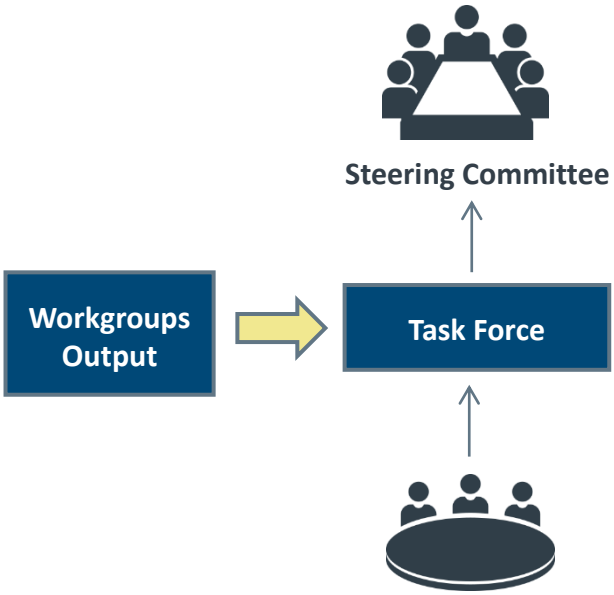

Figure 6.3 Phase II SIM Design

Project Management Team: The Project Management Team includes professionals from West Virginia University (WVU), West Virginia Department of Health and Human Resources (WVDHHR) and additional health care leaders from across the state. Table 6.1 provides a detailed roster of the team.

Table 6.1 SIM Project Management Team

Team Member	Current Position	Project Role	Project Responsibilities
Jeffrey Coben, MD	Professor, Schools of Medicine and Public Health; WVU	Primary Investigator and Project Director	Conduct oversight and coordination of Project Management Team, procurement of technical assistance and contractual services, fiscal responsibility, participation in CMMI collaborative activities; serve as Task Leader for Operational Plan, Quarterly Reports and Final Report
Lesley Cottrell, PhD	Professor of Pediatrics; WVU	Co-Investigator and Project Assistant Director	Assist Project Director with oversight and coordination activities; serve as Co-Chair of Better Health Workgroup and Task Leader for Stakeholder Engagement Plan and Future Monitoring and Evaluation Plan
Todd J. Crocco, MD, ACEP	Professor, Department of Emergency Medicine; WVU	Co-Investigator	Assist Project Director in all aspects of project management
Thomas Gilpin, PMP	Full-time employee, WVU Research Corporation; WVU School of Public Health	Project Manager	Assist Project Director in all aspects of project management; serve as Task Leader for Population Health Plan, Description of Baseline Health Care Environment and draft State Health System Innovation Plan
Joshua Austin, MA and MSc	Full-time employee, WVU Research Corporation; Office of the Cabinet Secretary, Charleston, WV	Project Coordinator	Assist in coordinating activities of the Collaborative and other stakeholder engagement activities
Courtney Newhouse, MPH, CWWS	Full-time employee, WVU Research Corporation; WVU School of Public Health	Administrative Assistant	Coordinate activities of project staff, meeting logistics, materials production, payroll and personnel tasks, telecommunications support, budget tracking, and other duties as assigned

Dana E. King, MD, MS	Professor and Chair of Family Medicine, WVU	Co-Investigator	Assist with Value-Based Health Delivery and Payment Methodology Transformation Plan; serve as Task Leader for Workforce Development Strategy
Karen Fitzpatrick, MD	Associate Professor of Family Medicine, WVU	Co-Investigator	Assist with Value-Based Health Delivery and Payment Methodology Transformation Plan and Workforce Development Strategy
Arnold Hassen, PhD	Director of Medical Informatics, West Virginia School of Osteopathic Medicine (WVSOM); Executive Director WVSOM Center for Rural and Community Health	Subcontract Primary Investigator	Serve as Chair of the Better Care Workgroup; assist with development of Driver Diagram, identification of state Regulatory and Policy Levers, HIT Plan, and Value-Based Health Delivery and Payment Methodology Transformation Plan
Cecil Pollard	Director, Office of Health Services Research; WVU	Co-Investigator	Assist with HIT Plan, Workforce Development Strategy, and Future Monitoring and Evaluation Plan
Adam Baus, PhD, MA, MPH	Co-Director, Office of Health Services Research; WVU	Co-Investigator	Assist with HIT Plan and Workforce Development Strategy
Dave Campbell, JD	CEO, West Virginia Health Improvement Institute	Subcontract Primary Investigator	Serve as Task Leader for State Regulatory and Policy Levers and Value-Based Health Delivery and Payment Methodology Transformation Plan
Nancy Sullivan, MAJ	Assistant to the Cabinet Secretary, WVDHHR	WVDHHR Liaison	Serve as liaison with the Collaborative; oversee Collaborative activities; assist with Stakeholder Engagement Plan; serve as Task Leader for Driver Diagram
Edward Dolly	Chief Information Officer, WVDHHR	Chief Information Officer	Serve as Task Leader for HIT Plan

Jeremiah Samples	Deputy Secretary, Public Health and Insurance, WVDHHR	Insurance & Payer Liaison	Serve as Chair of the Lower Cost Workgroup and Task Leader for Future Operational and Sustainability Plan
Jane Ruseski, PhD	Associate Professor, Economics, Associate Director, Bureau of Business and Economic Research; WVU	Economist	Conduct financial analyses of models during the planning phase; assist with Value-Based Health Delivery and Payment Methodology Transformation Plan; serve as Task Leader for Financial Analysis
Amanda McCarty, MS, MBA	Director of Performance Management, Bureau for Public Health; WVDHHR	WVDHHR Liaison	Assist with Population Health Plan and Description of Baseline Health Care Environment

6.1 SIM and WVHIC Coordination of Efforts

The SIM project commenced during a period of concurrent health system evaluation and study through the ongoing efforts of the West Virginia Health Innovation Collaborative (WVHIC). Under the direction of the Secretary of the West Virginia Department of Health and Human Resources (WVDHHR), the WVHIC was formed in 2014 to bring public and private stakeholders together to map a strategic vision for a healthy West Virginia.

The WVHIC includes three workgroups: Better Health, Better Care and Better Value. Through these workgroups, more than 120 public and private stakeholders have conducted needs assessments and preliminary data gathering to support the design of a model for health care in the state. Additionally, 151 health providers and other stakeholders are connected and contribute to the state planning and discussion through the WVHIC Listserv.

The *Collaborative* Membership Representation
Payers (Medicaid, Medicare, CHIP, PEIA, Highmark, WV Insurance); Health Providers (WVRHA, WVAFP, WVPCA, WVCCOA, Families USA, Family Care WV, WV Free, WVHA, individual health departments, individual hospital representations); Higher education institutions (HEPC, Marshall University, WV School of Osteopathic Medicine, WVU); Legal & Regulatory (individual law offices; WVPolicy); and Technology (WV Tele-Health; TSG Solutions).

Figure 6.4 West Virginia Health Innovation Collaborative Membership

Commercial payers, providers and other stakeholders involved in the WVHIC participate in quarterly meetings of the entire WVHIC group and in monthly meetings for each workgroup. These meetings include face-to-face participation and remote participation via webinar/teleconference.

The WVHIC framework and composition ensure that representatives from all parts of the health care system actively contribute to the development of the model. Thus, the WVHIC has served as the central hub for most of the stakeholder engagement efforts in the SIM project.

Individual representatives from an array of consumer, provider, policymaker and payer groups serve as WVHIC workgroup members. Additional stakeholders were identified and invited to participate in discussions about the SIM model design. Examples of these groups include individuals from West Virginians for Affordable Health Care, West Virginia Hospital Association, West Virginia Academy of Family Physicians, AARP and other groups representing these stakeholder types.

Advisory Groups: As needed, the SIM project team convened advisory groups on topic-specific issues, such as the integration of primary care and behavioral health, to offer specific recommendations on given parts of the model design.

The behavioral health integration workgroup met in October 2015 and January 2016. To inform these conversations and the overarching planning effort related to behavioral health and primary care integration, the SIM team contracted with Garrett Moran, Ph.D., project director of the U.S. Agency for Healthcare Research and Quality's The Academy for Integrating Behavioral Health and Primary Care.

6.2 Context for SHSIP Development

The SIM project development was reinforced by concurrent efforts to evaluate and study health care in West Virginia. As referenced in Section 3.1, in 2012 BPH conducted a State Public Health System Assessment that resulted in the compilation of a State Health Profile and targeted priorities for the State Health Improvement Plan. These targeted priorities were reviewed and approved by the workgroups of the Health Innovation Collaborative and serve as the basis for the SHSIP population health improvement objectives.

Additionally, as noted in Section 6.1, the pre-existing work of the Health Innovation Collaborative participants accelerated stakeholder engagement in the SIM model design elements.

6.3 Composition and Role of Steering Committee

Chaired by WVDHHR Cabinet Secretary Karen Bowling, the Steering Committee is composed of 11 individuals who are administrators and/or defined representatives of key decision-making partners within the state. These individuals represent the consumer, provider, policymaker and payer groups outlined in other levels of the engagement process.

Steering Committee
- Sets and oversees overall agenda
- Provides vision, goals and objectives and sets direction
- Arbiter of conflict as necessary
- Final decision authority

The role of the Steering Committee is as follows:

- Identify and define elements of the state model that will be discussed (and developed) in more detail by various workgroups and experts.
- Identify particular questions, procedural definitions, resources and other issues that workgroups should address in their work on a particular model element.
- Review all summative reports regarding WVHIC workgroup activities and model element decisions.
- Review and consider additional stakeholder involvement in workgroup activities as needed and outline any missed opportunities for additional input.
- Review comments collected through the public outreach efforts to determine if any additional considerations are needed for particular

model elements.

- Identify additional questions to be addressed for the particular model element, or finalize and appropriate model element for design process.

Table 6.2 SIM Steering Committee

Committee Member	Current Position
Karen L. Bowling	Chair, WVDHHR Cabinet Secretary
Cynthia E. Beane	Commissioner, Bureau for Medical Services; WVDHHR
James Becker, MD	Medical Director, Bureau for Medical Services; WVDHHR
Adam Breinig, DO	Family Practice Physician, Charleston, WV
Sharon L. Carte	Executive Director, West Virginia Children's Health Insurance Program (WVCHIP)
Ted Cheatham	Director, West Virginia Public Employees Insurance Agency (PEIA)
Fred Earley	President, Highmark Blue Cross Blue Shield West Virginia
Terri Giles	Director, West Virginians for Affordable Health Care
Rahul Gupta, MD, MPH, FACP	Commissioner and State Health Officer, Bureau for Public Health; WVDHHR
Sue Johnson-Phillippe	Chair, West Virginia Hospital Association
Joseph M. Letnaunchyn	President and CEO, West Virginia Hospital Association
Mike Riley	West Virginia Insurance Commissioner

6.4 Stakeholder Engagement Process: Workgroup Meetings

Work Groups
- Develops the content and details within the stated goals and objectives
- Frames the elements of the plan model

The five SIM design workgroups (Better Care, Better Health, Better Value, Health Information Technology and Workforce Development) each met three times from July to September 2015—a total of 15 meetings and more than 45 hours of meetings with over 400 participants. As discussed in Section 6.1, an ad hoc, level-setting meeting concerning the integration of behavioral health with primary care was also held in October 2015, with a follow-up focus meeting held in January 2016.

Through these meetings, the workgroups reviewed West Virginia public health priorities and proposed strategies for addressing obesity and tobacco; reviewed several different models of care coordination, including regional care coordination models; shared payer quality measures; reviewed the status of health IT and health information exchange (HIE) in the state; and preliminarily reviewed health workforce projections and needs.

Below is a summary of what the five workgroups discussed during Phase I of the SIM model design process.

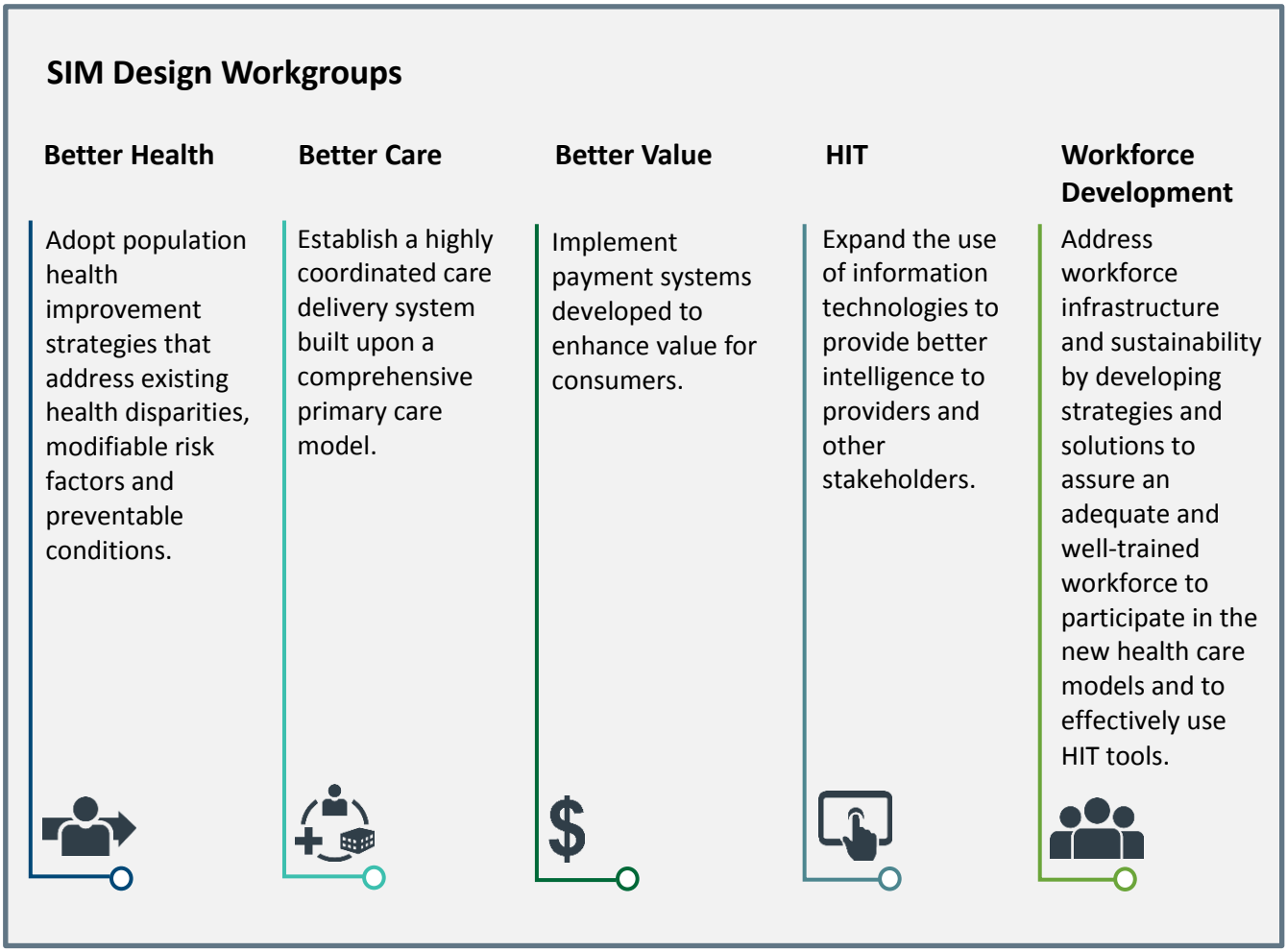

Figure 6.5 Project Aims for Workgroups Supporting SIM Design

Better Health Workgroup

- Workgroup comments reflect the view that core public health challenges faced by West Virginians are generally a consequence of unhealthy behaviors, such as substance abuse, tobacco use and poor nutritional habits coupled with a sedentary lifestyle.

- Furthermore, workgroup comments reflect the view that West Virginia must employ three types of approaches to address chronic disease, particularly obesity and tobacco usage, in the state:

    1. Traditional clinical approaches (e.g., measuring BMI and waist circumference)
    2. Innovative, patient-centered care and/or community linkages (e.g., community-based preventive services, health education to promote health literacy and patient self-management)
    3. Community-wide strategies (e.g., policy or legislative changes such as requiring caloric counts in menu labeling)

Better Care Workgroup

- To transition to a value-based health care system that is aligned with SIM goals, the workgroup comments reflect the view that payers should compensate providers for coordinating care, educating patients on how to appropriately access care, and meeting measures and benchmarks developed in consultation with providers that are aligned among all payers.

- Ideally, this value-based health care system would be designed by leveraging the advanced primary care model(s), such as the patient-centered medical home, that currently exist in West Virginia. However, it would also include care that is more holistic (e.g., social determinants of health) and integrated (e.g., behavioral health with primary care).

Better Value Workgroup

- Workgroup comments reflect the view that care coordination and care coordinators are essential and fundamental to developing a value-based health care system that is aligned with SIM goals. The workgroup comments further recognize that West Virginia varies widely in culture and socio-economic status by geographic areas; thus, flexibility is imperative in how care coordination should occur and who should perform it.

- To achieve administrative simplification and work toward attaining the same and better quality outcomes, the workgroup comments reflect the view that measures need to be aligned among payers to the extent possible.

Health Information Technology (HIT) Workgroup

- The workgroup spent considerable time creating a SWOT analysis of West Virginia's current HIT landscape. The key strengths, weaknesses, opportunities and threats from this analysis are provided in Figure 7.1 in Section 7.2.

Workforce Development Workgroup

- Not yet knowing the value-based health care system West Virginia envisions under the SIM grant, the workgroup discussed short-term (one to two years) and long-term (three to five years) strategies to fill headcount gaps (i.e., gaps in the number of providers) and skills gaps that exist in the current health care delivery system. A sample strategy developed by the workgroup is provided below:

    - Headcount Gap Short-Term – Gather accurate data that reflects "true need"; reconsider medically underserved areas and populations, which are based on outdated measures; consider geography (e.g., miles to provider, days to appointment)

A number of support documents from the workgroups process are included as appendices to this report (see Appendix A: SIM Workgroups).

Workgroup(s)	Appendix Item
Better Health	Better Health July Meeting Summary Notes
	Better Health August Meeting Summary Notes
	Better Health September Meeting Summary Notes
Better Care	Better Care July Meeting Summary Notes
	Better Care August Meeting Summary Notes
	Better Care September Meeting Summary Notes
Better Value	Better Value July Meeting Summary Notes
	Better Value August Meeting Summary Notes
	Better Value September Meeting Summary Notes
HIT	HIT July Meeting Summary Notes
	HIT August Meeting Summary Notes
	HIT September Meeting Summary Notes
Workforce Development	Workforce Development July Meeting Summary Notes
	Workforce Development August Meeting Summary Notes
	Workforce Development September Meeting Summary Notes
Behavioral Health and Primary Care Integration	Behavioral Health and Primary Care Integration January Meeting Summary Notes
	Behavioral Health and Primary Care Integration October Meeting Summary Notes
All	Workgroup Attendance Tracking

Table 6.3 Appendices Included in Appendix A: SIM Workgroups

6.5 Feedback Loops and Use of Stakeholder Recommendations and Feedback in Developing Plan: Workgroup Process and Outcomes

The charge of the workgroups was to develop and arrive at consensus on recommendations that would be presented to the Steering Committee to consider for inclusion in the SHSIP. All workgroup meetings were open to anyone wanting to attend, and many of the Steering Committee members were part of the workgroup process.

Throughout the workgroup process, the SIM Project Management Team worked diligently to ensure information and progress updates were available

to a wide audience. First, the team posted meeting agendas, meeting minutes, presentations and resource documents on the SIM page of the West Virginia Health Innovation Collaborative website. Additionally, the team developed multiple documents and papers that were used to provide supplemental information to workgroup members and meeting attendees, Steering Committee members, and other stakeholders interested in the SIM project. Finally, the team created documents that summarized workgroup output at various stages of the workgroup meetings. These summaries were used after the workgroup meetings to ensure the team was capturing stakeholder conversations accurately and to allow workgroup members to see (and comment on) the full range of recommendations that were being made by the workgroups.

At the end of the workgroup process, the Steering Committee met to provide their opinions on the workgroup recommendations. Although they did not formally vote on the recommendations, there was opportunity for questions and discussion after the presentation of the recommendations. Steering Committee members responded favorably to the recommendations and commended the Project Management Team on the stakeholder engagement process.

6.6 Process for Developing Concurrence on Recommendations and Resolving Disagreements: Guiding Principles and Ground Rules

To assist with the workgroup process and stakeholder engagement, the SIM Project Management Team engaged Collective Impact, LLC to provide facilitation and outreach services. Key members of the Collective Impact team facilitated the workgroup meetings and assisted the Project Management Team in planning, scheduling, conducting and summarizing the meetings.

The SIM team developed the following guiding principles and ground rules for use by the workgroups in conducting meetings.

Guiding Principles

1. Workgroup meetings were facilitated by Collective Impact and the SIM Project Management Team.
2. Consulting resources and external experts provided information and documents to help inform the discussions.

3. The workgroups were charged with recommending specific models and recommendations. A two-thirds majority was required to indicate consensus endorsement of a workgroup recommendation.
4. Written meeting summaries and proposed recommendations were produced by the Project Management Team.
5. Recommendations emerging from the workgroups were disseminated to the broader stakeholder community for input and commentary.
6. Recommendations and associated input were brought back to the Steering Committee for subsequent review, recommendations and requests for additional action.

Ground Rules

1. SIM workgroup participants should refrain from discussions related to any pending or prospective procurement of services or goods.
2. SIM workgroup participants may not engage in discussions or agreements that have anti-competitive objectives or results, including but not limited to the following that may be construed as an attempt to:
    - Raise, lower, or stabilize prices.
    - Allocate markets or territories.
    - Prevent any person or business entity from gaining access to any market or to any customer for goods or services.
    - Prevent or boycott any person or business entity, including managed care organizations or other third-party payers, from obtaining services freely in the market.
    - Foster unfair trade practices.
    - Assist in monopolization or attempts to monopolize.
    - In any way violate applicable federal or state antitrust laws and trade regulations.

6.7 Workgroup Consensus and Non-Consensus Items

At the conclusion of the workgroup meetings in September 2015, the SIM Project Management Team reviewed the workgroups' output and determined general consensus among the stakeholders regarding:

- Priority health concerns (tobacco, obesity, behavioral health/substance abuse).
- The need for improved care coordination, including better integration of behavioral health and physical health.

- The need for agreement and alignment of quality measures.
- The need to enhance IT capabilities.
- The need to address workforce shortages and projections.

Despite these general areas of agreement, a number of issues and challenges were also identified:

- Specific models for care delivery and associated payment reform had not been proposed by the workgroups.
- There was no consensus reached on the need, desirability or approach to regional care coordination.
- Providers and consumers expressed frustration with the current approach to quality measure identification and reporting.
- IT and workforce planning are, in part, dependent upon the approaches taken toward specific models of care/payment and quality measure reporting.

Additionally, the Project Management Team noted the workgroups reached no consensus on utilization of the patient-centered medical home model in moving toward value-based delivery and payment. There was also a need for refinement of strategies concerning leveraging of the state's utilization of Medicaid managed care contracting. Finally, feedback from some of the participating stakeholders suggested meeting fatigue and frustration with the pace and specificity of the workgroup process.

To address these issues and challenges, in October 2015 the Project Management Team recommended to the Steering Committee the implementation of a new, more focused entity. This group's goal would be to develop and propose specific models of value-based care delivery and payment that would be agreed-upon by payers, providers and consumers.

6.8 Establishment of the SIM Task Force

The more focused entity recommended by the Project Management Team and endorsed by the Steering Committee took the form of a joint Task Force made up of 21 payer, provider and consumer representatives. The SIM Task Force was charged with bringing forth specific models and recommendations to inform the SIM design.

Given the evolution toward the Task Force structure, members of the Steering Committee recommended the SIM Project Management Team seek a 12-month, no-cost extension from CMS to permit additional deliberations and the necessary consensus for developing the final SIM deliverables. CMS granted the team a six-month, no-cost extension.

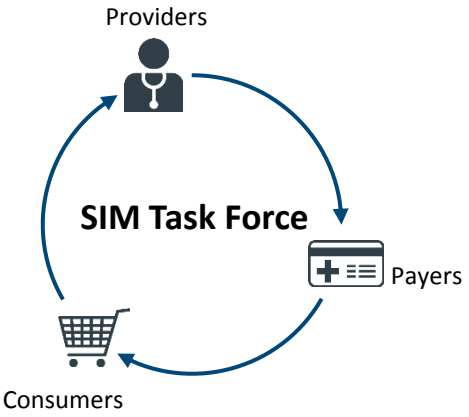

Figure 6.6 SIM Task Force Representatives

The Project Management Team conducted considerable work to contact the nominated members of the Task Force, confirm acceptance of participation, develop briefing materials and summaries, and bring members up to speed on project progress.

Table 6.4 SIM Task Force

	Task Force Member	Current Position
Payer Representatives	Sharon L. Carte	Executive Director, West Virginia Children's Health Insurance Program (WVCHIP)
	Ted Cheatham	Director, West Virginia Public Employees Insurance Agency (PEIA)
	Mitch Collins	Plan President, UniCare Health Plan of West Virginia
	Fred Earley	President, Highmark Blue Cross Blue Shield West Virginia
	James M. Pennington	President and CEO, The Health Plan of the Upper Ohio Valley
	Jeremiah Samples	Deputy Secretary, Public Health and Insurance, WVDHHR
	Eric Schmitz	Vice President of Network Development – KY/WV, Humana
	Todd White	CEO, CoventryCares (Aetna) of West Virginia
Provider Representatives	Doug Bentz	CEO, Roane General Hospital
	Hoyt J. Burdick, MD	Senior VP and Chief Medical Officer, Cabell Huntington Hospital
	Sarah Chouinard, MD	Chief Medical Officer, Community Care of West Virginia
	Christopher Colenda, MD, MPH	President and CEO, West Virginia University Health System
	Tara Hulsey, PhD, RN, CNE, FAAN	Dean and Endowed Professor, WVU School of Nursing
	Dana E. King, MD	WVU School of Medicine (family physician representative)
	Craig Robinson	Executive Director, Cabin Creek Health Systems (FQHC representative)
	Robert Whitler	Vice President For Government and Community Affairs, Charleston Area Medical Center & Executive Director, Partners in Health Network, Inc.
	Karen Yost, MA, LSW, LPC, NCC, ALPS, CCDVC, MAC, CSOTS	CEO, Prestera Center (Behavioral Health Representative)
Consumer Representatives	Michelle Foster, PhD	CEO, Kanawha Institute for Social Research & Action
	Terri Giles	Director, West Virginians for Affordable Health Care
	Eugenie Taylor	West Virginia Chamber of Commerce
	Kim Barber Tieman, MSW, ACSW	Health Program Officer, Claude Worthington Benedum Foundation

The Task Force held five meetings in total, beginning with its initial meeting in December 2015. As illustrated below, each meeting was aligned with one of the Task Force's four goals:

- **Goal One:** Identify delivery system and payment approaches that will promote a highly coordinated care delivery system built upon a comprehensive primary care model (Meeting One, December 2015)
- **Goal Two:** Identify delivery system and payment approaches for more effectively addressing high-risk, high-cost patients (Meeting Two, January 2016)
- **Goal Three:** Determine a process for establishing common quality measures and reporting methods (Meeting Three, February 2016)
- **Goal Four:** Determine the regulatory, policy and infrastructure changes needed to achieve the transition to value-based health care delivery and payment (Meeting Four, March 2016)

The final meeting in April 2016 was dedicated to finalizing the output of the Task Force and approving the draft plan before presenting it to relevant stakeholders.

Throughout this process, the Task Force operated under the same guiding principles and ground rules as the workgroups (see Section 6.6). The Project Management Team facilitated the Task Force meetings and provided meeting materials and summaries, and consensus required a two-thirds majority vote.

6.9 Process for Public Comment and Input

On May 31, 2016, a draft of West Virginia's SHSIP was posted online (on the SIM Grant webpage of the WVHIC website), initiating a month-long public comment period. A Qualtrics survey provided readers the opportunity to give feedback on the following questions:

1) What about the SHSIP resonates with you or do you like the most?
2) What about the SHSIP concerns you most and why?
3) What parts of the SHSIP are unclear and may need to be further defined?
4) Please note any additional comments or questions that you have related to the SHSIP.

The Qualtrics survey generated 34 comments from a variety of sources:

providers, payers, policy/government agencies, researchers and consumers.

Another important part of the public comment process involved targeted stakeholder engagement. The Project Management Team presented the SHSIP plan components to the following advisory groups:

- Claude Worthington Benedum Foundation Board of Trustees
- Highmark Blue Cross Blue Shield West Virginia
- Public Health Association—Local Health Departments
- Try This West Virginia
- West Virginia Behavioral Healthcare Providers Association
- West Virginia Bureau for Public Health Senior Leadership Team
- West Virginia Hospital Association
- West Virginia Primary Care Association
- West Virginia State Medical Association
- West Virginians for Affordable Health Care
- WVHIC Better Health, Better Care and Better Value Workgroups

These advisory groups completed surveys using the same questions as the Qualtrics survey and provided verbal feedback that was recorded by an independent facilitator.

Finally, the team received feedback from the Steering Committee, NORC, CMMI and ONC. In total, the team received 282 comments on the draft SHSIP.

Throughout the review period, the Project Management Team met on a weekly basis to review new comments and determine an appropriate course of action for each. When appropriate, the team chose to make a specific change in the draft SHSIP. At other times, a team representative would reply to the individual to thank him or her for the suggestions and provide context around why a change was not made. The team classified comments by response type and tracked the determined resolution to keep an aggregate record of all public comments and corresponding actions as shown in Table 6.5 below.

Table 6.5 Public Comment Responses by Type

Response Type		
	Critique	**Count**
*	Not enough information provided about the SIM plan	43
*	Roles of organizations or inadequate representation in the SIM plan process	29
*	Payment or funding caution raised	26
*	Component/topic not included in the SIM plan or does not have a large role	18
*	WVHTA characteristics	14
*	Felt left out of the SIM plan process or not sufficiently involved	12
*	HIT	6
*	Other	26
	Total	174
	Compliment	**Count**
*	Care coordination or PCMH noted in the SIM plan	9
*	WVHTA characteristics	9
*	Population/public health components of the SIM plan	8
*	The new delivery system discussed in the SIM plan	6
*	Including behavioral health and primary care integration in the SIM plan	2
*	Alignment of quality measures noted in the SIM plan	1
*	Other	12
	Total	47
	Recommendation	**Count**
*	Need to add or strengthen strategy in the SIM plan	11
*	Should look at another state that may be a good example for the SIM plan	5
*	Need an FAQ document for the SIM plan	1
*	Other	44
	Total	61

6.10 Process for Continuing Stakeholder Engagement Beyond Design Phase

An important output of the SIM process is that it generated substantive, cross-sector conversation about improving health care for West Virginians. A key aim of the WVHTA will be to continue that dialogue among stakeholders,

enabling them to shape the implementation of health care transformation in the state. When the WVHTA is organized, its leadership will solidify a structure that allows for ongoing stakeholder engagement.

As the SIM grant wraps up, West Virginia is ramping up its statutorily mandated State Health Plan process. The West Virginia Health Care Authority leads this process, and it will allow for further engagement of many of the same stakeholders as SIM. The State Health Plan's development and implementation will help maintain the momentum for health care delivery and payment transformation started through SIM.

7.0 Health Information Technology and Data Strategy

Health information technology (HIT) and data are important tools that, used effectively, can contribute to the improvement of health outcomes for the citizens of West Virginia. However, limitations of these tools exist in the current delivery environment. The recommended strategies that follow provide a path forward in the movement to value-based health care, which is very dependent on timely access to accurate outcome and cost data.

The West Virginia SIM HIT and data strategies are intended to align with the population health improvement and delivery and payment transformation objectives outlined in the other sections of the SHSIP. The strategies set forth in this section of the SHSIP were developed by a diverse group of stakeholders representing providers, payers, consumers, community resources and policymakers. These strategies build on the foundation established in the "West Virginia Health Information Technology Statewide Strategic Plan (WVHITSSP)," released in 2009.[136] The WVHITSSP was updated and expanded in subsequent related plans developed by the West Virginia Bureau for Medical Services for Medicaid HIT planning and implementation purposes. The West Virginia Health Information Network (WVHIN), the state's health information exchange (HIE) entity, used the WVHITSSP to guide development and deployment efforts supporting HIE.

The strategies outlined in this section of the SHSIP for SIM purposes are being coordinated with the State Medicaid HIT Plan (SMHP) update and planning process, as well as an update of the State Health Plan by the West Virginia Health Care Authority (WVHCA). The intent is to have one unified set of strategies for HIT and data use rather than "stovepipe" strategies that are program- or market segment-specific. These strategies also align with CMS aspirations for HIT adoption and use as part of value-based health care, including the enhanced provider capacity to use data for improvement as envisioned by the CMS HIT incentive program.

7.1 Data Collection, Use and Exchange for Value-Based Health Care

The Agency for Healthcare Research and Quality (AHRQ) has described high-quality health care as the consistent delivery of the right care to the right patient at the right time. In health IT, the high-quality equivalent is that HIT systems should consistently provide access to the right data for the right

[136] "West Virginia Health Information Technology Statewide Strategic Plan." Available at http://www.hca.wv.gov/policyandplanning/Documents/Health%20Plan%20Analysis/ApxG.pdf.

patient available in the right format at the right time. Accordingly, high-quality health data should be captured, recorded, stored, extracted, exchanged and presented in a manner that makes it usable and results in reliable, accurate and actionable information matched to the proper individual. Unfortunately, the Office of the National Coordinator for Health Information Technology (ONC) reports that the current state of electronically stored health information has a high degree of variability in its correctness and completeness. In fact, a literature review found that the correctness of EHR data ranged between 44% and 100%, and completeness between one percent and 100%.[137]

These results are not entirely unexpected, due to the following factors:

- The relatively recent transition from paper records to electronic health record systems for most health care providers
- The evolution of EHR systems from an initial focus on electronic billing to clinical data capture and recording
- The variability in the functionality and training offered by a wide array of EHR vendors
- The challenge of integrating these systems with clinical and administrative workflow in busy practices

This variability poses a significant challenge in the efforts to transform payment for health care services to a value-based methodology. It is relatively easy to document an encounter in the current fee-for-service environment, but it is more difficult to assure that accurate and reliable information from an array of sources is available to determine the quality of outcomes and cost for interactions between patient and provider in a value-based system. Consequently, data flow and the integrity, accuracy and reliability of data are integral to the core infrastructure needed to facilitate the transition to a value-based payment methodology.

[137] Nicole Gray Weiskopf and Chunhua Weng, "Methods and dimensions of electronic health record data quality assessment: enabling reuse for clinical research," Journal of the American Medical Informatics Association. Available at http://jamia.oxfordjournals.org/content/20/1/144.long. Cited in ONC publication "Capturing High Quality Electronic Health Records Data to Support Performance Improvement," available at https://www.healthit.gov/sites/default/files/onc-beacon-lg3-ehr-data-quality-and-perform-impvt.pdf.

According to the American Health Information Management Association (AHIMA) and its Data Quality Management Model, there are four key processes driving data quality:[138]

- Application: The purpose for which the data are collected
- Collection: The processes by which data elements are accumulated
- Warehousing: The processes and systems used to store and maintain data and data journals
- Analysis: The process of translating data into information utilized for an application

These processes are evaluated with regard to 10 different data quality characteristics:[139]

- Accuracy: Ensure data are the correct values, valid and attached to the correct patient record.
- Accessibility: Data items should be easily obtainable (data liquidity) and legal to access with strong protections and controls built into the process.
- Comprehensiveness: All required data items are included. Ensure that the entire scope of the data is collected and document intentional limitations.
- Consistency: The value of the data should be reliable and the same across applications.
- Currency: The data should be up to date.
- Definition: Clear definitions should be provided so that current and future data users will know what the data mean. Each data element should have clear meaning and acceptable values.
- Granularity: The attributes and values of data should be defined at the correct level of detail.
- Precision: Data values should be just large enough to support the application or process.
- Relevancy: The data are meaningful to the performance of the process or application for which they are collected.
- Timeliness: Determined by how the data are being used and their context.

[138] "Statement on Quality Healthcare Data and Information," American Health Information Management Association. Available at http://library.ahima.org/doc?oid=101304#.VzzBGmcUXcs.
[139] "Statement on Quality Healthcare Data and Information," American Health Information Management Association. Available at http://library.ahima.org/doc?oid=101304#.VzzBGmcUXcs.

The AHIMA data quality framework provides a useful standard in developing the SIM HIT and data strategies. For the SHSIP, the desired end of the use of HIT is to facilitate the generation and use of high-quality health information to drive improved outcomes and reduced overall costs of health care. The SIM HIT workgroup sought to address the current barriers and obstacles in developing strategies that would optimize the use of HIT and data in the migration to value-based delivery and payment models. Current HIT systems and patterns of use of those systems present a number of obstacles in areas such as:

- Data capture and recording
- Data storage, extraction and exchange
- Usability of current-generation EHRs
- Usability of data
- Data access and exchange strategies: push, pull or access in place
- Integrating patient-generated health data into population health records
- Tracking provenance of health information

Data Capture and Recording

There are a number of challenges to accurate data capture and recording in the current EHR use environment. A report by AcademyHealth noted:[140]

> One significant impediment is the fact that EHR systems are not generally structured in a manner that allows users to extract the full value of the data. In other words, the principle of "collect once and use many times" is much easier said than done with existing technologies. In fact, it has been suggested that the very features of most EHR systems that make them attractive to clinical users actually contribute to their lack of utility as efficiently designed data management systems. In order to meet the needs and conform to the dominant workflow patterns of providers, most EHRs resemble digital versions of paper records. Somewhat ironically, this attempt at familiarity often makes it far more challenging for providers (and other potential users) to subsequently locate and then use the information they need. One oft-cited example of this is the common use of the free text "notes" field, which resembles the process of taking paper-based notes, but does an equally poor job of organizing and categorizing the content.

[140] "Finding Value in Volume: An Exploration of Data Access and Quality Challenges," AcademyHealth. Available at https://www.academyhealth.org/files/publications/HIT4AKAccessandQual.pdf.

AcademyHealth continues by noting: "Most EHRs are set up and used in a manner that often defaults to recording content in an unstructured format. When providers cannot quickly locate the appropriate field for a particular piece of information, or if there is no discrete or structured field that's been built into the system to capture said element, the typical response is to record the information in a free-text field. This does not necessarily affect the clinician's ability to locate information needed to care for the patient, but does make it nearly invisible (for data extraction and reporting)."

Therefore, the various SIM stakeholders have suggested ongoing provider training on the use of structured data fields within EHRs. Most EHRs are formatted to have users populate certain "structured" fields to enable extraction of this data for reporting and data analysis. If users do not understand the flow of data within the EHR, variability in data capture and entry will skew the usefulness of data extracted for quality measurement and reporting. Mapping data flow and structure can help users understand the importance of using structured data fields instead of "free" text fields (such as provider notes) within most EHRs.

Many providers are still primarily concerned with documenting in the notes field of EHRs as a vestige of practice patterns using paper records. As noted by AcademyHealth, these text field entries are less accessible (absent some text-reading capabilities not present in most current EHRs) and therefore less useful in producing quality reports. Many EHR users are disappointed in reviewing initial quality reports from current EHR systems, as they discover that bad data "in" produces bad data "out" of these systems and that poor data capture leads to misleading pictures of quality and performance.

System users also must understand the significance of the data to be captured and recorded. Using the social determinants of health model requires accurate and complete capture of essential health, social, environmental and family history data to provide a broader view of health drivers. Consequently, everyone in the health information capture process must understand the intended use of the information to be collected; the need to formulate questions to the patients and caregivers to elicit accurate and complete responses to be entered into the system; and the proper place or places to enter the information to optimize the usefulness of the information to the care team.

An example cited by AcademyHealth is the use of non-standard practices in data entry. The article cites the common example of blood pressure, "a

routinely measured and important indicator of health that is often recorded in different ways within the same practice or organization. A blood pressure of 120/80, for example, can be entered as 120 80; 120/80; 120/80 sitting; 120/80 left arm; etc. In essence, the number of permutations for a non-standardized data element is limited only by the establishment of clear policies, consistently followed, at the provider and practice levels."

Without proper and sustained training in these skills and practices, providers will not realize the potential benefit of many EHR systems on patient outcomes. Many practices contract for a limited amount of training on implementation of an EHR, yet do not contract for ongoing training. Thus, providers could benefit from ongoing training on the usability of EHRs and the importance of appropriate data capture and recording.

As noted as a strategy for health care transformation in Section 5.2, it is important to continue to support training efforts for providers and care teams in data management and analytics for the purpose of supporting population health approaches and driving improvements in health outcomes. This training could be afforded through the West Virginia Regional HIT Extension Center (WVRHITEC), West Virginia Health Transformation Accelerator (WVHTA), West Virginia Medical Institute (WVMI) or other provider support organizations. Academic-based support organizations such as the WVU Office of Health Services Research, West Virginia School of Osteopathic Medicine and Marshall University Health Informatics program can also be leveraged. These organizations could also assist providers and practices in mapping data flow, data auditing and validation and assessing data integrity issues within internal systems to help improve the quality and quantity of data used for health improvement activities.

Data Storage, Extraction and Exchange

The SIM HIT workgroup identified a number of issues to be addressed with regard to the storage, extraction and transmission of health information in the current HIT environment. Security through appropriate encryption and other access controls was a significant concern, arising from a perceived lack of understanding in the field by health care organizations on the proper application of data security best practices. It was the collective concern of the workgroup that security risk assessments mandated for HIPAA compliance and meaningful use are not currently being optimized to address security risk vulnerabilities, especially in smaller practice settings that may not have access to supporting technical and subject-matter expertise.

Further, the workgroup expressed concerns on the usefulness of data extracted and exchanged from current systems due to challenges on data accuracy and completeness, the use of text fields instead of structured data, the variability in the format of data being extracted, the lack of uniform patient identifiers within the exchange systems being used and the lack of interoperability of current systems. These issues present significant challenges that must be addressed in the HIT and data strategies to optimize data for value-based health care.

Although EHR interoperability is an expectation of the certification process under meaningful use mandates of CMS, the reality of current experience is far from the desired objective. The WVHIN has struggled with utilization and long-term sustainability of the state HIE due to a lack of interoperability, the presence of technical and cost barriers to connectivity of major EHR vendors and the lack of readily implementable business use cases for HIE. The HIE and data strategies strongly support HIE development and use to share timely admission, discharge and transfer alerts and pertinent health care information for targeted super-utilizers and all patients.

Usability of Current-Generation EHRs

The American Medical Association (AMA) has noted that "the design and implementation of EHRs do not align with the cognitive and/or workflow requirements and preferences of physicians within and across specialties and settings."[141] The AMA also cites a report by Black Book Rankings that indicates the meaningful use incentives have created "an artificial market for immature products. The report also found that many EHR vendors are preoccupied with backlogged implementations and selling current products, and that this has resulted in neglect of development priorities that could improve usability." Finally, the AMA acknowledged that some EHR usability issues are a result of sub-optimal implementation and workflow processes that have been incorporated into the EHR configuration and implementation.

[141] "Improving Care: Priorities to Improve Electronic Health Record Usability," American Medical Association. Referenced at http://www.ama-assn.org/ama/pub/news/news/2014/2014-09-16-solutions-to-ehr-systems.page.

Usability of Data

Health informatics is an evolving field, and as EHRs become more widespread, the challenge is turning huge sums of data into actionable information. One author noted:[142]

> Since well before the turn of this century, healthcare has concerned itself with information technology in a significant way. Yet, as we enter a new decade, many thought leaders have recognized that this "IT" approach is inadequate. The healthcare reform that industry experts seek can be achieved only through the more complex process of information management. The distinction is noteworthy. The foundational IT model has guided healthcare from a paper-based enterprise to one driven by digitized information. As a result, providers and caregivers now find themselves struggling with the challenge of managing and making meaningful use of the data available to them.

That author also describes the progression of data in stages: acquisition of data, aggregation of acquired data, adjudication of aggregated data and analysis of these data in a meaningful way.

> For the most part, healthcare has made significant progress through the first stage and is striving to conquer the second… However, they have hit a roadblock as they attempt to break down the data silos represented by each distinct system. For many, the cross-application aggregation and adjudication of data represents the Mt. Everest of information management. The industry has yet to figure out a way to deliver the information in a concise and "smart" fashion so that it is accessible on demand and at the point of care. Stymied at this point, healthcare consequently is unable to progress to stage four: achieving meaningful analysis of the information it has acquired….Healthcare organizations must begin to explore platforms that allow disparate systems not only to view external information, but also to truly understand and make use of the incoming data while maintaining the original meaning of that information, regardless of source, format, or nomenclature.

The author refers to this needed step as "data harmonization," which is organized into a knowledge framework to drive value-based health care analytics.

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[142] William A. Fera, "Next IT Challenge: From Data Acquisition to Harmonized Information Management," Journal of AHIMA. Available at http://bok.ahima.org/doc?oid=102000#.V3-3uvkrJQI.

In the current environment, if data is not necessary for payment, it may not be reported to a health insurance payer. Under HIPAA, a patient has the right to pay for a service and request that information about the service not be reported to a payer. Thus, patient social information, clinical records and claims data may be generated at very different stages of a patient encounter, for different purposes and uses, and may be subjected to a number of interpretations and permutations through payment codes, diagnostic uses and patient goal-setting. Harmonizing these disparate data streams is important to present a more accurate and complete picture of health needs in a patient-centered delivery model.

Organizing data into actionable information requires not only effective aggregation and validation of the data, but also effective presentation of the data to inform, educate or activate the viewer. This application is emerging in health care; however, a 2011 Institute of Medicine report noted, "Information visualization is not as advanced in parts of clinical medicine as compared with other scientific disciplines."[143] Integrating data visualization tools for care teams and patients into data platforms and EHRs is an important objective of the HIT and data strategies.

One of the visualization methods involves geospatial applications for health care data. Some health teams, such as those engaged with the Camden Coalition of Healthcare Providers, have used geospatial applications to identify and visually present clusters of frequent users of services ("hotspotting"). Another example of this application is found in the work of researchers at Duke University, who have created on-demand geospatial predictive models about where and when people smoke. This study is helping researchers design ways to use mobile devices to provide personalized smoking cessation interventions, such as motivational text messages, based not only on time, but also on location.[144]

Data Access and Exchange Strategies: Push, Pull or Access in Place

An important component of the HIT and data strategies is addressing how to best structure access to data to improve outcomes, understanding that data access policies and procedures will evolve as data use progresses and matures in a population health management model.

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[143] Claudia Grossmann, Brian Powers, and J. Michael McGinnis, "Digital Infrastructure for the Learning Health System," Institute of Medicine.

[144] "Putting Geography to Work in Healthcare," Duke Translational Medicine Institute. Available at https://www.dtmi.duke.edu/news-publications/putting-geography-to-work.

The initial transition from paper records to EHRs represents a somewhat closed environment, meaning many providers are still focused on internally generated health information based on interactions with patients. As providers become accountable for coordination of care and cost across health care settings (within ACOs or under bundled payment, episode of care and advanced primary care models), access to externally generated data will become increasingly important to provider care teams.

Data exchange can be accomplished through at least two forms of data transmission—push and pull—that address different patient data needs.[145] In a "push" configuration, data are electronically deposited in a recipient's system after a sender initiates transfer. In contrast, a "pull" system allows the provider to initiate a data query from external data sources—so named because a user who seeks data must actively access a system and query relevant data. This system permits the provider to aggregate data from multiple health care institutions across a community to provide comprehensive information for clinical care, emergency response, biosurveillance and quality activities.

Another option does not involve data movement; rather, the provider can "look-up" data through authorized access to a remote database for informational purposes and decide whether or not to copy or requisition a data transfer of desired information (if permitted). This option is akin to "read-only" access rights to documents accessed through the Internet.

Under the SHSIP, HIT workgroups will continually review and address these access options for configuring health information databases and HIE engines as population health management tools and methods evolve to meet value-based health system and payment models. Studies suggest that providers may need a blend of these access options to meet their data needs. For example, all three options could be useful in a single care coordination interaction: Some information, such as ADT notices of patient hospital discharge or ER visits, may be initially pushed to medical homes since these medical homes might be unaware of such interaction. The notice would then permit care team members to read and pull relevant clinical or patient preference information from the hospital database to facilitate post-acute care coordination.

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[145] Thomas R. Campion, Jr., Jessica S. Ancker, Alison M. Edwards, Vaishali N. Patel, Rainu Kaushal and the HITEC Investigators, "Push and Pull: Physician Usage of and Satisfaction with Health Information Exchange," AMIA Annual Symposium Proceedings. Available at http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3540571/pdf/amia_2012_symp_0077.pdf.

One study suggests that these options facilitate data harmonization without inundating practices and providers with unneeded data: "Both clinical and nonclinical staff would benefit from organizational support meant to reduce the complex data gathering situation for clinicians and improve productivity."[146]

Providers will need access to claims data to have a more comprehensive view of use of health resources and costs. CMS initiated this process in the value-based payment model with providers by requiring the reporting of quality information and then providing an aggregate scorecard of quality and cost information based on claims information, including an indexed health care utilization and cost report for the attributed patient panel of the practice. This process can be replicated in a multi-payer effort to push cost and utilization information back to providers to drive population health management efforts.

As described in Section 5.2, these HIT and data strategies reflect a vision for a uniform provider scorecard (similar to what Delaware has achieved), which can be developed and utilized by payers in value-based programs as quality and outcome measures are aligned and the Medicaid data warehouse is optimized. The scorecard could also be accessible to providers through a portal so they can view their performance and benchmark across peers, and to health care consumers so they can make informed health care choices based on provider quality and outcomes.

To optimize these reporting opportunities, West Virginia Medicaid, in partnership with the WVHTA, will design the revised State Health Information Technology Plan to optimize use of the Medicaid data warehouse. The HIT workgroup will guide these efforts, utilizing subject matter experts from key stakeholder groups, including payers, providers, WVMI and the state's academic health science centers.

Integrating Patient-Generated Health Data into Population Health Records

ONC has established a commonly accepted definition of patient-generated health data (PGHD) as being health-related data created, recorded or gathered

[146] Patrick Kierkegaard, Rainu Kaushal and Joshua R. Vest, "Information Retrieval Pathways for Health Information Exchange in Multiple Care Settings." American Journal of Managed Care. Available at http://www.ajmc.com/journals/issue/2014/2014-11-vol20-SP/Information-Retrieval-Pathways-for-Health-Information-Exchange-in-Multiple-Care-Settings/.

by or from patients (or family members or other caregivers) to help address a health concern. ONC notes:[147]

> Providers base their care decisions on information received from the patient, such as vital signs, symptoms, medical allergies, laboratory results, and a variety of other types of data. Traditionally, the information is generated in a clinical setting: during a visit, in a lab, in a diagnostic screening office, etc. The data are often a one-time snapshot or are gathered infrequently. New technologies can enable patients to generate important data outside of these settings as often as needed and share it with their providers to expand the depth, breadth or continuity of information available to improve care and outcomes.

Access to data, usability, education, health literacy, economic disparities and similar factors can be barriers to PGHD use by patients. As PGHD is integrated, population health management protocols, policies and procedures will need to address:

- What PGHD will be received and through what channel(s);
- Who will review it and when;
- What response will be given to the patient and when;
- If/when/how the information might be entered into the patient's medical record; and
- How privacy and security will be ensured.

Tracking Provenance of Health Information

ONC has defined "provenance" in the health data setting as "the origin of clinical information when first created, including information about the source of the data and about processing/transitions the data has undergone."[148] ONC also notes:

> Provenance metadata, or data that identifies the source of clinical information, could allow a system that aggregates patient information (EHR, personal health record (PHR) or health information exchange (HIE)) to understand where particular medications and diagnoses in a patient's record came from. Being able to identify provenance is critical to provider trust in data received from patients or from patients' PHRs.

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[147] "Patient-Generated Health Data: White Paper," Office of the National Coordinator for Health Information Technology. Available at https://www.healthit.gov/sites/default/files/rti_pghd_whitepaper_april_2012.pdf.
[148] "Patient-Generated Health Data: White Paper," Office of the National Coordinator for Health Information Technology. Available at https://www.healthit.gov/sites/default/files/rti_pghd_whitepaper_april_2012.pdf.

Some HIEs have improved provenance tracking by marking and retaining provenance as they aggregate data from multiple sources and exchange records. This is different from the provenance that would be associated with a direct transmission from a patient or a patient's PHR.

After conducting an environmental scan of the ability to track data provenance in the current HIT landscape, ONC found:

- Most systems do not capture origin with sufficient granularity to meet providers' needs related to PGHD.
- Currently no dominant provenance model exists within the HIT community.
- There is no uniform way of handling data provenance when data is originally created and/or when shared and integrated, including reconciliation.
- There is no harmonized standard currently in place.

These issues will require the attention and efforts of the HIT workgroup to facilitate integration of PGHD into the population health data stream and to foster more effective HIE.

7.2 SIM HIT Workgroup, Stakeholder and Task Force Concerns and Recommendations

The SIM HIT workgroup shared a number of the constraints and shortcomings outlined above as present in the current HIT and data environment in West Virginia. Additionally, the workgroup conducted a SWOT analysis of the state's current HIT landscape (see Figure 7.1).

The workgroup identified four key barriers to timely sharing of health information in the current environment:

- Security and access control issues (particularly for sensitive information)
- Fragmented data silos and platforms
- Lack of provider awareness, training, protocols and procedures for locating and accessing data streams
- Lack of consumer knowledge of where and how to access health data

SWOT Analysis: West Virginia's Current HIT Landscape

Strengths	Weaknesses
○ Existing technology and a governance structure is in place to leverage data, including WVHIN, the Medicaid Data Warehouse and the hospital system infrastructure ○ Health Information Technology (HIT) framework is being created to facilitate capture, exchange and utilization of clinical and outcome data to drive health improvement and incentivize value-based payment ○ Enhanced funding available to continue onboarding other areas of need ○ Few burdensome state / federal regulations for the successful deployment of telehealth ○ Technical platform for state health information exchange (i.e., WVHIN) ○ Significant advancement in the adoption and use of HIT systems enhanced by incentives from the Centers for Medicare and Medicaid Services and technical support from the Office of the National Coordinator for HIT	○ There is lacking interoperability among current HIT infrastructure—a problem that is not unique to West Virginia ○ A sustainability model or plan is not in place for WVHIN (also a threat) ○ Provider HIT fatigue, increased costs and lost time with systemic changes and additional requirements (e.g., HIPPA compliance audits and ICD-10 implementation requirements) ○ Due to business operating rules, data quality is at risk ○ Data governance structure needs to be reinforced ○ Cost and limited system and business resources to support adoption and use of HIT, particularly in small and rural practice settings ○ Rural HIT infrastructure (e.g., lacking broadband and connectivity) ○ Need an agreed upon definition of secure as it relates to confidential data ○ Early stages of data integration and use for health transformation under traditional practice / payment models ○ Costs to adopt, implement and upgrade EHR systems and use the health information exchange ○ Limitations on reimbursement / payment for telehealth and remote patient care
Opportunities	**Threats**
○ Identify the value and return on investment of HIT to both patients and providers ○ Progress that has been made with electronic health records provides a foundation to strategically define clinical data needs ○ Build a lateral, equitable system of data access and sharing across data systems to address population health ○ Ability to create new business process efficiencies across programs by integrating new sources of data ○ Reduction in time to deliver reports across enterprise regarding clients, providers, employers, etc. ○ Leverage the WVHIN to facilitate HIT support for transitioning to a value-based model ○ Telehealth and mobile / remote tools can be extended to provide needed specialty care in underserved areas of the state and to engage patients at home or work ○ The Medicaid Data Warehouse could become the de facto All Payer Claims Database	○ A sustainability model for WVHIN is not in place ○ A significant number of providers are retiring and leaving the health care system, which impacts both access to care and quality of care ○ Potential for data security breaches ○ Legal misunderstandings, ambiguities in what PHI can be shared among primary care and behavioral health providers ○ Potential for small-practice, rural and / or unaffiliated providers to retire or otherwise self-select out of EHR systems due to costs and other barriers ○ Potential for patients not seeing the benefit or value of a PHR ○ EHR mission creep (e.g., adding data that are not germane or that trigger additional regulatory burdens with little return on investment)

Figure 7.1 HIT Workgroup SWOT Analysis: Current HIT Landscape

To address the issue of matching data from the various data silos, the workgroup recommended utilization of a Master Patient ID Index to track consumers (and their data) as they transition through the health care system with different providers and payers. The group recommended this be coupled with an enterprise service bus to manage data transactions—both inbound and outbound. One other option is the use of a medical home registry to permit tracking of individuals with (and by comparison with payer databases, without) a medical home for attachment and data routing purposes.

In facilitating data flow and quality, one of the questions to be resolved is who will be responsible for data integration and how it will be accomplished. The group recommended that data presentation dashboards be incorporated into the data integration platform. The workgroup raised a number of questions to be addressed in the strategies relative to data governance and use of one or more data warehouses. These questions include:

- Who will provide needed education on a data warehouse (i.e., how it works, who can access it, how to use data, etc.)?
- How will data governance facilitate integration of claims and clinical and social data with processes to validate, rationalize and verify data?
- What are the data collection and reporting goals?
- What governance standards define acceptable use and ownership of data?

To address some of these concerns, the workgroup recommended:

- A survey of patients to see what they know about their health data and if they can access it.
- A survey of providers to ascertain adoption rates of certified EHRs, progression to stage 3 meaningful use and barriers to collection, exchange and use of high-quality health data for value-based health care reporting and health risk management.
- Required use of certified EHRs with meaningful PHR for patient by a future date for participation in state-sponsored health programs.
- Use of secure applications that provide a preview of data versus download at first access of data sources and data controls for patient portals.
- Increased enrollment in the WVHIN and increased utilization of the WVHIN's HIE.
- Coordination of provider training and monitoring among payers to encourage use of enhanced coding, specifically ICD-10 codes, to

facilitate better tracking of social determinants of health and population health issues; encourage full recording and reporting of all relevant diagnostic and disease codes, not just those associated with principal diagnosis for billing purposes.

- Evaluation of provider needs for "timely" information (i.e., when is real-time information needed and what is the latency tolerance for data? How quickly do providers need data for it to be actionable/meaningful?). The group noted that the Medicaid data warehouse and other data sources populated with claims information experience latency due to data flow associated with the current claims submission and processing structure. Even ADT feeds on hospital discharge and ER use may have some latency depending on the submission protocol (real time, end of day or batched submissions).

These concerns and recommendations of the SIM HIT workgroup align with those of the Task Force. The SIM HIT stakeholders noted the following themes as foundational to the development of the SIM HIT and data strategies:

- The HIT system is not a single system but a "system of systems."
- West Virginia must leverage, maximize and build upon existing HIT systems.
- Ongoing efforts are needed to inventory data sources across systems and determine barriers to effective use of these data sources.
- Flexibility will be important in advancing interoperability.
- Infrastructure, policies and data use should be standards-based.
- There is a need to balance the interest in protecting privacy and security of data while assuring access for health management and improvement.
- There is a need to coordinate communication and education of consumers on the need for health information and data use and exchange (effective outreach and support).
- Data are in "silos" that will need to be overcome.
- A strong data governance structure and framework will be needed.

One of the recommendations that emerged from the discussions of these HIT and data strategies is the need to align quality measures. As discussed in Section 5.2, the SIM Task Force recommended utilization of the West Virginia Health Innovation Collaborative (WVHIC), a pre-existing public-private partnership used to share health care best practices in a "grand rounds" fashion, to publically vet the CMS Core Quality Measures Collaborative's

quality measures as a basis for aligning multi-payer quality measures in the state.

7.3 Coordination of Data Sources

One of the challenges articulated by the SIM HIT workgroup and other stakeholders is the fragmentation of current data sources. Although West Virginia has enabling legislation for an all-payer claims database,[149] one has yet to be developed. Each payer has a separate (and for non-public payers, a proprietary) database of health information. Within state government, there are a number of separate and distinct (non-connected) databases, including but not limited to the following:

- WVDHHR, the state's major social service and health service agency, is comprised of five bureaus: Bureau for Behavioral Health and Health Facilities; Bureau for Child Support Enforcement; Bureau for Children and Families; Bureau for Medical Services (BMS) and Bureau for Public Health (BPH). WVDHHR programs have data relevant to health care delivery, well-being and social determinants of health. These data are maintained within bureaus and/or divisions of WVDHHR based on programmatic guidelines. Several programs are funded through federal agencies, such as the CDC and the Health Resources and Services Administration (HRSA), and data are maintained, used and restricted based on requirements associated with the funding source. A challenge to accessing and using these various data sources for health improvement and coordination purposes is the diverse array of hosted environments housing the data.
- BMS manages West Virginia's Medicaid program, which covers more than 521,000 West Virginians annually with a network of approximately 24,000 active providers. In January 2016, BMS launched an update to the Medicaid Management Information System (MMIS), which will integrate enhanced data warehouse/decision support functionality and allow better coordination between MMIS and WVDHHR's other social service eligibility system(s). The data warehouse/decision support functionality of the MMIS includes data analytics tools, which complement those included in the WVHIN's HIE described below. These tools can be leveraged as part of health

[149] West Virginia Code Chapter 33, Article 4A, Sections 1-8.

improvement efforts to provide more timely and meaningful population health management information to care teams and provider organizations.

- BPH includes a number of divisions that impact the population health of West Virginia. BPH houses the West Virginia Health Statistics Center, which collects and disseminates information on disease prevalence and health outcomes for state citizens; it also houses the Office of Epidemiology and Prevention Services (OEPS). OEPS operates the West Virginia Electronic Disease Surveillance System, a web-based electronic reporting system that serves local and state public health departments and West Virginia hospitals, and connects to the CDC's Biosense 2.0 electronic surveillance system. OEPS operates the state's immunization registry to track immunization rates and to exchange health information with providers on administered immunizations.
- The West Virginia Health Care Authority (WVHCA) was created to gather information on health care costs, develop a system of cost control and ensure accessibility to appropriate acute care services. The WVHCA serves as a source of data, particularly related to hospital, nursing home and institutional utilization, costs and trends. This function assists in evaluating the impact of proposed changes in health care delivery and payment on institutional health care providers and aids in identifying improvement opportunities. WVHCA offers a web-based tool to provide consumers information on West Virginia hospital charges and patient quality care indicators.
- West Virginia Offices of the Insurance Commissioner (OIC) monitor, regulate and license agents, as well as agencies and insurance companies. OIC has organizational and administrative responsibility for the West Virginia health insurance marketplace, and it maintains a database of insurance rates, coverage by payer and costs and outcomes data as mandated by the ACA. OIC serves as an important source of data on health insurance coverage, cost, outcomes and claims experience.
- Within the West Virginia governmental structure, there are a number of independent professional licensing boards—each with data beneficial to evaluating and analyzing the current and predicted availability of the West Virginia health care workforce to evaluate access to care under health service delivery models.
- The West Virginia Board of Pharmacy (WVBP) operates the West

Virginia Controlled Substance Automated Prescription Program (CSAPP) to help prescribers and pharmacists identify patients who may be abusing controlled substances and who may benefit from a substance abuse referral. According to WVBP, each year the CSAPP responds to more than 900,000 queries from practitioners and pharmacists, making it an important tool in the fight against substance abuse, particularly abuse of opioids.

- Even though they may not directly regulate or influence health, other government agencies also have health information databases; for instance, the West Virginia Department of Education has student health information in the West Virginia Education Information System, and the West Virginia Department of Corrections and the West Virginia Regional Jail Authority each have health information on incarcerated individuals.

The SIM HIT and data strategies encourage effective use and leveraging of these data sources to better coordinate care and manage population health. The chief information officer for WVDHHR assisted in the development and review of these strategies; he serves as the state's technology coordinator for addressing barriers or limitations to accessing and using these data sources to meet the objectives of the SHSIP.

7.4 Current State of HIT Adoption and Use

The data strategies to advance high-value health care are dependent on high-quality data, and one of the drivers of data quality is effective adoption and use of HIT. West Virginia providers have made significant progress in this area and now track closely with national trends in the adoption and use of electronic health information systems. According to 2014 data from ONC, there are 4,641 office-based health care providers in West Virginia, and of that total, 2,127 are primary care providers. ONC data indicates:[150]

- Seventy-six percent of West Virginia office-based physicians (i.e., allopathic physicians and doctors of osteopathic medicine) have adopted a certified EHR. This is slightly above the national average of 74%.

[150] All statistics cited in this paragraph were queried from the ONC HealthIT.gov Quick Stats Dashboard.

- More than 80% of the office-based primary care providers—and more than 70% of non-primary care office-based providers—in West Virginia report adoption of a certified EHR.
- More than 71% of office-based physicians in West Virginia practices of 10 or fewer physicians report adoption of a certified EHR.
- As of the end of 2015, approximately 53% of West Virginia office-based physicians have demonstrated meaningful use of certified HIT in the CMS EHR incentive program—slightly below the national average of 56%.

West Virginia health care providers have progressed rapidly in the adoption and use of EHRs since 2009. In fact, the initial WVHITSSP estimated adoption and use of electronic clinical information by physician practices statewide to be less than 10%.[151] According to the ONC Quick Stats Dashboard, as recently as 2011, only 28% of West Virginia office-based providers reported adoption of a basic EHR, compared to 34% nationally. The growth in EHR use in West Virginia is due in large part to the impact of the CMS HIT incentive program, the incentives and penalties associated with Medicare meaningful use expectations and advancement in usability of EHR products. Another important factor was provider support through programs such as those offered by the West Virginia Regional HIT Extension Center.

Equally impressive is the rate of HIT use by West Virginia hospitals. As of 2015, ONC reports that 94% of eligible West Virginia non-federal acute care and critical access hospitals have demonstrated meaningful use of certified HIT through participation in the CMS EHR incentive program. This is slightly less than the national average of 95%.[152]

The pharmacy sector of the West Virginia health care delivery system has likewise embraced the transition to HIT. As of July 2014, ONC indicates that 98% of retail community pharmacies in West Virginia are actively engaged in electronic prescribing, with 77% of physicians and nearly 5,000 West Virginia providers actively prescribing electronically.[153]

The SIM HIT workgroup recommended a survey to identify providers who have not adopted certified EHRs and to assess the progression of providers in

[151] "West Virginia Health Information Technology Statewide Strategic Plan." Available at http://www.hca.wv.gov/policyandplanning/Documents/Health%20Plan%20Analysis/ApxG.pdf.
[152] All statistics cited in this paragraph were queried from the ONC HealthIT.gov Quick Stats Dashboard.
[153] Meghan Hufstader Gabriel and Matthew Swain, "E-Prescribing Trends in the United States," Office of the National Coordinator for Health Information Technology. Available at https://www.healthit.gov/sites/default/files/oncdatabriefe-prescribingincreases2014.pdf.

the use of EHRs and data to drive health improvement objectives. Programs such as the Medicaid enhanced match for support of Medicaid providers (and connectivity to non-eligible providers per CMS guidance)[154] can help address gaps in exchange of information.

Health Information Exchange

WVHIN, the statewide HIE lead agency, has largely led the HIE efforts in West Virginia. As of March 2016, the WVHIN reports that it has connected 19 hospitals and more than 100 hospital-affiliated physician practices to the query-based HIE, with approximately 20 hospitals currently in some stage of the technical connection process. To improve the value of the WVHIN's HIE, it partnered with Healtheway to connect to a nationwide HIE and afford access to new interoperability technology through a trusted technology framework. The WVHIN also partnered with 10 other state HIE programs to enable the seamless exchange of health records via the Direct protocol. This partnership allows WVDirect providers to send and receive health records to and from providers with a Direct address in other states. This capability is important as a significant percentage of West Virginia's population lives in border areas of the state, and health care consumers travel both to and from West Virginia to receive health care services.

To complement the WVHIN's statewide platform, health care systems have developed local HIEs. An example is the CAPGATE system used by Partners In Health Network (PIHN), a regional health improvement network operating predominantly in central and southern West Virginia. CAPGATE is a secure, Internet-based clinical information system to facilitate data sharing among PIHN participating health care entities. Anchored by major hospitals, areas such as Morgantown, Huntington, Wheeling and the Eastern Panhandle of West Virginia have developed similar local HIE networks. The West Virginia Primary Care Association has also developed a data warehouse with HIE, data storage and analytics capabilities.

Despite progress in developing the HIE infrastructure, West Virginia's physicians lag slightly behind the national averages in health information exchange using EHRs. Only 34% of West Virginia office-based physicians report electronically sharing any patient health information (e.g., lab results,

[154] State Medicaid Directors Letter 16-003. This letter notes that the CMS Medicaid Data and Systems Group and ONC Office of Policy have partnered to update the guidance on how states may support HIE and interoperable systems to best support Medicaid providers in attesting to Meaningful Use Stages 2 and 3. This provides an avenue for BMS to help connect non-eligible providers to the Medicaid data warehouse and MMIS system to facilitate enhanced HIE for Medicaid members.

imaging reports, problem lists and medication lists) with any other providers, including hospitals, ambulatory providers or clinical laboratories, compared to the national average of 42%. Only 48% of West Virginia office-based physicians report having an EHR with the capability to exchange secure messages with patients, compared to the national average of 52%.[155]

Broadband and Connectivity Infrastructure

One of the recommendations of the SIM HIT workgroup is to continue efforts to expand and enhance broadband connectivity to support HIT adoption and use, including telehealth applications. A 2014 WVHCA report says:[156]

> Broadband availability has penetrated the majority of provider office locations, if not all. In previous years there was a lack of available services for doctors in the southern part of the state and along the eastern border. The most recent information shows that access to broadband has not only improved significantly in the areas previously lacking broadband services, but across the state as well. All West Virginia acute care and critical access hospitals have access to high-speed communications (broadband), according to the National Telecommunications and Information Administration. Federally Qualified Health Centers in the southern and eastern part of the state that may not have had coverage in the past now show coverage by at least one service provider. All other parts of the state show broadband provider availability and access for health facilities statewide.

Telehealth

West Virginia has experienced some success in the utilization of telehealth to overcome lack of access to health care services, particularly in rural areas of the state. These programs are foundational to leverage the potential of telehealth to expand access to high-value services in the transformed health delivery system.

- The longest-standing telehealth program in the state is the Mountaineer Doctor Television (MDTV) program, which delivers secure telemedicine and videoconferencing services. Its headquarters are at the Robert C. Byrd Health Sciences Center in Morgantown, with branch locations throughout the state. MDTV was established in 1992

[155] All statistics cited in this paragraph were queried from the ONC HealthIT.gov Quick Stats Dashboard.
[156] "West Virginia Health Information Technology Infrastructure: Broadband Availability for Health Care Programs in West Virginia," West Virginia Health Care Authority. Available at http://www.hca.wv.gov/policyandplanning/br/Documents/Broadband_Report_14.pdf.

to better serve rural West Virginians through the advancements in technology.

- Interest in advancing telehealth led to the formation of the West Virginia Telehealth Alliance (WVTA). WVTA sought and was selected to participate as one of 69 organizations nationally in the Federal Communication Commission's Rural Health Care Pilot Program. WVTA leveraged approximately $9.7 million in state and federal funds to improve broadband connectivity for more than 100 eligible health care entities in the state.
- The West Virginia Perinatal Partnership focuses on increasing the usage of telemedicine to provide prenatal services to those living in areas with limited access to providers, including the formation of a telehealth network for prenatal clinics and rural hospitals.
- WVU Medicine has expanded telehealth programs by providing psychiatric services to clinics in 12 rural West Virginia counties through its telepsychiatry program. WVU Medicine also developed a telestroke program to provide video-based neurological care that will assist in the development of treatment strategies for patients who suffer a stroke. St. Mary's Hospital in Huntington has also established a telestroke program to serve southern West Virginia.
- The Louis A. Johnson VA Medical Center in Clarksburg is one of the most advanced users of telehealth in West Virginia. The Center reported that a telehealth program combining remote care coordination and health monitoring technology has helped to reduce emergency room visits by 20% and the number of days hospitalized by 62% among 65 veterans in the COPD-focused program.
- One of the most recent innovations in telehealth in West Virginia—launched in April 2016—is the expansion of the Project ECHO model. Discussed in Sections 3.5.7 and 5.2, this connection allows clinicians to consult with specialist peers and develop intervention strategies to manage and treat chronic conditions. Cabin Creek Health Systems is the first health care provider in West Virginia to participate in the replication of Project ECHO; it is linked to clinicians at West Virginia University to improve outcomes for patients with hepatitis C.

Alan Snell, writing in Health Affairs, notes:[157]

> Remote care management (RCM) programs use telehealth technology to facilitate clinically driven, remote monitoring, care, and education of patients and are an absolute necessity for providers and payers striving to implement an effective population health management strategy. Historically, RCM programs have been viewed through a fee-for-service lens and, as a consequence, overlooked, because physicians would not be reimbursed for the time to monitor these patients outside the confines of their offices. Yet the current shift to value-based care presents an imperative for health care providers to avoid costs by better managing the health of people with chronic conditions….RCM programs have the potential to extend a provider's reach and perspective into the daily lives of patients.

7.5 Provider Use of HIT and Data to Support Plan Objectives

Although West Virginia has made significant inroads in the adoption of and use of EHRs by providers, much work remains. Many providers are at early stages of integrating HIT into clinical use and utilizing the resulting data to drive health improvement efforts.

CMS and ONC strategies for HIT adoption and use necessitate a progression of skills and capacity at the practice level as HIT integrates into clinical and administrative processes. This progression is reflected in the staging of meaningful use expectations. As noted, data quality will improve as providers become more proficient in using these systems and data quality controls described in Section 7.1 are implemented and enhanced through monitoring and evaluation. The intent of the SIM HIT and data strategies is to create a flexible and progressive framework to align HIT and data utilization with the SHSIP system and payment transformation drivers, goals and strategies. The recommended HIT and data strategies are summarized in Section 7.10 below.

[157] Alan Snell, "The Role Of Remote Care Management In Population Health," Health Affairs Blog. Available at http://healthaffairs.org/blog/2014/04/04/the-role-of-remote-care-management-in-population-health/.

7.6 Coordination of HIT and Data Governance with Plan Implementation

As noted, the SIM HIT workgroup and stakeholders recognize the importance of a framework for development of an HIT and data governance process as the transition to value-based health care progresses. Rather than be prescriptive, the parties opted to express broad objectives to guide the refinement of governance as HIT and data use matures (as outlined in Section 7.1).

The intent of the SIM HIT and data governance framework is to facilitate a means of coordinating HIT resources, infrastructure, policy and regulations to meet health improvement and transformation objectives to drive value. The framework informs and aligns decision-making for IT planning, policy and operations in order to meet objectives, reduce and manage risk and promote the responsible and strategic use of HIT resources. Accordingly, the framework leverages ONC's Governance Framework for Trusted Electronic Health Information Exchange[158] to assure alignment with national expectations and objectives. The organizational principles of the framework are as follows:

- Participants will be encouraged to operate with transparency and openness. Health information and data are to be maintained, used and exchanged to promote patient-centered care, respect patient wishes and goals and facilitate the use of data to improve health and address social determinants of health.
- Mechanisms and safeguards will be established to ensure compliance with applicable federal and state laws to ensure data privacy, integrity and security.
- Good data stewardship principles will be utilized to assure transparency about data use; controls linked to the purpose for data use; rights of individuals to authorize data use; security safeguards and controls; de-identification of data (when relevant); data quality, including integrity, accuracy, timeliness and completeness; limits on use, disclosure and retention; oversight of data uses; accountability and enforcement and remedies.[159]

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[158] "Governance Framework for Trusted Electronic Health Information Exchange," Office of the National Coordinator for Health Information Technology. Available at https://www.healthit.gov/sites/default/files/GovernanceFrameworkTrustedEHIE_Final.pdf.

[159] Susan Baird Kanaan and Justine M. Carr, "Health Data Stewardship: What, Why, Who, How," National Committee on Vital and Health Statistics. Available at http://www.ncvhs.hhs.gov/wp-content/uploads/2014/05/090930lt.pdf.

- The governance process will promote inclusive participation and adequate stakeholder representation, especially among patients and patient advocates, in the development of policies and practices.
- Oversight and coordination activities will be consistent and equitable, with procedures that afford due process to the stakeholders that are subject to oversight, including a process for resolving conflicts over data ownership, information sharing and exchange between public and private stakeholders, should they arise.
- Standards of participation will promote collaboration and avoid instances where (even when permitted by law) differences in fees, policies, services or contracts would prevent patients' health information from being used or electronically exchanged to better coordinate care or improve health.
- Participants should create a technical framework that encourages open access to exchange services (e.g., directory data) that would enable local, regional and nationwide partners to identify with whom they can electronically exchange information and how such exchange could be completed under applicable laws and regulations, including use of reliable patient identifiers to assure proper identification and matching of patient data.
- Consistent with applicable laws, consumers will be provided with meaningful choice as to whether their personally identifiable information can be electronically exchanged, and restrictions or preferences will be accommodated to balance the need for access to protected health information for optimizing care outcomes with privacy expectations of consumers.
- Participants should encourage the adoption and use of technology to support the health improvement objectives and to assure data integrity and trust among participants and consumers.
- Participants should coordinate and align with national and regional use of vocabulary, content, transport and security standards, and associated implementation specifications developed by voluntary consensus standards organizations when equivalent federal standards have not been adopted.
- Participants should establish a process for auditing and assuring conformance assessment and testing of technology infrastructure, applications, storage and exchange means to assure consistency, integrity and compliance with applicable federal and state standards.

7.7 Coordination of HIT Policy and Regulatory Levers to Support the Plan

The SIM HIT and data strategies envision alignment of policy and regulatory levers to accelerate standards-based HIT and data adoption and use to improve care. Some of these policy levers include integrating certified EHR use and data proficiency into alternative payment models, which will align with the national meaningful use staging strategy. The current policy environment should improve transparency and encourage innovative uses of data for consumer awareness of cost-effective treatment options. This innovation includes, for example, linkages with the Choosing Wisely initiative to educate and inform consumer choices on proper usage of antibiotics, imaging for low back pain and other elective health care decisions.

By focusing on attachment to advanced primary care models, such as the PCMH, the policy levers can promote greater patient engagement and shared-decision making. Through the ongoing efforts initiated by SIM, there is a framework to review policies and regulations to identify impediments to consumer-driven health improvement. These efforts will also facilitate multi-payer coordination to enable and expand the use of HIT and data as population health improvement tools. These strategies are described in greater detail in the third driver of Section 5.2.

Using policy and regulatory levers to support HIT and data use is part of the overarching SIM policy and regulatory strategies outlined in Section 10 of the SHSIP. The framework for HIT and data use should balance the expectations of privacy and security of consumer's protected health information with the need for meaningful flow of clinical, social and claims data. This data liquidity is essential for effective population health management to achieve the health improvement and system transformation objectives.

SHSIP Appendix B is a compendium of ONC-identified policy levers related to HIT. The appendix identifies these levers, their application to HIT use and interoperability and existing activities in West Virginia that correspond to the levers.

7.8 Utilization of HIT Infrastructure to Support the Plan

The West Virginia SIM HIT and data strategies expect the use of Medicaid and state enterprise IT systems as part of the state's interoperable HIT infrastructure. Through coordination of these resources with private health

systems and non-public payers, the intent is to create the framework for shared and aligned public/private HIT capacity. This coordinated infrastructure will facilitate data normalization, validation and aggregation. It will also support event notification and other clinical alerting and secondary uses of health data to support administrative and quality improvement activities (e.g., eligibility, service authorization, care planning, quality measurement and monitoring, evaluation, payment and auditing).

The state has risk stratification and predictive analytic tools included in the Medicaid data warehouse and WVHIN platforms; several other Medicaid MCOs and commercial payers have similar tools. These tools should be leveraged with data feeds from providers to drive increased use of risk stratification and predictive analytics as part of care team operations. Importantly, integration will need to be phased in as providers and payers learn to effectively use these tools and the resulting data. In West Virginia, these new aspects of value-based care have not been largely utilized in the current fee-for-service delivery environment. As such, there will be a learning and data validation curve that must be accommodated to avoid "false positives" and use of misleading or contradictory data by inexperienced population health managers.

As health care providers and care teams progress in the integration of HIT and data in these enhanced care processes and protocols, additional tools can be integrated. As noted in Section 7.4 above, the SIM HIT and data strategies seek to expand use of the existing telehealth infrastructure to increase access and improve the timeliness of care. Providers will need coordinated support to use evidence-based best practices as these new technology tools are introduced into clinical workflows and care management processes.

A framework has been established through the SIM planning process to better coordinate quality data collection and use for outcome evaluation and measurement. Part of the SIM HIT and data strategies addresses using standards-based HIT capacity, such as the Medicaid data warehouse, to enable electronic quality reporting. The stakeholders seek to align and consolidate reporting efforts to ease provider burden; however, whether a single repository of clinical quality indicators can be accomplished will be influenced by how CMS approaches such reporting for value-based health care as part of MACRA.

7.9 Strategies for Rollout and Implementation

The SIM HIT and data strategies are designed to align with health system transformation. Of crucial importance is a flexible and adaptable approach to accommodate the ability of providers to assimilate tools and modified workflows and accomplish the health improvement and system transformation objectives. As noted, many providers are still in the early stages of HIT and data integration. In addition, many of the EHR systems have been enhanced to meet more stringent certification requirements and expectations, and providers are struggling to master these new capacities while also dealing with ICD-10 migration and new care delivery demands. Balancing the need to expedite health system transformation with the capacity of providers and consumers to accommodate these changes will require a high level of coordination, communication and understanding among the diverse stakeholders.

7.10 Summary of SIM HIT and Data Strategies

Table 7.2 summarizes the recommended HIT and data strategies presented in this section. First, however, it is helpful to review the complementary strategies provided in Sections 5 and 14 under Driver 3: data and information management capacity. This capacity is essential for population health management, allowing stakeholders to harness data with tools and analytics to drive better outcomes and lower costs.

Table 7.1 briefly summarizes the strategies from Section 5.2 and supporting tactics from Section 14.0. Note that the WVHTA and HIT guidance group will lead many of the proposed tactics. See Sections 5.2 and 14.0 for more detail.

Table 7.1 Summary of Driver 3 Strategies and Tactics—Data and Information Management Capacity

Strategies	Tactics, 2016-2021
Encourage Providers to Continue Training Staff in Data Management and Analytics	- Coordinate provider training on population health management tools; later expand to care team members and support resources. - Integrate training into medical education/training programs. - Work with vendors to enhance capabilities and with public health entities to use registries. - Train on advanced population health management tools.
Leverage the Medicaid Data Warehouse as a Repository for Claims Data	- Develop data use agreements consistent with MITA. - As permitted by law, link providers to the warehouse and grant access to claims data from participating payers. - Work with state agencies to integrate socioeconomic data.
Align Quality Measures Across Payers	- Vet CMS Core Quality Measures through WVHIC; use feedback to determine final slate of measures. - Recommend adoption by payers and use in the Medicaid managed care contract quality withhold. - Regularly assess and update measures as needed.
Develop a Standardized State-Based Provider Scorecard	- Use aligned quality measures and centralized claims data to develop the scorecard. - Create a provider portal for peer benchmarking. - Incorporate scorecard into value-based payer programs. - Make scorecard accessible to consumers.
Optimize an HIE	- Coordinate resources for effective HIE using local, state and national platforms. - Work with payers and providers to assess quality/quantity of health information. - Assess data flow in support of population health management and APMs.

Table 7.2 Summary of Recommended HIT and Data Strategies

Vision	The vision for the use of HIT under the SHSIP is to facilitate the generation and use of high-quality health information to drive improved outcomes and reduced overall cost of health care.
Data Collection, Use and Exchange	Use the AHIMA data quality framework (outlined in Section 7.1) in developing the SIM data standards and expectations.
	Data flow (data liquidity) and the integrity, accuracy and reliability of high-quality data constitute the core infrastructure needed to facilitate the transition to a value-based payment methodology. Data visualization and use of tools such as geospatial mapping can assist in the actionable presentation of data. Policies will also need to address data provenance to identify data sources in HIE.
	Provide ongoing training to enhance the use of EHRs as health improvement tools and to highlight the importance of appropriate data capture and recording (such as using structured data fields). This training could be afforded through the West Virginia Regional HIT Extension Center, West Virginia Health Transformation Accelerator, West Virginia Medical Institute or other provider support organizations. Academic-based support organizations such as the WVU Office of Health Services Research, West Virginia School of Osteopathic Medicine and Marshall University Health Informatics program can also be leveraged. These organizations could also assist providers and practices in mapping data flow, data auditing and validation and assessing data integrity issues within internal systems to help improve the quality and quantity of data used for health improvement activities.
	Provide training and support for providers and practices during data progression stages: acquisition of data; aggregation of acquired data; adjudication of aggregated data; and analysis of these data in a meaningful way.
	Develop capacity during the data progression process for data harmonization, which is organized into a knowledge framework to drive value-based health care analytics and accommodate patient-generated health data.

SIM Stakeholder Recommendations	Continue to engage stakeholders through the WVHTA, WVHIC and other collaborative efforts to address: • Security and access control issues (particularly for sensitive information); • Fragmented data silos and platforms; • Lack of provider awareness, training, protocols and procedures for locating and accessing data streams; and • Lack of consumer knowledge of where and how to access health data.
	Implement a Master Patient Identifier with an enterprise service bus to manage data transactions—both inbound and outbound. Consider adding a medical home patient registry as part of this functionality to permit tracking of individuals attached to a medical home and to route information from care sources to the medical home.
	Designate an entity to facilitate data integration and incorporate presentation dashboards as part of the integration platform. Data access policies and procedures will need a blend of push, pull and access in place options to meet the needs of the end users.
	Convene stakeholders to address barriers to effective use of the Medicaid data warehouse as a data clearinghouse for health improvement efforts and use the West Virginia Health Innovation Collaborative to vet CMS Core Quality Measures to align quality reporting and measurement of payers where possible.
	Implement the recommendations and address the concerns (listed in Section 7.2) of the various HIT stakeholder groups.
Coordination of Data Sources	Facilitate effective use of various data sources (private payers, public payers, public health and regulatory agencies) and integrate data "silos" to overcome data fragmentation and lack of access.
Current State of HIT Adoption and Use	Leverage Medicaid enhanced match for support of Medicaid providers (and connectivity to non-eligible providers per CMS guidance) to address gaps in information exchange capabilities.
	Increase enrollment in the West Virginia Health Information Network and increase utilization of the WVHIN's HIE.
	Continue to develop broadband access and capacity while expanding use of telehealth applications; integrate telehealth into new payment and delivery models and expand the applications of remote monitoring and mobile technologies.

	Identify providers who have not adopted certified EHRs and address barriers to adoption where possible. Continue to leverage HIT incentive programs and support resources to the greatest extent possible.
	Assess the progression of providers in the use of EHRs and data to drive health improvement objectives. Provide ongoing technical assistance.
Provider Use of HIT and Data	Facilitate provider training on and use of risk stratification and predictive analytics tools included in the Medicaid data warehouse and other payer-based or HIE data platforms.
HIT and Data Infrastructure	Utilize a flexible and progressive framework to align HIT and data utilization with the SHSIP system and payment transformation drivers, goals and strategies.
	Develop agreed-upon quality measures and map data elements to facilitate consistency in data elements and reporting.
	Align and consolidate reporting efforts to ease provider burden though a single repository of clinical quality indicators, if possible (depending in part on how CMS approaches such reporting for value-based health care as part of MACRA).
HIT and Data Governance	Utilize the ONC's Governance Framework for Trusted Electronic Health Information Exchange as a framework for HIT and data governance to assure alignment with national expectations and objectives.
Policy and Regulatory Levers	Continually review and utilize to the extent possible policy and regulatory levers to accelerate standards-based HIT and data adoption and use to improve care.
	Align certified EHR use and data proficiency into alternative payment models to align with the national meaningful use staging strategy.
	Leverage the policy and regulatory environment to improve transparency and encourage innovative uses of data for consumer awareness of cost-effective treatment options.
	Through continuous review, identify impediments to consumer-driven health improvement and facilitate multi-payer coordination to enable and expand the use of HIT and data as population health improvement tools.
	Balance privacy and security concerns with data liquidity and exchange needs in HIT and data systems.

	Use approaches that are consistent with ONC's Data Segmentation for Privacy (DS4P) Initiative to assure sensitive data are shared only in a manner consistent with legal requirements and patient consent.[160] Develop and train providers in the use of standardized consent forms that assure compliance with state and federal privacy laws, including 42 CFR Part 2 as it applies to substance abuse and associated treatment.
HIT Supporting Value-Based Care	Align HIT and data platforms with the transition to value-based health care and alternative payment models. Engage stakeholders through the WVHTA to address policies and technical frameworks to assure data availability, integrity, usability and security.
	Integrate HIT and data platforms to provide high-quality and predictive analytics to drive further improvements for high-cost and super-utilizer populations and reduce avoidable costs.
	Convene stakeholders to address barriers to formation of regional systems of care and review the data flow needs of regional participants.
	Enhance the use of telehealth to better coordinate care between long-term care facilities and other health care settings, particularly to address transitions to and from inpatient hospital settings.

[160] "DS4P Initiative," Office of the National Coordinator for Health Information Technology. Available at https://www.healthit.gov/providers-professionals/ds4p-initiative.

8.0 Workforce Development Strategy

While the rapidly changing health care environment will profoundly impact all members of the health care system, a stakeholder group that cannot be overlooked is the health care workforce itself. As the system evolves from a volume-based, supply-oriented health care delivery model to a more patient-centered, value-driven system of care, so, too, will the roles, responsibilities, demands and skills of the workers carrying out the day-to-day delivery of care. Crucial for success under a transformed health care system is a comprehensive strategy that addresses the health care workforce.

8.1 Context for Strategy Development

Section 3.13 briefly discussed the need to align the health care workforce with the vision for a transformed care delivery system. Following a roundtable conversation on the future of the health care workforce, the American Hospital Association identified a number of assumptions and recommendations to support the need to redevelop the capacity of the health care workforce. These recommendations included:[161]

- To function as seamless, efficient teams, all health care professionals (both current and future) need to be trained in inter-professional educational settings.
- The health care community must begin work now to design community-based care focusing on achieving and sustaining wellness instead of only intervening and treating illnesses.
- Primary health care should be centered around the patient and family in a user-driven design, in all aspects of practice.
- Hospitals should evolve from traditional "hospitals" to "health systems," partnering with community organizations and patients in order to advance the community's wellness and health needs.

One of the critical prerequisites to achieving the objectives of the SHSIP is an adequate and well-trained health care workforce that can operate effectively within a transformed value-based delivery system and that has the capacity to be continually learning.

[161] "Workforce Roles in a Redesigned Primary Care Model," American Hospital Association. Available at http://www.aha.org/content/13/13-0110-wf-primary-care.pdf.

8.2 Current State of Health Care Workforce

The West Virginia health care workforce employs more than 115,000 individuals.[162] Table 8.1 below breaks down health care employment by sector.

Sector	Total Employment	Total Wages (ths $)	Average Annual Wage
Ambulatory Healthcare Services	40,154	$1,865,725	$46,464
Hospitals	39,567	$2,027,863	$51,251
Nursing and Residential Care Facilities	18,599	$514,278	$27,651
Social Assistance	17,336	$301,349	$17,383
Total	**115,656**	**$4,709,215**	**$40,717**

Table 8.1 Health Care Industry Employment in West Virginia by Sector (Source: WVU College of Business and Economics)

Health care employment represents over 16% of total employment in West Virginia. Projected growth is low for the rest of the decade, at a rate of one to two percent in 2016 and 2017, and then tapering off to a lower rate of growth through 2020.[163] Like other industries in the state, health care is impacted by a general trend in the West Virginia economy: an older workforce and a significant number reaching retirement age within the next five years. Thus, West Virginia's health care workforce development strategy must address the replacement of retiring workers. It also must address the need for workers with different skills in a value-based system (such as team-based health care, care coordination and health coaching for chronic disease management) and the integration of community-based health resources such as community health workers, paramedicine workers, trained care coordinators and peer counselors.

Even in the current system, workforce distribution is uneven across the state. According to the federal Health Resources and Services Administration

[162] "2016 West Virginia Economic Outlook," West Virginia University College of Business and Economics. Available at http://www.be.wvu.edu/bber/outlook_pdfs/WV-Economic-Outlook-2016.pdf.
[163] "2016 West Virginia Economic Outlook," West Virginia University College of Business and Economics. Available at http://www.be.wvu.edu/bber/outlook_pdfs/WV-Economic-Outlook-2016.pdf.

(HRSA), of West Virginia's 55 counties, 28 are currently designated as primary care health professional shortage areas (HPSAs); 33 are mental health HPSAs; and 32 are dental HPSAs.[164] A large portion of the state is also a medically underserved area (MUA). Unlike HPSAs, which are re-evaluated with more regularity, many of West Virginia's MUA designates have not been re-evaluated since 1978, which makes them a less effective planning resource.

An important tool to understand the health care workforce in the state is a series of four reports by the West Virginia Rural Health Association (WVRHA). The WVRHA commissioned a study of the health care workforce supply from the West Virginia Rural Health Research Center, which was published in 2012 and utilized state health care licensure data.[165] In 2013, WVRHA completed a health care demand report to assess the demand for health care services.[166] For this second report, WVRHA contracted with the National Center for the Analysis of Healthcare Data (NCAHD). The report included data and visualizations in the form of maps to illustrate health care supply and demand within the state. The WVRHA, working in partnership with NCAHD, released updated supply and demand reports in 2014[167] and 2015.[168]

The 2015 workforce analysis by WVRHA indicates the following numbers of providers by specialty in the state:

- Audiologists (142)
- Advanced practice nurses (1,677), including 27 certified nurse specialists, 60 certified nurse midwifes, 546 certified registered nurse anesthetists and 1,278 nurse practitioners
- Chiropractors (262)
- Dentists (910) and dental hygienists (1,110)
- Diabetic educators (61)
- Dieticians (61)

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[164] This data is inclusive of geographic or low-income population HPSA designations only. It does not include other types of HPSAs, such as site-based or facility-based HPSAs. Additionally, in some of these counties only a portion of the county is designated. HPSA Find, Health Resources and Services Administration Data Warehouse. Available at http://datawarehouse.hrsa.gov/tools/analyzers/hpsafind.aspx.

[165] "Health Care in West Virginia: A Workforce Analysis," West Virginia Rural Health Association, 2012.

[166] "Health Care in West Virginia: A Workforce Demand Analysis," West Virginia Rural Health Association, 2013.

[167] "Health Care in West Virginia: A Workforce Supply and Demand Analysis Report," West Virginia Rural Health Association, 2014.

[168] "Health Care in West Virginia: A Workforce Supply and Demand Analysis Report," West Virginia Rural Health Association, 2015. Available at http://wvrha.org/wp-content/uploads/2015/12/2015-Draft-WV-Workforce-9-28-15.pdf.

- Occupational therapists (218) and occupational therapist assistants (137)
- Optometrists (237)
- Pharmacists (2,347)
- Psychiatrists (195)
- Psychologists (685)
- Podiatrists (39)
- Physical therapists (972)
- Speech language pathologists (776)
- Licensed social workers (2,050)
- Licensed graduate social workers (484)
- Licensed independent clinical social workers (307) and certified social workers (276)

The report also indicates there are 4,176 licensed allopathic physicians (MDs), of which 1,136 are primary care physicians, and 1,638 osteopathic physicians (DOs), of which 858 are primary care physicians. The primary care workforce also includes 771 physician assistants and 1,278 nurse practitioners.[169]

In 2014, the West Virginia Legislature passed House Bill 4245, which mandated annual reporting beginning in 2016 by six state health care licensing boards on their memberships' anticipated retirement dates, age, gender, percentage of time working direct services, percentage of time working administration and county of practice. These boards are the West Virginia Board of Medicine, the West Virginia Board of Examiners for Registered Professional Nurses, the West Virginia Board of Examiners for Licensed Practical Nurses, the West Virginia Board of Pharmacy, the West Virginia Board of Dentistry and the West Virginia Board of Osteopathy. The collection of this type of data will assist in conducting more precise health care workforce planning. The mandate, however, is only to report the numbers; the law does not identify an organization that is responsible for analyzing the data and making recommendations.

[169] "Health Care in West Virginia: A Workforce Supply and Demand Analysis Report," West Virginia Rural Health Association, 2015. Available at http://wvrha.org/wp-content/uploads/2015/12/2015-Draft-WV-Workforce-9-28-15.pdf.

8.2.1 Current Shortages and Misdistribution of Providers

As discussed in Section 3.13.4, a principal challenge to health care access in West Virginia is the distribution of providers relative to the population in urban versus rural areas. Because most health care providers reside in urban areas, there is a misdistribution (or undersupply) of providers in rural areas relative to the need for services. This misdistribution creates poor provider to population ratios, resulting in areas of the state being designated as MUAs or HPSAs and placing a burden on rural communities in terms of health care workforce recruitment and retention. Many West Virginia counties have a small population, and the loss or gain of just one provider can change a county's HPSA status.

It is important to understand HRSA's definition of a primary care HPSA, which is based on a physician to population ratio of 1:3,500. In other words, when there are 3,500 or more people per primary care physician, an area is eligible to be designated as a primary care HPSA. HRSA acknowledges the subjectivity of this definition:[170]

> While the 1:3,500 ratio has been a longstanding ratio used to identify high-need areas, it is important to note that there is no generally accepted ratio of physician to population ratio. Furthermore, primary care needs of an individual community will vary by a number of factors such as the age of the community's population. Additionally, the formula used to designate primary care HPSAs does not take into account the availability of additional primary care services provided by nurse practitioners and physician assistants in an area. Other sources describing primary care supply use other ratios; for example, a ratio of one primary care physician to 2,000 population.

Patient-centered medical home (PCMH) staffing models recommended by the American Medical Association and the Agency for Healthcare Research and Quality (AHRQ) recently advocated a

[170] "Shortage Designation: Health Professional Shortage Areas & Medically Underserved Areas/Populations," Health Resources and Services Administration, U.S. Department of Health and Human Services. Available at http://www.hrsa.gov/shortage/.

ratio of one primary care physician to 2,150 population.[171] If either this ratio or the 1:2,000 ratio were adopted, the impact for West Virginia would be a startling near doubling of the additional physicians needed to alleviate shortages.

While West Virginia's overall provider to population ratios are comparable or superior to U.S. medians, ratios vary widely across the state, as illustrated in Table 8.2.[172]

Ratio	U.S. Median	WV Overall	WV Minimum	WV Maximum
Primary care physician to population	1:1,990	1:1,290	1:4,690	1:640
Dentist to population	1:2,590	1:2,030	1:11,780	1:880
Mental health provider to population	1:1,060	1:910	1:9,010	1:420

Table 8.2 Provider to Population Ratios in West Virginia (Source: County Health Rankings, Robert Wood Johnson Foundation)

Dental HPSAs are based on a dentist to population ratio of 1:5,000, and mental health HPSAs are based on a psychiatrist to population ratio of 1:30,000. While mental health HPSA designations sometimes take into account "core mental health providers,"[173] most mental health HPSA designations are based only on the ratio of psychiatrists to population.[174]

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[171] Mitesh Patel et al., "Estimating the staffing infrastructure for a patient-centered medical home," The American Journal of Managed Care. Available at http://www.ajmc.com/journals/issue/2013/2013-1-vol19-n6/Estimating-the-Staffing-Infrastructure-for-a-Patient-Centered-Medical-Home/.
[172] "2016 County Health Rankings: West Virginia," County Health Rankings, Robert Wood Johnson Foundation. Available at http://www.countyhealthrankings.org/sites/default/files/state/downloads/CHR2016_WV.pdf.
[173] Core mental health providers include psychiatrists as well as clinical psychologists, clinical social workers, psychiatric nurse specialists, and marriage and family therapists.
[174] "Shortage Designation: Health Professional Shortage Areas & Medically Underserved Areas/Populations," Health Resources and Services Administration, U.S. Department of Health and Human Services. Available at http://www.hrsa.gov/shortage/.

Overlap among the three types of HPSAs is common; however, the same counties do not always appear on all three lists. For example, Jefferson County in the Eastern Panhandle is a mental health HPSA but not a primary care or dental HPSA, while Marshall County in the Northern Panhandle is a primary care HPSA but not a dental or mental health HPSA. Similarly, Boone County in the southwestern part of the state is a dental HPSA but not a primary care or mental health HPSA. This variability in access by specialty and location further complicates planning and implementation of health care workforce initiatives.

8.2.2 Projected and Anticipated Shortages and Misdistribution of Providers

In 2014-2015, West Virginia's three state-funded medical schools collectively graduated 348 students.[175] For the 2014-2015 academic year, West Virginia had more students enrolled in medical or osteopathic school per population than any other state, with 84 students per 100,000 population.[176] West Virginia's medical schools emphasize primary care, and as a result, graduate many students who want to practice primary care. For example, among the graduating class of 2015, approximately 55 percent of students entered primary care residencies—defined as family medicine, internal medicine, internal medicine/pediatrics, OBGYN and pediatrics.[177] However, even though these students enter primary care residencies, for many of them it will not ultimately translate to practicing in one of the state's highest-need areas or even practicing in West Virginia.

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[175] "2015 West Virginia Health Sciences and Rural Health Report Card," West Virginia Higher Education Policy Commission. Available at http://www.wvhepc.edu/wp-content/uploads/2016/01/2015-Health-Report-Card.pdf.
[176] 2015 State Physician Workforce Data Book, Association of American Medical Colleges. Available at https://www.aamc.org/data/workforce/reports/442830/statedataandreports.html.
[177] "2015 West Virginia Health Sciences and Rural Health Report Card," West Virginia Higher Education Policy Commission. Available at http://www.wvhepc.edu/wp-content/uploads/2016/01/2015-Health-Report-Card.pdf.

Looking ahead to the future health care needs of the state, West Virginia anticipates a shortage of primary care physicians. Section 3.13.1 referenced a report by the Robert Graham Center that examines the primary care needs of West Virginians from 2010-2030.[178] This report accounts for a conflux of factors driving increased demand for primary care providers: an aging patient population, population growth and a larger number of insured patients under the ACA. In conclusion, the Graham Center projected that West Virginia would need an additional 190 primary care physicians by 2030, or a 14% increase over the then-current workforce of 1,330 primary care physicians (see Figure 8.1).

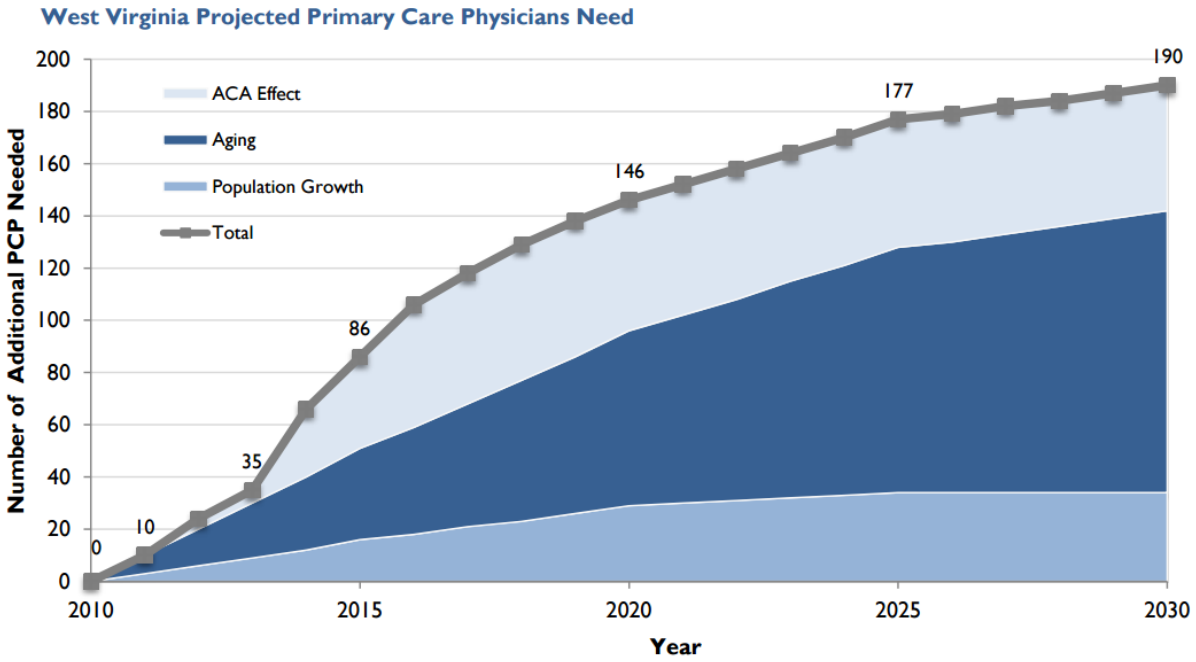


Figure 8.1 Additional Primary Care Physicians Needed in West Virginia, 2010-2030 (Source: Robert Graham Center)

Specifically, West Virginia's increased need for primary care physicians (PCPs) stems from the three driving factors as follows:

- 56% (108 PCPs) from increased utilization due to aging

[178] "West Virginia: Projecting Primary Care Physician Workforce," Robert Graham Center. Available at http://www.graham-center.org/content/dam/rgc/documents/maps-data-tools/state-collections/workforce-projections/West%20Virginia.pdf.

- 25% (48 PCPs) due to a greater insured population following the ACA
- 17% (34 PCPs) due to population growth

Importantly, the projection by the Graham Center is a baseline to maintain current levels of access. It does not take into account the need to replace retiring physicians or the need to bolster primary care as a strategy for health care delivery transformation.

The largest proportion of rural primary care physicians in the state are family physicians. Many of these physicians are graduates of the state's nine family medicine residencies (allopathic and osteopathic), which collectively produce 48 graduates per year.[179]

Historically, not all of these programs have filled their available slots each year due to low interest on the part of medical students (For example, in 2016, only 34 of the 48 training slots were filled.) Thus, challenges remain in attracting medical students to the main primary care specialty.

Over the last decade, approximately half of West Virginia's family medicine residency graduates have stayed and located in the state to practice, leading to an annual output of about 20 in-state family physicians; the number of general internal medicine residency graduates staying in the state and practicing has routinely been in the single digits. To reach the estimated need for 190 additional primary care physicians by 2030 would require an increase in output of about 18-20 physicians a year, or a doubling of current output to meet projected needs.[180]

This gap is unlikely to be addressed by family medicine providers moving in from out of state because other states have similar shortage trends. The need for more family physicians to lead rural health care teams will have to be met by improving recruitment of West Virginia family medicine residency graduates to these practice sites and then focusing on their retention once they arrive. Additionally, non-

[179] Calculated via residency directories from American Academy of Family Physicians and the American Osteopathic Association.
[180] "West Virginia: Projecting Primary Care Physician Workforce," Robert Graham Center. Available at http://www.graham-center.org/content/dam/rgc/documents/maps-data-tools/state-collections/workforce-projections/West%20Virginia.pdf.

physician providers are critical components of rural health care teams, and complementary recruitment and retention activities for these providers are essential.

In addition to primary care, West Virginia faces shortages of specialty providers, particularly in many rural areas of the state. In its 2015 workforce supply and demand analysis, the WVRHA evaluated the proximity of specialty physicians to areas of need based on various diseases and medical outcomes. As a result, WVRHA identified eight specialties of significance and assessed their demand (also listed in Section 3.13.3): cardiology, nephrology, gastroenterology, orthopedic surgery, psychiatry, oncology, general surgery and endocrinology. The misdistribution of providers in these specialties presents a great challenge to the ability to manage prevalent chronic conditions, such as cardiovascular disease and diabetes, in certain populations—a foundational element of population health management and one of the SHSIP objectives. For example, Figure 8.2 illustrates the supply of endocrinologists according to WVRHA's analysis.

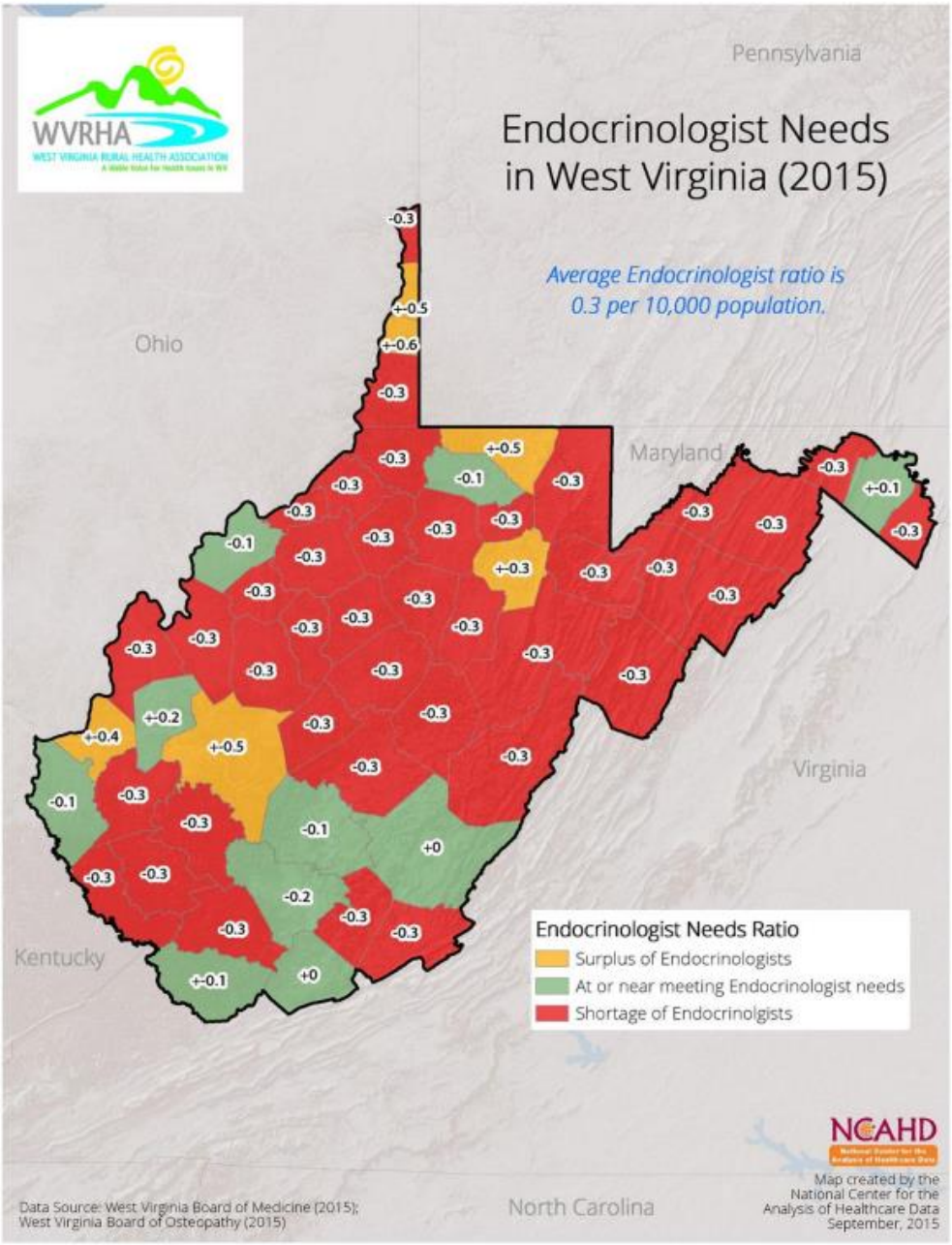
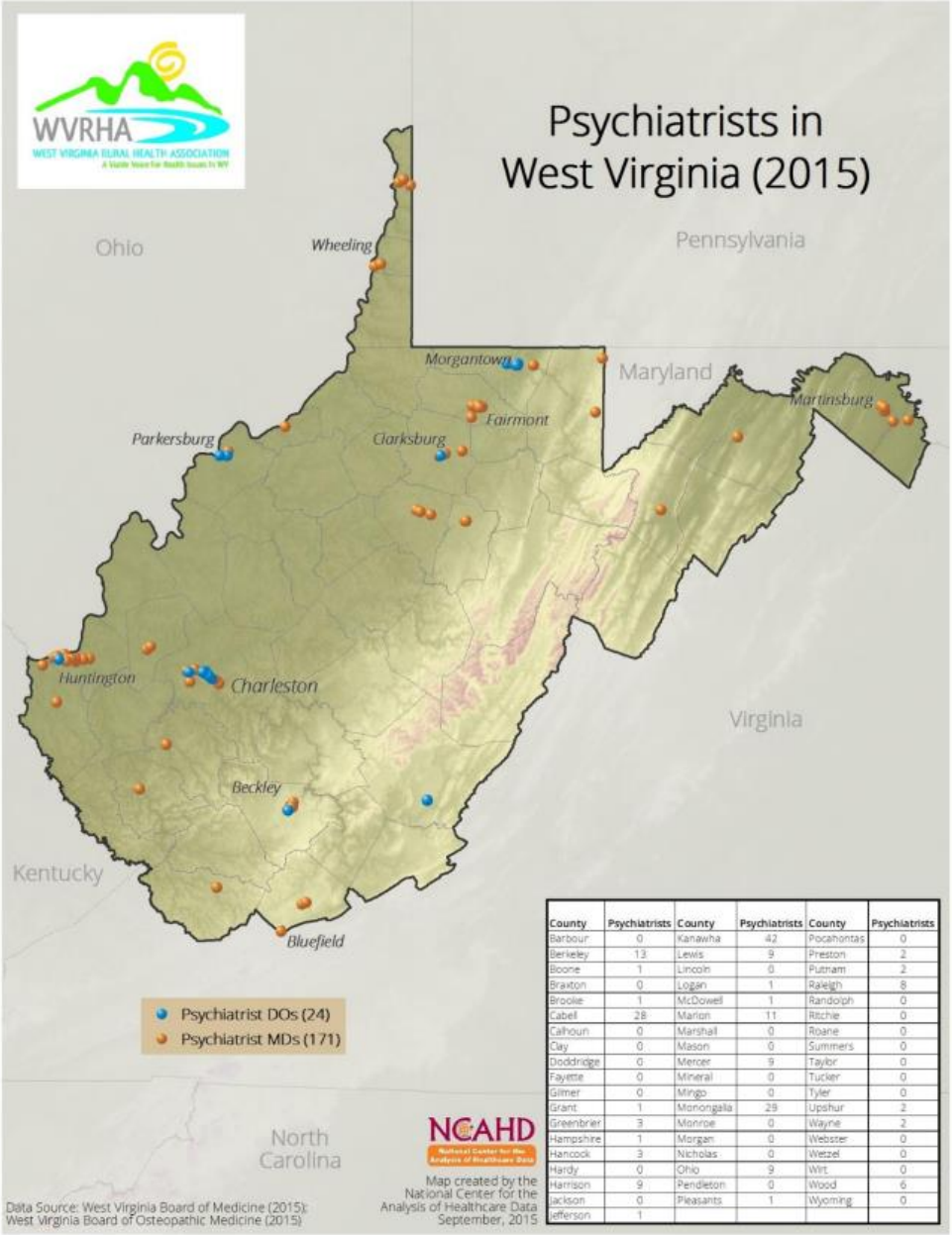


Figure 8.2 Specialist Needs in West Virginia—Example: Endocrinology (Source: WVRHA)

Another particularly concerning misdistribution of providers across the state is that of mental health providers. As discussed in Section 3.5.7, West Virginia ranks 34th in the nation for access to mental

health care.[181] Access varies dramatically between rural and non-rural areas, with provider to population ratios swinging from 1:9,010 in Mason County to 1:420 in Ohio County.[182] Figure 8.3 illustrates the location of psychiatrists across West Virginia.



County	Psychiatrists	County	Psychiatrists	County	Psychiatrists
Barbour	0	Kanawha	42	Pocahontas	0
Berkeley	13	Lewis	9	Preston	2
Boone	1	Lincoln	0	Putnam	2
Braxton	0	Logan	1	Raleigh	8
Brooke	1	McDowell	1	Randolph	0
Cabell	28	Marion	11	Ritchie	0
Calhoun	0	Marshall	0	Roane	0
Clay	0	Mason	0	Summers	0
Doddridge	0	Mercer	9	Taylor	0
Fayette	0	Mineral	0	Tucker	0
Gilmer	0	Mingo	0	Tyler	0
Grant	1	Monongalia	29	Upshur	2
Greenbrier	3	Monroe	0	Wayne	2
Hampshire	1	Morgan	0	Webster	0
Hancock	3	Nicholas	0	Wetzel	0
Hardy	0	Ohio	9	Wirt	0
Harrison	9	Pendleton	0	Wood	6
Jackson	0	Pleasants	1	Wyoming	0
Jefferson	1				

Figure 8.3 Psychiatrists in West Virginia (Source: WVRHA)

[181] AIMS Center, University of Washington. Available at http://aims.uw.edu/collaborative-care.
[182] County Health Rankings, Robert Wood Johnson Foundation. Available at http://www.countyhealthrankings.org/app/west-virginia/2016/measure/factors/62/map.

Figure 8.4 illustrates the current distribution of active licensed psychologists—both doctoral and master's level—in the state.[183]

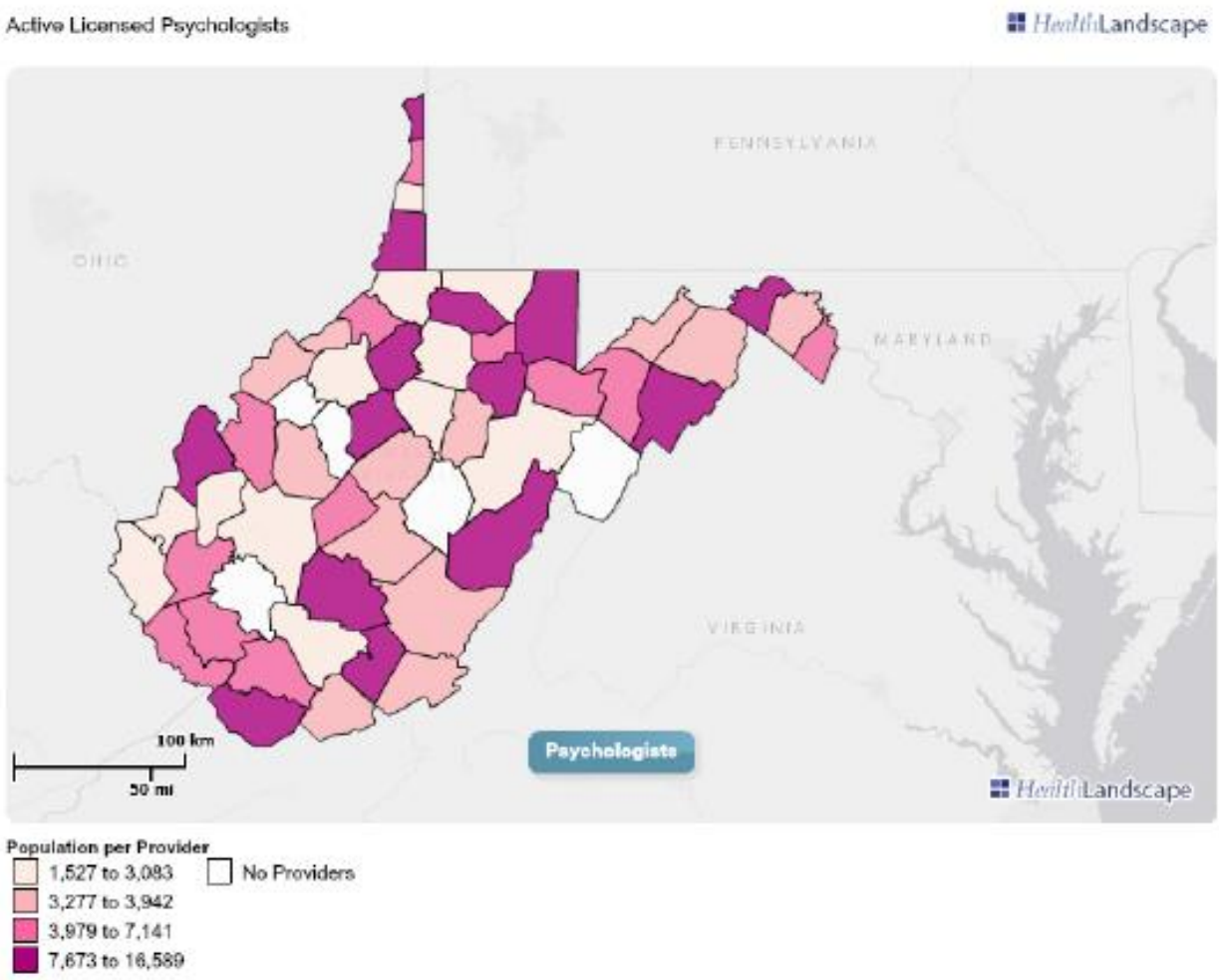


Figure 8.4 Ratio of Population per Active Licensed Psychologist in West Virginia (Source: American Medical Association)

The shortage of mental health providers—particularly in rural areas of the state—presents a major challenge to the goal of improving population health, as behavioral health has far-reaching consequences on the overall health care system. As highlighted in Section 3.5.6, there is a strong connection between behavioral health and chronic disease, and chronic disease patients often become high-cost utilizers of the health care system.

[183] Appendix C contains a table with the corresponding data for Figure 8.4.

Looking ahead, the need for mental health providers will accelerate due to the increasing prevalence of substance abuse problems in West Virginia and the frequent mental health co-morbidities in patients. Additionally, integrating primary care and behavioral health care—one of the goals of health care transformation—will require more training and will exacerbate the need for more mental health nurses, psychiatrists and mental health social workers in the next decade. Considering recommended provider ratios, the current 33 geographic or low-income population mental health HPSAs will require dozens of additional psychiatrists, social workers and nurse specialists to meet the need; many more providers will be needed if the high needs and the rural misdistribution are taken into account.

8.2.3 Accelerating and Intervening Events That Could Impact Provider Availability

Several intervening events will likely impact provider availability and need in the state, including aging of the workforce, the need for team-based care coordination, increased demand for IT services and increasing integration of mental health services and primary care.

As WVRHA notes, "identifying areas where there are both an aging population and aging health care workforce is critical in strategic planning for health care training, recruitment and retention programs." West Virginia's primary care physicians average age 49; nurse practitioners, age 41; and physician assistants, age 40. Further, more than one in three primary care physicians in the state are age 55 or older—a troubling indictor that a significant portion of the primary care providers in the state will exit the workforce in the near term as they reach retirement age.[184]

[184] "Health Care in West Virginia: A Workforce Supply and Demand Analysis Report," West Virginia Rural Health Association, 2015. Available at http://wvrha.org/wp-content/uploads/2015/12/2015-Draft-WV-Workforce-9-28-15.pdf.

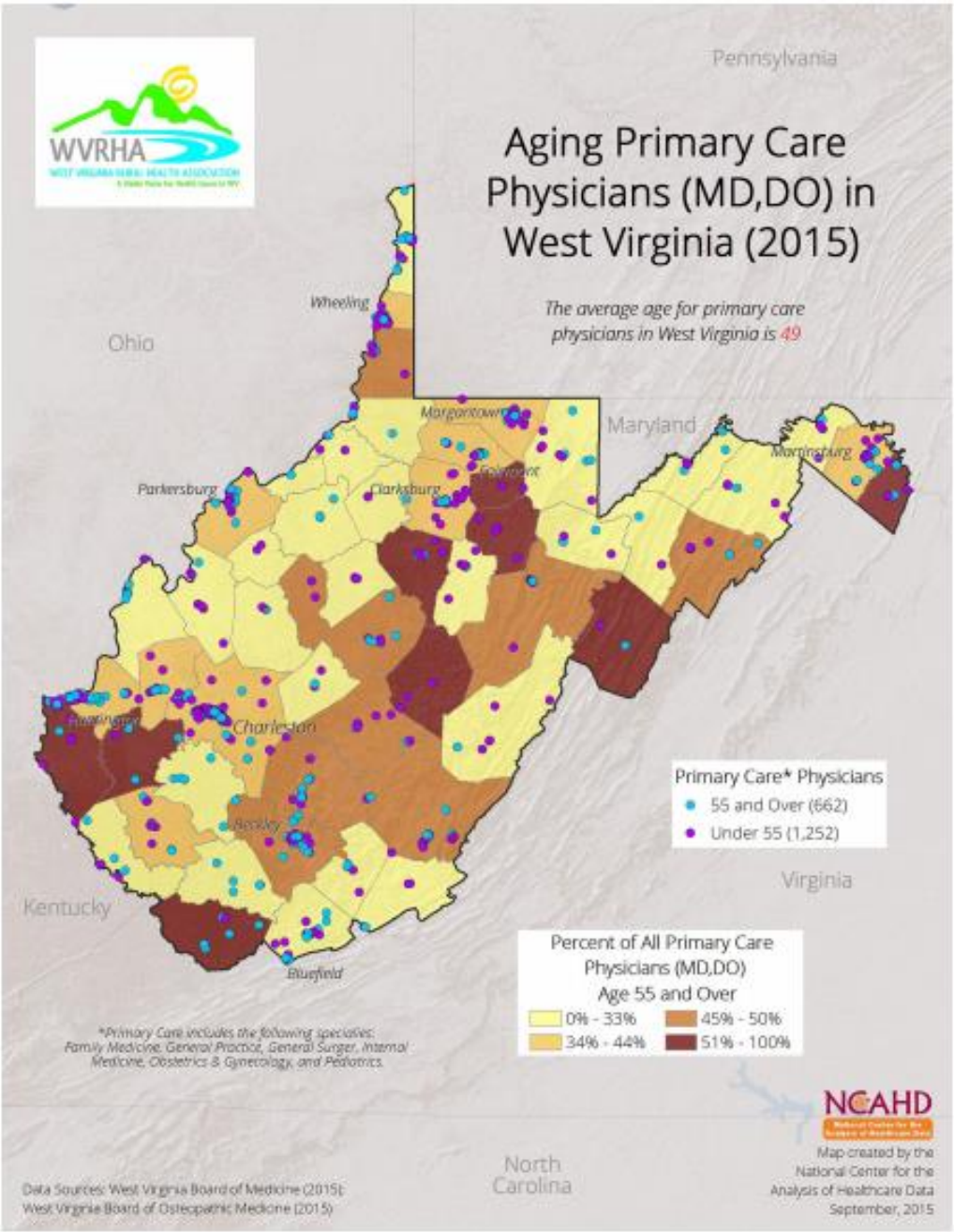


Figure 8.5 Aging Primary Care Physicians in West Virginia (Source: WVRHA)

The aging of West Virginia's health care workforce is a significant challenge that could impact the transformation of the health care delivery system. Movement to alternative payment and delivery models such as accountable care organizations and integrated delivery networks could accelerate retirement in older providers who are unwilling to participate in these new models. This outcome is

particularly likely with solo practitioners or those providers in smaller or rural practices that may lack the capital, resources, expertise or support to make the needed clinical system transformations and investment in advanced health IT systems.

A second factor that will affect provider need and availability is the adoption of team-based care, which will create additional need for nurse coordinators, mental health specialist nurse coordinators and community health workers. Non-physician staffing ratios in patient-centered medical home practices exceed those of non-PCMH practices by 10-20%.[185] Thus, transformation to this model of care in West Virginia will put pressure on the system and require more workers. Additionally, while economies of scale in staffing are more easily reached in practices with over 12 physicians, such practices are uncommon in rural West Virginia, where one- or two- provider practices are still common due to the low rural population density. Finally, the state leads the nation in the per capita ratio of federally qualified health centers (FQHCs) to population, and the FQHCs provide a huge proportion of the primary care in the state. However, they face similar challenges in recruiting physicians and use the multidisciplinary team approach to extend their access and provide more care.

Lastly, data coordination and measurement of performance and productivity play a substantial role in health care transformation and will accelerate the need for providers in the state. In the coming years, IT services and the IT workforce will need to be expanded, not only to meet data coordination needs, but also to facilitate the proliferation of telemedicine and electronic medical records. Coordination of data, quality reporting and collaboration for community and clinical research all require robust IT connections and staffing.

[185] Deborah N. Peikes et al., "Staffing Patterns of Primary Care Practices in the Comprehensive Primary Care Initiative," Annals of Family Medicine. Available at http://www.annfammed.org/content/12/2/142.full.

8.2.4 Current Education and Training Programs for the Health Care Workforce

West Virginia institutions of higher education offer an array of health profession training programs, many of which emphasize training in primary care and the importance of providing care in rural and underserved areas of the state. These education and training programs are the foundation of statewide efforts to increase the supply and more effective distribution of primary care providers.

West Virginia has one dental school and multiple dental hygiene programs: two associate's degree, two bachelor's degree and one master's degree. The state has three pharmacy schools and three physician assistant programs, and five institutions offer master's and/or doctoral level nursing degrees.

The Rural Health Initiative is the state-funded rural health care program for medical students and residents (and some additional health profession students, such as nursing and dentistry students). In 2011, the initiative was redesigned to allow the West Virginia Higher Education Policy Commission (WVHEPC) to grant the majority of the funding to the state's three academic health centers—located at Marshall University, the West Virginia School of Osteopathic Medicine and the West Virginia University Health Sciences Center—to work toward four shared goals:

- Increase the recruitment of health care providers to rural areas
- Increase the retention rate of health care providers in rural areas
- Develop pipeline programs to enhance student interest in rural health care careers
- Support the involvement of rural areas of the state in the health education process

In response, the medical schools have created programs that emphasize customized rural experiences for targeted students who express an interest in rural health care careers. The redesigned program shows early signs of success; however, the long physician training timeline means it will be a few more years before the state begins to see the results of the program and can conclude whether the new approach is moving the needle in placing more physicians in

rural and underserved areas.

West Virginia also significantly invests in pipeline programs, community-based training for students in primary care training programs and incentive programs for primary care providers. A host of pipeline programs allow students to explore health care careers and are offered in middle school, high school and college. The state's three academic health centers partner with undergraduate institutions, high schools and communities across the state to host enrichment programs like health career clubs, summer camps and shadowing programs. Many of these activities are conducted in partnership with the state's five regional Area Health Education Centers.

Through funding from the U.S. Department of Labor, West Virginia offers retraining opportunities for the long-term unemployed population. After six months of unemployment—and with unemployment benefits likely to be exhausted—workers may participate in Let's Train WV, a program that provides paid skills training and matches participants with employers seeking new workers. To qualify, participants must train in high-demand fields, one of which is health care.

West Virginia further offers retraining opportunities specific to dislocated coal miners impacted by layoffs and mine closures. Supported by a U.S. Department of Labor grant, WorkForce West Virginia provides up to $5,000 per participant for skills training in a high-demand occupation, as well as up to $100 per week to cover gas, food and child care costs. This program, along with Let's Train WV, is an opportunity to develop more health care workers while simultaneously reducing unemployment.

West Virginia leverages other federal programs such as the National Health Service Corps and offers several state-funded incentive programs designed to attract a variety of primary care providers to underserved areas. These programs include the Bureau for Public Health's State Loan Repayment Program and the Recruitment and Retention Community Project, and the WVHEPC's Health Sciences Service Program. They offer between $10,000 and $50,000 in assistance to primary care providers in exchange for at least a two-

year service obligation. Additionally, through the state-funded Rural Health Initiative, all three medical schools offer incentives for students to complete residency training within the state.

Finally, the WVU Department of Family Medicine Rural Scholars Program has been particularly successful at placing primary care physicians in West Virginia. Figure 8.6 below illustrates placement of the last seven years of graduates in the WVU system, in which 32 of 33 graduates were retained in the state.

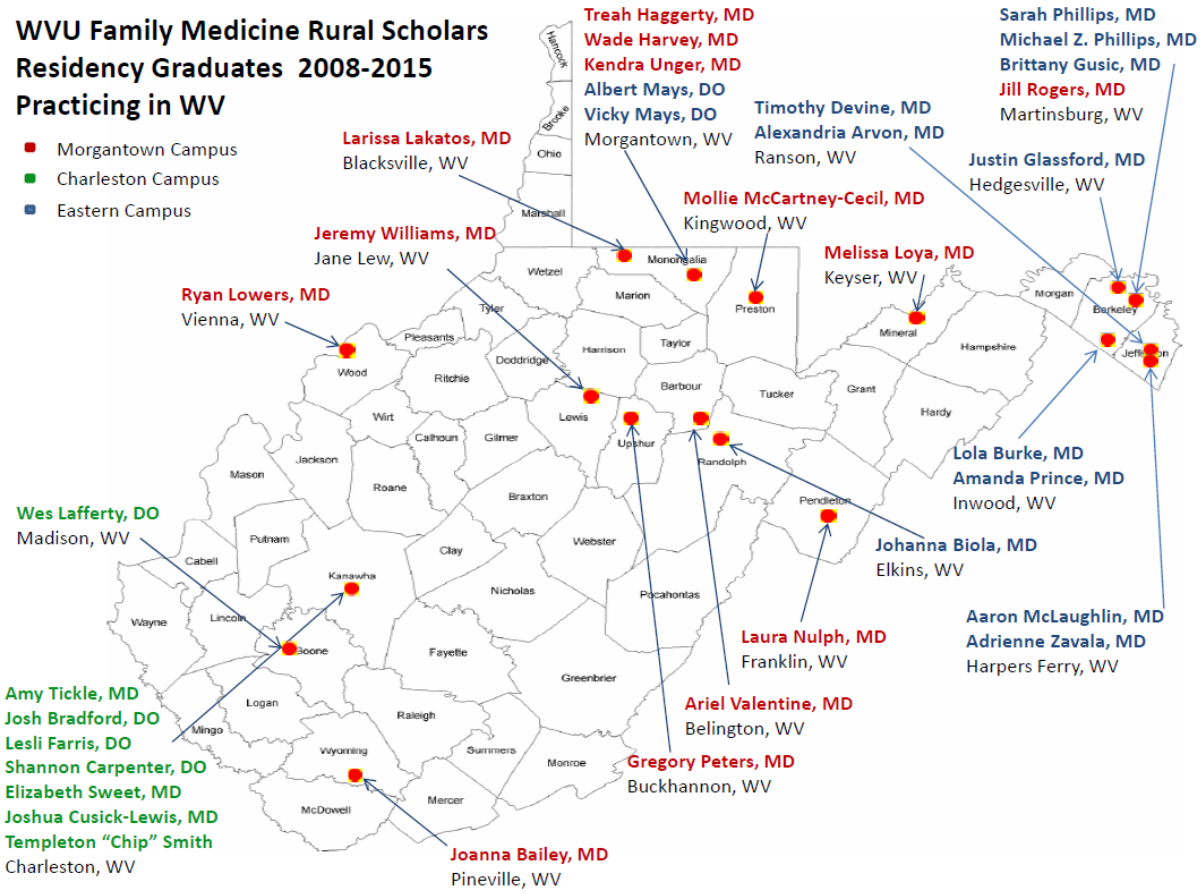


Figure 8.6 WVU School of Medicine Rural Scholars Program—Graduates Practicing in West Virginia, 2008-2015 (Source: WVU Family Medicine Data)

8.3 Assessment of Current Training and Skill Development Infrastructure and Future Needs

Most commentators on the transformation of care delivery to accommodate the transition to value-based health care and to achieve the Triple Aim acknowledge that changes will be needed in the process of delivering care, which will require training or retraining at many levels. For example, nursing staff may need additional training for care coordination with chronically ill patients. Physicians who have been trained to think and act autonomously may need training for teamwork and shared decision-making. New types of care team members, such as community health workers, may require adaptation to state education and training requirements, in addition to certification at the state level for augmenting preventive, primary and behavioral health care. Staff in acute-care settings and those working in long-term care or community settings may need to learn new communication protocols to best serve patients.

Many of these training programs will involve retraining existing workforce members who already are engaged in care delivery on a full-time basis. Training programs will need to be tailored to accommodate the schedules and demands of these workers. In-service training modules, team simulations and remote and on-demand virtual training resources using adult learning methods will be crucial tools for disseminating these new best practices for high-value care delivery.

Use of data to drive improvement, communication skills, motivational interviewing and care team coordination are key skills to be developed, taught and supported as part of the training process. Training programs for existing health professionals also will need to integrate this skill set development to ensure future workers have the skills they need to succeed as health team members.

A number of specific ongoing training initiatives are described throughout the SHSIP.

8.4 Process and Access to Data to Continually Assess and Monitor Health Care Workforce

As noted, West Virginia has benefited from the work of WVRHA as the lead organization to coordinate efforts for data collection to address current health

care workforce supply and demand metrics. This framework provides a unified approach to facilitate accurate projections of future supply and demand of West Virginia's health care workforce. Along with supporting legislation, it also creates a means of identifying specific actions that are necessary to ensure an adequate and trained workforce will be available to deliver care under transformed models of care and payment.

Where West Virginia must improve is in officially tasking an agency or organization with the overall responsibility for health care workforce planning and implementation. Until such an organization is identified, West Virginia's ability to respond to health care workforce needs will continue to underperform.

8.5 Strategies for Rollout and Implementation

The strategies that follow are designed to address six principal needs:

- For ongoing evaluation
- For primary care physicians
- For nurse care coordinators and advanced practice nurse professionals
- For community health workers
- To fully leverage technology in care delivery
- For mental health specialists, mental health nurses and social workers

Each group of needs is covered individually in the remainder of this section. At the conclusion of this section, Table 8.4 summarizes all recommended strategies for the health care workforce in West Virginia.

Addressing the Need for Ongoing Evaluation

Strategy
Establish a state Health Care Workforce Planning Group to regularly assess workforce needs and provide recommendations.

As discussed in Section 6.4, through the SIM design process a workgroup of diverse stakeholders convened to analyze the current state of West Virginia's health care workforce and make recommendations for adjustment to meet future needs. It became clear, however, that providing strategic guidance to state and health system leaders would require more than a one-time assessment. Instead, implementing a structure

that would allow this group to continue to meet after the conclusion of the SIM project would ensure the group regularly assesses the changing health care workforce needs of the state and provides recommendations to meet those needs.

To that end, a central strategy for workforce development is the establishment of a Health Care Workforce Planning Group, whose responsibilities will be:

- To identify, assess, educate and promote training of the health care workforce.
- To develop a PCMH Training and Support Center to develop PCMH nurse coordinator and staff training, offer certification, establish standards, monitor workforce needs and offer on-site, online and in-practice training options for West Virginia rural practices.
- To draft a biennial health care workforce status report for the Governor's Office, the West Virginia Legislature, relevant state agencies and the public.

The WVHTA will help establish the Health Care Workforce Planning Group and guide its ongoing efforts to evaluate workforce needs in the state.

Addressing the Need for Primary Care Physicians

One of the most pressing needs of the next decade is for more primary care physicians in rural West Virginia. Sections 8.2.1 and 8.2.2 describe in detail the current and projected misdistribution of primary care physicians across the state and the estimation of an additional 190 primary care physicians needed by 2030. The challenge ahead lies in finding these added physicians and incentivizing them to practice in shortage areas in rural West Virginia.

First, although West Virginia produces an above-average number of medical school graduates compared to national benchmarks, retention in West Virginia—and particularly rural West Virginia—is lackluster. WVHEPC annually tracks retention of its medical school graduates, looking at retention overall, in primary care and in rural areas. For the graduating classes of 2005-2010, 34% of graduates (460) were retained to practice in state, 21% of graduates (281) were practicing primary care, and 10% of graduates (136)

were practicing in rural areas.[186] These percentages have remained relatively stable over the last 25 years; however, the actual number of graduates has grown as all three medical schools have increased their class sizes.

Institution	Total Number	In Practice in WV	In Primary Care in WV	In Rural Areas of WV
Marshall University	244	78 (32%)	46 (19%)	12 (5%)
West Virginia School of Osteopathic Medicine	572	195 (34%)	133 (23%)	79 (14%)
West Virginia University	537	187 (35%)	102 (19%)	45 (8%)
TOTAL	1,353	460 (34%)	281 (21%)	136 (10%)

Table 8.3 Retention of Medical School Graduates to Practice in West Virginia, Primary Care and Rural Areas (Source: WVHEPC)

Over the past 25 years, strategies to increase the proportion of graduates choosing rural primary care careers have met with somewhat limited success, although fewer graduates would likely have chosen rural care in the absence of policies and scholarships. Even with the redesigned Rural Health Initiative and the success of programs like the Rural Scholars, West Virginia still needs to identify strategies to produce an additional 20 rural primary care physicians annually between now and 2030, to meet the projected need for 190 (per Graham Center estimates). The current production of about 48 family medicine graduates annually will need to be increased by 50%, a reachable but challenging task in the current

Strategies

Promote strategies aimed at retention of medical school graduates, particularly in primary care.

Support and expand the Rural Health Initiative, residency incentives and loan repayment programs.

Expand the Rural Scholars Program to all family medicine programs.

Support using new models to address the primary care physician shortage.

[186] "2015 West Virginia Health Sciences and Rural Health Report Card," West Virginia Higher Education Policy Commission. Available at http://www.wvhepc.edu/wp-content/uploads/2016/01/2015-Health-Report-Card.pdf.

health care reform era.

Retention and recruiting also will be a challenge in the coming decade due to low interest in family medicine and other primary care specialties among students. For example, in 2016 only 8.7% of medical students chose family medicine residencies. Of the 3,260 residency training positions offered in family medicine, only 41.7% were filled with medical students from the U.S.[187]

Recommended Strategies

a. Promote strategies aimed at retention of medical school graduates in West Virginia, particularly in primary care.
b. The Rural Health Initiative, primary care residency incentive programs and loan repayment programs need to be supported and expanded if West Virginia is expected to increase retention by 50% from current rates.
c. Expand the Rural Scholars Program to all of the state's family medicine programs.
d. Due to the challenges of rural recruitment and the flat growth curve of physician placement in rural West Virginia, the state and its health systems should support using new models to address the primary care physician shortage. New strategies, such as the Rural Interdisciplinary Medical Home model (RIM), the Spoke and Wheel Model, the Medical Center linkage model and the Rural Telemedicine Outreach Model, have shown promise here and in other states. These models promote:[188]
    - The use of nurses and advanced practice professionals as part of physician-led teams to expand access in rural areas
    - Use of outreach practitioners in "spoke" cities to spend part of their time meeting remote rural needs
    - Further expansion of primary care rural outreach networks from larger health systems
    - Expanded use of telemedicine for mental health and other specialty care to rural practices that cannot sustain full-time specialists in these fields

[187] "2016 Match Results for Family Medicine," American Academy of Family Physicians. Available at http://www.aafp.org/medical-school-residency/program-directors/nrmp.html.
[188] Dana E. King, Lew Holloway and Robert Walker, "Expanding models for rural primary care in West Virginia," West Virginia Medical Journal.

Addressing the Need for Nurse Care Coordinators and Advanced Practice Nurse Professionals

Nurses: According to recent analyses, it would take the average provider 17.4 hours a day to address the medical and prevention needs for a panel of 2,000 patients.[189] Applying the current definition for HPSAs (1:3,500), it would require the provider to dedicate more than 30 hours a day to care for the assigned population of 3,500 patients. While this expectation is obviously unrealistic, it is the reality, given the current definition of "shortage" and the current provider ratios in rural West Virginia.

Strategies

Establish a state PCMH Training and Support Center to coordinate and accelerate training of the necessary nurses and advanced practice nurse professionals needed for health care transformation and medical home models.

Strengthen statewide training through additional faculty, nursing school slots and specialized training.

To extend care to more patients, many practices are using a TeamSTEPPS model that utilizes more nursing staff and pre-visit nurse coordinators to increase patient flow, increase access and see more patients with higher quality than traditional staffing ratios have experienced. Increasing team care is an evolving model that promises to increase patient access and extend care to more people in rural areas. The situation will be similar for dental practices wanting to expand to reach rural populations using team care.

Because West Virginia lacks sufficient training for nurse care coordinators, the state will need to develop additional training in order to progress along the health care transformation spectrum. Currently, there are no certified nurse coordinator programs in the state; as a result, individuals interested in formal training have to seek training in other states (for example, the Geisinger Navigator program in Pennsylvania) on team care and how to address "high utilizers" in primary care. Establishing such training programs in the state will promote the development and expansion of the PCMH model.

Advanced practice nurses: Advanced practice nurses also can play a crucial role in rural West Virginia, both as part of multi-provider offices and in

[189] Thomas Bodenheimer and Hoangmai H. Pham, "Primary Care: Current Problems And Proposed Solutions," Health Affairs. Available at http://content.healthaffairs.org/content/29/5/799.full.

independent practices. Although they are distributed throughout the state similarly to other health professionals, they offer a potentially vital way to extend outpatient primary care and preventive care services into rural areas. In fact, graduates from family nurse practitioner programs consistently have high retention rates—with 82% of West Virginia University's 2014 graduating class practicing in West Virginia, compared to 34% of medical school graduates from the graduating classes of 2005-2010.[190] Because these family nurse practitioner graduates are trained and educated to deliver primary care, they are a promising pool of providers that should be leveraged to reach rural communities.

In 2016, the West Virginia Legislature enacted HB 4334 that allows advanced practice nurses to receive new status and prescribing privileges and removes the collaborative agreement after a specified number of years' experience. A key argument in support of this legislation was that it will improve access to care of the underserved, which includes uninsured, underinsured, Medicaid recipients, disabled, poor and rural residents.

Figure 8.7 illustrates the current distribution of nurse practitioners in the state.[191]

[190] "2015 West Virginia Health Sciences and Rural Health Report Card," West Virginia Higher Education Policy Commission. Available at http://www.wvhepc.edu/wp-content/uploads/2016/01/2015-Health-Report-Card.pdf.

[191] Appendix C contains a table with the corresponding data for Figure 8.7.

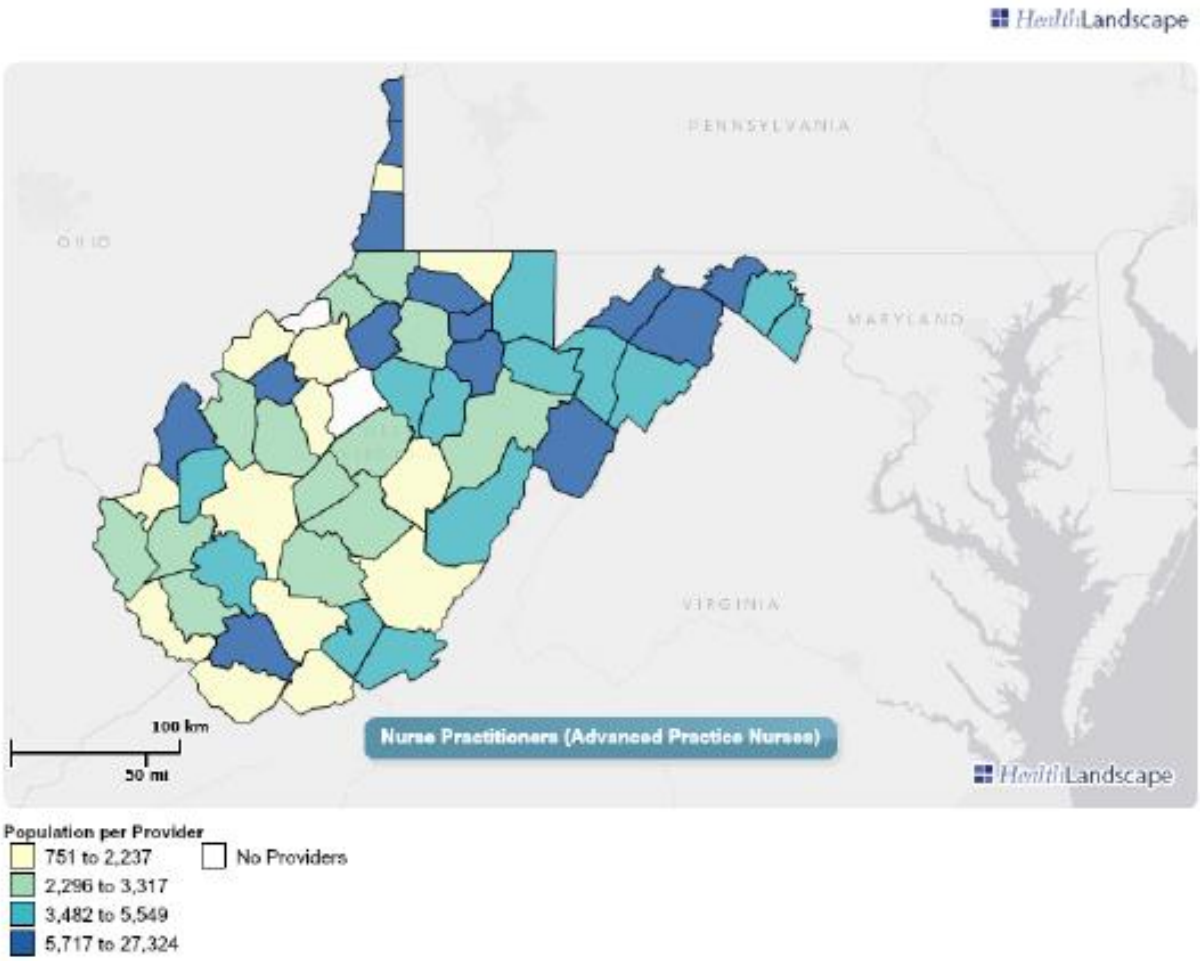


Figure 8.7 Ratio of Population per Nurse Practitioner in West Virginia (Source: American Medical Association)

Advanced practice nurses often face the same disincentives as other health care providers when considering locating to rural areas, including social and professional isolation, lack of health care infrastructure and spousal occupational issues. Thus, for the state to succeed in using this model, it must continue to offer loan repayment, scholarships and incentives for advanced practice nurses to undertake rural practice.

To meet expanded nursing needs, West Virginia must improve access to in-state advanced practice nursing programs. At the doctoral level particularly, it is currently not uncommon for nursing students to enroll in out-of-state online programs due to the lack of programs within West Virginia. Additionally, the nursing faculty shortage persists in the state and is compounded by a host of factors: more competitive wages in direct care

luring away faculty, the nearing retirement of many nurse educators and an increasing emphasis on nursing faculty attaining doctoral degrees.

Addressing the Need for Community Health Workers

Trends like ongoing health care transformation, increased need for team care and increasing rates of chronic disease in West Virginia have produced a clear need for more community health workers. Community health workers include a variety of professionals—health navigators, health educators, peer counselors and community outreach workers—working "at the interface of health care and community."[192] As discussed in Section 5.2, these models have proven successful and cost-effective, especially in underserved, low-income communities.

Strategies

Study and evaluate a variety of models to determine how best to train and use community health workers.

Develop community health workers with medical, health education and social worker skills to address growing demands and complex needs.

Expand the use and training of paramedics in rural communities.

The role of a community health worker is to serve as a partner and intermediary between providers and patients. They help providers understand their patients' questions, concerns or barriers to improved health; they also interpret providers' recommendations for patients—whether literally translating from English into another language, or figuratively from medical jargon into lay language.[193]

In addition to their outreach work of providing health education and services, community health workers also add value through "in-reach," or serving as a gateway to the unreached subpopulations of the community. Acting as a conduit to the rest of the care team, they are able to educate the team on

[192] Joshua Freeman, "Community Health Workers: An Important Method for Addressing the Social Determinants of Health," Society of Teachers of Family Medicine. Available at http://www.stfm.org/FamilyMedicine/Vol48Issue4/Freeman257.
[193] Joshua Freeman, "Community Health Workers: An Important Method for Addressing the Social Determinants of Health," Society of Teachers of Family Medicine. Available at http://www.stfm.org/FamilyMedicine/Vol48Issue4/Freeman257.

perspectives from the entire community, including those traditionally unreached groups.[194]

The use of community health workers is an important vehicle to create linkages between providers and community-based resources. Through a "boots-on-the-ground" approach, community health workers gain institutional knowledge that comes from being engrained in a community: They understand local social determinants of health, cultural nuances and even specific patients within the community. As a result, they are poised to be an effective local advocate and connector for patient-centered care. Section 9.3 will cover the need for community linkages in more detail.

West Virginia currently has several community health worker training programs and pilot projects underway, led by groups like the Marshall University Department of Family and Community Health, Minnie Hamilton Health Care Center and the West Virginia School of Osteopathic Medicine Center for Rural and Community Health.

Recommended Strategies

a. While all of the community health worker training programs and pilots currently underway in the state are exploring how community health workers can impact positive health outcomes, each of these projects operates differently. As West Virginia moves forward with SHSIP implementation, the state should study and evaluate data from various models to determine the most effective ways to train and use community health workers.
b. Future community health programs will need more highly trained workers to meet the growing demands of an aging population. New, more completely trained community health workers with medical, health education and social worker skills may be needed to address the complex needs of the growing number of people with multimorbidity.[195] Thus, a one-size-fits-all approach to community health workers may not be possible, and the state should continue to explore different levels of community health worker training. For example, the state could consider utilizing licensed clinical social

[194] Meike Schleiff and Henry Taylor, "A Foundational Role for Community Health Workers in West Virginia: Reflections for Consideration by the WV SIM Working Group."
[195] Steven M. Ornstein, Paul J. Nietert, Ruth G. Jenkins and Cara B. Litvin, "The Prevalence of Chronic Diseases and Multimorbidity in Primary Care Practice: A PPRNet Report," Journal of the American Board of Family Medicine. Available at http://www.jabfm.org/content/26/5/518.full.

workers, RNs or specially trained community health workers who can provide services that are more complex. The use of trained health care professionals would allow for more versatile community health workers and potentially result in lower overall health care costs.

c. In many rural areas of West Virginia, paramedics provide not only emergency medical services, but also preventive health care services. Integration of paramedicine into a transformed health care delivery system provides an innovative way to expand the capacity of an enhanced primary care delivery model using existing resources.

Addressing the Need to Fully Leverage Technology in Care Delivery

As the use of telemedicine and electronic medical records proliferates, IT services and workforce will need to be expanded. An important potential use of technology is to address the shortage and misdistribution of health care providers by bridging the gap between West Virginia's urban and rural areas. Additionally, technology can create virtually integrated networks of providers to accomplish the goal of more coordinated and aligned health care delivery through patient-centered care teams.

Strategies

Support training of health care-oriented IT personnel from high school to post-graduate.

Promote training in health systems and vendor-sponsored training to build skills in current workers.

Consider and support loan repayment, scholarships and rural stipends.

Recommended Strategies

a. Support training of health care-oriented IT personnel in high schools, community colleges, baccalaureate institutions and post-graduate training.
b. Promote training in health systems and vendor-sponsored training to build skills in current workers.
c. Consider and support loan repayment, scholarships and rural stipends.

Addressing the Need for Mental Health Specialists, Mental Health Nurses and Social Workers

An expanded workforce is crucial to supporting the integration of mental health care and primary health care—a central strategy for health care transformation in the state. Social and community needs of patients occupy a prominent place in the underlying causes for West Virginia's low state health rankings, and no solution to addressing medical needs will be complete without enhancing community services and access to them.

As discussed in Section 3.2, the Accountable Health Communities (AHC) model is a key federal program designed to facilitate the connection between patients and community social services, and West Virginia has responded with an application to the program. If awarded, the grant will support enhanced communication, as well as a central coordination center to match patients with existing social and community resources.

As the use of the AHC model proliferates, a larger workforce of social workers, community workers and mental health workers will be needed. While community economic and infrastructure development are beyond the scope of the SIM project, SIM can support policies and programs that help ensure workers will be trained and available in the future.

Strategies

Expand the collaborative care model for common behavioral health disorders.

Include the training and support of mental health professionals in the proposed PCMH Training and Support Center.

Support training of mental health professionals from high school to post-graduate with scholarships, seminars and development programs.

Expand student slots for formal training in health systems and colleges.

Support loan repayment, scholarships and rural stipends for all health professionals in the health care transformation and AHC models.

An important strategy to address the shortage of behavioral health professionals in rural areas is the expansion of the collaborative care/consulting psychiatrist model (also referenced under Driver Two in

Section 5.2). Under this model, a consulting psychiatrist works remotely with a locally placed, mid-level mental health professional or nurse to treat mild to moderately severe disorders. Using evidence-based care, the consulting professional only intervenes in a stepped-care approach if the patient's recovery is not progressing in a timely way. This model has been demonstrated to be effective and can dramatically extend the number of patients treated successfully; importantly, it also eliminates the need for the consulting psychiatrist to relocate to the underserved rural area.

Recommended Strategies

a. Expand the collaborative care model for the treatment of common behavioral health disorders.
b. Include the training and support of mental health specialists, mental health nurses and social workers in the proposed PCMH Training and Support Center.
c. Recommend the state, providers and payers support training of mental health specialists, mental health nurses and social workers in high schools, community and technical colleges, baccalaureate institutions and post-graduate training, with scholarships, seminars and mentorship/shadowing/apprenticeship programs.
d. Expand student slots for formal training in health systems, community and technical colleges, and baccalaureate institutions.
e. Support loan repayment, scholarships and rural stipends for all health professionals in the health care transformation and AHC models.

Table 8.4 Summary of Recommended Workforce Strategies

Needs Addressed	Recommended Strategies
Addressing the need for ongoing evaluation	Establish a state Health Care Workforce Planning Group to regularly assess the changing health care workforce needs of the state and provide recommendations to meet those needs.
Addressing the need for primary care physicians	Promote strategies aimed at retention of medical school graduates in West Virginia, particularly in primary care.
	Support and expand the Rural Health Initiative, primary care residency incentive programs and loan repayment programs.
	Expand the Rural Scholars Program to all of the state's family medicine programs.
	Support using new models to address the primary care physician shortage.
Addressing the need for nurse care coordinators and advanced practice nurse professionals	Establish a state PCMH Training and Support Center to coordinate and accelerate training of the necessary nurses and advanced practice nurse professionals needed for health care transformation and medical home models.
	Strengthen statewide training through additional faculty, nursing school slots and specialized training.
Addressing the need for community health workers	Study and evaluate a variety of community health worker models to determine how best to train and use community health workers.
	Develop community health workers with medical, health education and social worker skills to address growing demands and complex needs.
	Expand the use and training of paramedics in rural communities.
Addressing the need to fully leverage technology in care delivery	Support training of health care-oriented IT personnel in high schools, community colleges, baccalaureate institutions and post-graduate training.

	Promote training in health systems and vendor-sponsored training to build skills in current workers.
	Consider and support loan repayment, scholarships and rural stipends.
Addressing the need for mental health specialists, mental health nurses and social workers	Expand the collaborative care model for the treatment of common behavioral health disorders.
	Use the AHC model opportunity to connect communities with needed social services.
	Include the training and support of mental health specialists, mental health nurses and social workers in the proposed PCMH Training and Support Center.
	Support training of mental health professionals from high school to post-graduate with scholarships, seminars and development programs.
	Expand student slots for formal training in health systems, community and technical colleges, and baccalaureate institutions.
	Support loan repayment, scholarships and rural stipends for all health professionals in the health care transformation and AHC models.

9.0 Integration with Public Health Infrastructure

An important resource to meet the population health and system transformation objectives of the SHSIP is the public health infrastructure in West Virginia. The West Virginia Bureau for Public Health (BPH) and constituent local health departments play a vital role in protecting and promoting the health of West Virginia citizens. Coordinating with them and with other organizations and agencies that serve this interest is an integral part of creating enhanced systems of care under the SHSIP.

As have most other states, West Virginia has traditionally separated health and behavioral health in its public health system. Another unit under the umbrella of the Department of Health and Human Resources that plays an important role in the mission of improving public health is the Bureau for Behavioral Health and Health Facilities (BBHHF). The BBHHF supports programs in counties and communities throughout West Virginia that are designed to promote healthy behavior and lifestyles and to reduce the risks that contribute to alcohol, tobacco and other drug misuse and abuse. These community-based prevention programs also work to support emotional health and reduce the risk of suicide.

The framework for West Virginia's public health infrastructure is codified in Chapter 16 of the West Virginia Code. WV Code §16-1-1 provides:

> It is the policy of this state to promote the physical and mental health of all of its citizens and to prevent disease, injury, and disability whenever possible. The state recognizes its responsibility to assist in the provision of essential public health services and establishes by this article a state public health system to work in conjunction with local boards of health to provide basic public health services that encourage healthy people in healthy communities.

As described in other sections of this SHSIP, the key to population health improvement and transformation of the health care delivery infrastructure is patient-centered care that is holistic and addresses the social determinants of health. West Virginia's public health organizations have been at the forefront of these efforts, and their work will be leveraged as part of the strategic initiatives set forth in the SHSIP.

9.1 Context for Integration of SHSIP with Public Health Infrastructure

Despite the strengths of the public health system in West Virginia as described in Section 9.2 below, the system as it stands today must evolve.

Structured on a long-standing traditional model that is not positioned to respond effectively to the transition to value-based care, the system must adapt to health system transformation to meet the Triple Aim objectives of better health, better care and better value.

Nationally, leading agencies have laid a foundation for aligning public health and health care through the paradigm of population health. The Institute of Medicine's Roundtable on Population Health Improvement defines population health as "the health outcomes of a group of individuals, including the distribution of such outcomes within the group." At its core, population health recognizes that health outcomes are good or bad, or unevenly distributed in the population, due to factors such as individual genetics and behaviors; social, familial, cultural and economic factors; physical environment; and effectiveness of the public health and health care systems.[196]

The Institute of Medicine has released four reports and a workshop summary calling for the modernization of the public health system, including recommendations for:

- The accreditation of public health agencies
- Development of a minimum package of public health services
- A standard chart of accounts for public health work
- Standardized measurement of health outcomes through a performance measurement system
- Strategic partnerships between public health agencies, primary care and other partners to improve population health

State and local health departments nationwide are adopting these recommendations. Currently, 45% of the U.S. population (nearly 139 million people) is being served by an accredited public health agency, and multiple states have adopted minimum packages of public health services.[197]

In response to this challenge, BPH assembled a Public Health Impact Task Force (PHITF) in April 2015 to redefine the mission of public health in West Virginia. State Health Officer and Commissioner for BPH Dr. Rahul Gupta

[196] "Health Policy Brief: What Is Population Health?" Health Policy Institute of Ohio. Available at http://www.healthpolicyohio.org/wp-content/uploads/2014/11/WhatIsPopHealth_PolicyBrief.pdf.
[197] "Public Health Accreditation Board Awards Five-Year Accreditation to 17 Public Health Departments," Public Health Accreditation Board. Available at http://www.phaboard.org/wp-content/uploads/PHABNewsReleaseNov16201511.pdf.

commissioned the PHITF, whose 28 members are representatives from BPH, local health departments, legislators and the following partner organizations:

- Association of West Virginia County Commissioners
- West Virginia Association of Counties
- West Virginia Association of Free Clinics
- West Virginia Hospital Association
- West Virginia State Medical Association
- West Virginia University School of Public Health
- Public Employees Insurance Agency (PEIA)
- West Virginians for Affordable Health Care

Dr. Gupta charged the PHITF with making recommendations for structural and organizational changes to the public health system in West Virginia to more effectively and efficiently work with communities to improve health while addressing health concerns.

Over the course of 2015, the PHITF met in parallel with many of the other SIM workgroup meetings. The PHITF worked in four focused workgroups that align with the Institute of Medicine's report "Vital Signs: Core Metrics for Health and Health Care Progress." The report identifies four interrelated domains of influence with the "greatest potential to have a positive effect on the health and well-being of the population and each individual within it, now and in the years to come." These four domains are healthy people, care quality, care costs and people's engagement in health and health care.[198]

First, the PHITF found that the performance standards for local boards of health were outdated and not reflective of recent evidence on the relationship of economies of scale to public health system performance, the importance of market analysis to determine service provision or the national accreditation standards for public health. Further, the PHITF identified significant differences among the 49 local health agencies in administrative costs; collection, reporting and delivery of public health data and services; information technology capacity; and revenue generation. These differences suggested that services and funding were not being effectively targeted statewide for the greatest impact on health outcomes according to consistent

[198] "Vital Signs: Core Metrics for Health and Health Care Progress," Institute of Medicine. Available at http://www.nap.edu/read/19402/chapter/4#40.

standards. These challenges are reflected nationally and are not unique to West Virginia.

The stakeholders that engaged in the PHITF also acknowledged changes in funding of public health. Nationally, funding streams from the Centers for Disease Control and Prevention (CDC) have been declining while Health Resources and Services Administration (HRSA) funds have increased.[199] Due to state fiscal crises and new opportunities for revenue generation through insurance billing, few states support local health departments with general revenue funds. Funding streams to public health are also increasingly integrated with other programs, and providers require significant evidence of partnering with other community or state level organizations to maintain funding.

As noted in other sections of the SHSIP, state agencies have received cuts to their budgets annually over the last four years, and the two- to four-year projections for the state include significant revenue shortfalls and anticipated required reductions. The impact of these cuts is compounded by reductions in federal funding. Further, federal funding to BPH for traditional public health programs has decreased significantly. For example, Public Health Emergency Preparedness funding has declined since 2002, resulting in a 47% reduction of funds for West Virginia. Due to West Virginia's Medicaid expansion and reduced uninsured rate, primary care center funding from the state for uncompensated care was reduced by 44% in state fiscal year 2015. The state's free clinics also received a 32% reduction in state funding in state fiscal year 2015 in addition to a new funding formula.[200]

The PHITF found that these funding changes and challenges require not just adaptation, but strategic reinvention of how the public health system in West Virginia targets public dollars for public goods and how the system can leverage the efficiencies and opportunities brought about by the shift to a population health focus.

At the PHITF meeting on December 9, 2015, the PHITF membership voted unanimously to adopt the following core concepts as the foundation for public

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[199] "Key Health Data About West Virginia," Trust for America's Health. Available at http://healthyamericans.org/states/?stateid=WV#section=3,year=2013,code=undefined.

[200] "West Virginia Public Health Impact Task Force Final Report," Bureau for Public Health, West Virginia Department of Health and Human Resources. Available at http://www.dhhr.wv.gov/localhealth/Public%20Health%20Impact%20Task%20Force/Documents/Report/WV%20PHITF%20Final%20Report%2012%2018%202015%20DRAFT.pdf.

health in West Virginia, as outlined by BPH and aligned with key concepts presented by the West Virginia Association of Local Health Departments:

1. Maintain a local health presence and services in every county.
2. Partner with stakeholders to align West Virginia's public health system with national recommendations by developing a minimum package of public health services accessible to all West Virginians.
3. The state's public policy should support a public health system that is accreditation-ready.
4. Conduct an assessment of the current system (state and local) responsible for the provision of statewide basic public health services, including funding and revenue sources.
5. The state's public policy should encourage the efficient and effective use of public resources that support statewide public health services.
6. A Public Health Advisory Board should be established to improve transparency, accountability and efficiency and promote a statewide culture of health.

These core concepts align with the vision for health system transformation and population health improvement set forth in other sections of this SHSIP. An enhanced and improved public health system based upon these principles will support and facilitate many of the strategic objectives outlined in the SHSIP. West Virginia also intends to work to integrate health and behavioral health within its overall approach to public health and to continue the emphasis on promotion of emotional health and healthy lifestyles and the prevention of tobacco, alcohol and misuse of other drugs.

9.2 Current State of Public Health Infrastructure

BPH operates within the West Virginia Department of Health and Human Resources (WVDHHR) to direct public health activities at all levels within the state. BPH works to fulfill the core functions of public health:

- The assessment of community health status and available resources
- Policy development resulting in proposals to support and encourage better health
- Assurance that needed services are available, accessible and of acceptable quality

Within BPH are the Office of the Chief Medical Examiner; Office of Community Health Systems and Health Promotion; Office of Emergency Medical Services; Office of Epidemiology and Prevention Services; Office of Environmental Health Services; Health Statistics Center; Office of Laboratory Services; Office of Maternal, Child and Family Health; Office of Nutrition Services; Office of Minority Health; and Center for Threat Preparedness. Also housed within BPH is the Center for Local Health, which provides technical support and assistance to 49 autonomous local boards of health.

Primary Care

The Office of Community Health Systems and Health Promotion's Division of Primary Care (DPC) is BPH's financial and programmatic agency to a statewide network of 31 community-based primary care centers, which have over 180 satellite health service sites that include 106 school-based health centers, 17 black lung clinic sites and nine free clinic sites. The network of centers and free clinics provides medical services to more than 400,000 West Virginians and continually works to expand services and access to care. The DPC promotes the use of evidence-based health care models, such as the PCMH and the chronic care model, for community-based primary care organizations in the state to improve health outcomes of chronically ill patients by reducing health disparities and improving access to quality health care, regardless of ability to pay. The DPC also provides technical assistance to community-based primary care organizations in implementing quality process improvement for evidence-based health care models.

DPC programs include:

- Uncompensated Care Primary Health Care: Through an annual state appropriation, grants are awarded to a network of primary care centers and free clinics to help defray costs of health care services to uninsured and underinsured patients. These funds assure health care availability for all West Virginians.

- School-Based Health Centers: An annual award is allocated to participating primary care centers for preventive and primary health care for children, adolescents, faculty and the community at 106 schools in 31 counties. Counseling and health education are included, with some centers offering dental and/or mental health services.

- Black Lung Clinics Program: The DPC administers state and federal

funding for technical assistance to project sites statewide. These project sites provide diagnostic and screening services and follow-up primary care services. Additionally, benefits counseling is provided for the coal mining population and any other occupation-related respiratory patient in the primary care setting. All patients of this program are rendered services regardless of ability to pay.

- Quality Assurance/Technical Assistance Program: Technical assistance is available to state-funded primary care centers and free clinics to ensure the quality of care standards.
- Cooperative Agreement for Primary Health Care: This federally funded program helps develop access to health care, recruit health care providers and improve development of community health projects.
- Free Health Clinic (Health Right) Program: An annual state appropriation supports Free Clinics in providing comprehensive medical care and medications at no cost to over 47,000 uninsured and underinsured indigent West Virginians, including thousands of impoverished senior citizens.

Rural Health

The Office of Community Health Systems and Health Promotion's Division of Rural Health and Recruitment develops pilot and demonstration projects to meet rural health needs, with the goal of integrating those projects into the existing health care system. The division develops, implements and coordinates recruitment and retention activities to help increase access to primary health care services in underserved communities statewide. In addition, the division plans and develops policy, provides technical assistance and promotes statewide coordination of rural health activities.

Specific Division of Rural Health and Recruitment programs include:

- Rural Hospital Flexibility Program: The Medicare Rural Hospital Flexibility Program (referred to as the Flex Program) is a grant program that assists critical access hospitals by providing funding to state governments to encourage quality and performance improvement activities that include: stabilizing rural hospital finance, integrating emergency medical services into their health care systems,

incorporating population health and fostering innovative models of health care. The program facilitates the development of model community-based rural collaborative systems of care in all grantee states.

- Small Hospital Improvement Program: The purpose of this program is to help small rural hospitals with 49 beds or less, do any or all of the following:
    - Enable the purchase of equipment and/or training to help hospitals attain value-based purchasing provision in the ACA.
    - Aid small rural hospitals in joining or becoming ACOs, or creating shared savings programs per the ACA.
    - Enable small rural hospitals to purchase HIT, equipment, and/or training to comply with meaningful use, ICD-10 standards and payment bundling. Funding for this program was first provided by the Labor/HHS Appropriations Act for FY 2002, in which conference report language expanded the purpose of this grant program to also help small rural hospitals comply with provisions of HIPAA, reduce medical errors and support quality improvement.

- Recruitable Community Program: The Recruitable Community Program focuses on increasing a rural community's recruiting potential by enhancing the ability of rural communities to recruit medical providers through community development and increased knowledge of recruitment and retention issues. The program is a collaborative partnership between the WVU Department of Family Medicine and BPH. The two components of the Recruitable Community Program include the First Impressions Team and the Community Design Team; their services are paid by the program with funds allocated through the Division of Rural Health and Recruitment.

- Health Professions Recruitment Program: This program assists facilities in recruiting physicians and mid-level practitioners; provides information and recruitment activities to state residency programs and medical school students; and serves as a clearinghouse for physicians, mid-level practitioners and dentists. This program provides a specialty listing of placement opportunities for health professionals statewide.

- Health Professions Clearinghouse: The Health Professions Clearinghouse is a statewide program that provides extensive information on West Virginia practice opportunities to health care providers seeking placement assistance. Practice profiles are prepared that include information about the site's clinical environment and the community's recreational assets, economic environment, educational resources and other characteristics. The provider's curriculum vita is circulated to interested sites, and the provider receives a list of these sites.

- National Health Service Corps: The National Health Service Corps is a federally funded program that offers scholarships and loan repayment incentives to health care students and clinicians to improve access to care at National Health Service Corps-approved sites. Staff within the division work with the federal government to determine compliance with specific criteria to qualify for National Health Service Corps loan repayment.

- State Loan Repayment Program (SLRP): As mentioned in Section 8.2.4, the SLRP is a federally funded program that offers medical loan repayment to primary care physicians, nurse practitioners, nurse midwives, physician assistants and dentists in return for two years of obligated service in a West Virginia HPSA for a nonprofit employer. SLRP will pay for qualified government and commercial education loans obtained for medical school tuition expenses, reasonable educational expenses required by the medical school or training program and reasonable living expenses, as determined by the program.

- Recruitment and Retention Community Project (RRCP): Also mentioned in Section 8.2.4, the RRCP is designed to help fill gaps that exist with state and federal loan repayment/scholarship programs. This is accomplished by building on existing incentives to develop a more competitive package for the recruitment and retention of primary health care providers. The purpose of this grant is to help rural communities recruit and retain primary care providers in medically underserved communities by providing financial support in the form of recruitment grants (loan repayment and forgiveness) and retention grants (locum tenens), or other incentives approved by BPH.

There is a maximum of four years of support through this program.

- J-1 Visa Waiver Program: The J-1 Visa Waiver Program is dedicated to assisting all West Virginia residents in accessing quality, affordable health care services. The J-1 Visa Waiver Program offers a means of increasing the availability of physicians in areas of West Virginia that are designated as either a HPSA or a MUA. Communities that have been unable to recruit an American physician can recruit a foreign physician that has been trained in the United States. BPH is allowed to support assignments through the Department of State or the Appalachian Regional Commission programs. Both programs allow placement of primary care physicians, and the DOS allows for the placement of sub-specialists.

- Health Professional Shortage Area/Medically Underserved Area Program: This program is responsible for gathering and analyzing statistical data for defined rational service areas of West Virginia and making recommendations to the U.S. Department of Health and Human Services Division of Shortage Designation for the purpose of designating areas as HPSAs, MUAs and medically underserved populations.

Chronic Disease

Housed within BPH, the Division of Health Promotion and Chronic Disease (HPCD) collaborates with health systems and providers, communities and decision-makers to improve the quality of life for West Virginians with chronic disease. Specifically, it focuses on programs aimed to increase healthy weight attainment and improve key chronic disease indicators. (The focus on chronic disease is an important one for West Virginia; in fact, in 2011 West Virginia was one of the first states in the nation to release a coordinated chronic disease plan.) HPCD served as an important collaborator as part of SIM, guiding the development of the population health improvement goals and objectives and the coordination of health system transformation strategies to improve population health.

HPCD partners with numerous national, state and local agencies/organizations to promote systems change initiatives in early child care centers, schools, worksites, health systems and communities. HPCD promotes quality care for people with chronic disease by assisting health care providers to implement evidence-based, outcome-focused clinical and

preventive services, and by encouraging them to refer their patients to community-based programs designed to prevent and manage disease and enhance quality of life. This approach helps prepare clinicians for value-based care delivery systems that result in improved population health.

In addition to continued collaboration with HPCD, an important component of public health integration with the SHSIP will be coordination with the CDC. A number of grant funding opportunities exist through the CDC and align with the population health improvement goals of the SHSIP; these opportunities include funding for obesity, physical activity and nutrition, diabetes and prediabetes, hypertension and pre-hypertension, and tobacco use and prevention.

Obesity

In addition to chronic disease, the state's public health infrastructure has deployed a number of resources to target other prominent public health challenges. As cited extensively in Section 3.3, the state plan "Addressing Obesity and Related Chronic Diseases" focuses on reducing obesity in West Virginia by increasing physical activity, improving fruit and vegetable consumption and strengthening environments and policies that encourage healthy living. This includes implementing practice protocols within health systems to prevent and manage obesity and related chronic conditions. These interventions will help manage and prevent diabetes, hypertension and cardiovascular disease.

Tobacco Use

BPH's Division of Tobacco Prevention (DTP) initiates and supports statewide, regional and community policies and informational efforts to reduce the dependence on tobacco and tobacco-derived products. Since 2001, DTP has worked closely with the CDC and the West Virginia Prevention Research Center to assess the impact and effectiveness of the state's tobacco prevention and cessation efforts.

The programs of the DTP include:

- Clean Indoor Air Program: Works with local communities, local health departments and state organizations to protect the public from the dangers of secondhand or environmental tobacco smoke through policy and media advocacy, public education and community activism.

- Tobacco Cessation Program: The Cessation Program's goal is to educate users on the dangers of all forms of tobacco and provide successful ways to quit, including using the WV Tobacco Cessation Quitline.

- Youth Tobacco Prevention Program: The Youth Tobacco Prevention Program's goal is to prevent the state's youth from initiating use of tobacco products and to assist the youth who are using to quit. The program's primary initiative is Raze, the state's teen tobacco prevention initiative. The organization is focused on combating the tobacco industry's targeting of young people through media advocacy, organized tobacco prevention activities, educational programs, and promotion of cessation programs.

The state tobacco plan, "Addressing Tobacco Use and Its Associated Health Conditions in West Virginia," has been approved for the DTP and other partners to follow. Key goals of the plan are to:

- Reduce adult tobacco utilization.
- Reduce youth tobacco utilization.
- Focus on improving COPD and cancers associated with tobacco use.
- Reduce exposure to secondhand cigarette smoke.
- Reduce the utilization of smokeless tobacco and other nicotine products.

Behavioral Health

The BBHHF's Prevention Team leads West Virginia's public health efforts focused on behavioral health issues and has also been heavily involved in addressing tobacco use. With funding from the Substance Abuse and Mental Health Services Administration (SAMHSA), BBHHF funds a network of six regional prevention grantees and operates a number of programs that are intended to:

- Build emotional health.
- Prevent or delay and mitigate the symptoms and complications of substance abuse and mental illness in the targeted areas of alcohol misuse/abuse and prescription misuse/abuse.
- Prevent suicide in high-risk populations.

With support from SAMHSA, BBHHF has developed a comprehensive strategic

prevention plan to enhance service coordination, community partnerships, and multi-agency collaboration for substance abuse prevention services. Programs that focus on these goals include:

- Behavioral Health Workforce Capacity Assessment: Through a combination of a survey and regional focus groups, this comprehensive behavioral health workforce assessment will give a more complete, accurate picture of the current workforce and its future needs. Data gathered will be incorporated into planning for enhancing the workforce.

- Regional Data and Planning Teams: These teams have been formed in each of the six substance abuse regions and mirror the work of the State Epidemiological Outcomes Workgroup at the regional level. These teams are comprised of multiple partnerships and are responsible for coordinating plans and gathering and disseminating data at the local and regional levels.

- Medical Education Team: This team has been formed in partnership with the West Virginia Medical Professional's Health Program. The purpose of this team is to utilize physicians to help further educate other physicians in best practices and on the topics of substance abuse prevention, including areas such as suicide, prescription drug abuse, drug-exposed pregnancies, youth alcohol use and adult alcohol abuse.

- Annual Synar survey of tobacco sales to underage youth: BBHHF conducts an annual survey of tobacco sales outlets to assess what proportion properly refuse to sell tobacco products to underage minors. This survey is part of the state's overall strategy to prevent youth tobacco use.

Finally, BBHHF, in collaboration with the West Virginia Department of Education and Marshall University, operates a grant program to support local school board efforts to expand school mental health programs. These programs are required to provide:

- Promotion of social, emotional, and behavioral health of all students
- Early identification of problems and the provision of early intervention services
- Treatment or referral for substance abuse

Other Efforts

Other organizations also constitute important participants in the public health support system—for example, the West Virginia University Extension Service (WVUES), which has operations in all 55 counties in West Virginia. The work of WVUES at these locations addresses a wide variety of community issues via a nontraditional mix of learners, faculty, staff and volunteers. WVUES' Families and Health Programs provides education and services in areas of health, nutrition, relationships, family dynamics and finances. Marshall University and the West Virginia School of Osteopathic Medicine have similar programs engaged in important community-based efforts to use community health workers and local resources to engage individuals and communities in healthier lifestyles and self-management. These programs are offered at little or no cost to participants.

Local Health Departments

Central to public health improvement efforts are the West Virginia local health departments, which provide a variety of local health services. These health departments, also called local boards of health, are organized under the local control of county commissions. As noted above, there are 49 local boards of health serving 55 counties; of these there are eight combined county/municipal local boards of health serving single counties and coordinating municipalities; two combined county local boards of health serving six counties and two counties, respectively; and 39 local boards of health serving single counties.

Local health departments are an important part of the public health infrastructure. In addition to health care services, local health departments oversee and coordinate food and water quality; communicable disease investigation; environmental surveillance; disaster response; animal encounters; manufactured housing communities; nuisance complaints; onsite septic system design and inspection; and water well construction. Together with BPH, local health departments can respond quickly to emerging issues, representing the front line against disease outbreaks and public health threats. Having developed strong, effective local partner relationships, they have the ability to cover large geographies and rural areas in service delivery.

Local health departments assume a high level of health coordination responsibility at the local level, making the public health infrastructure a central part of the population health management system in West Virginia. Figure 9.1 depicts the services provided by local health departments and the associated funding streams that support those activities.

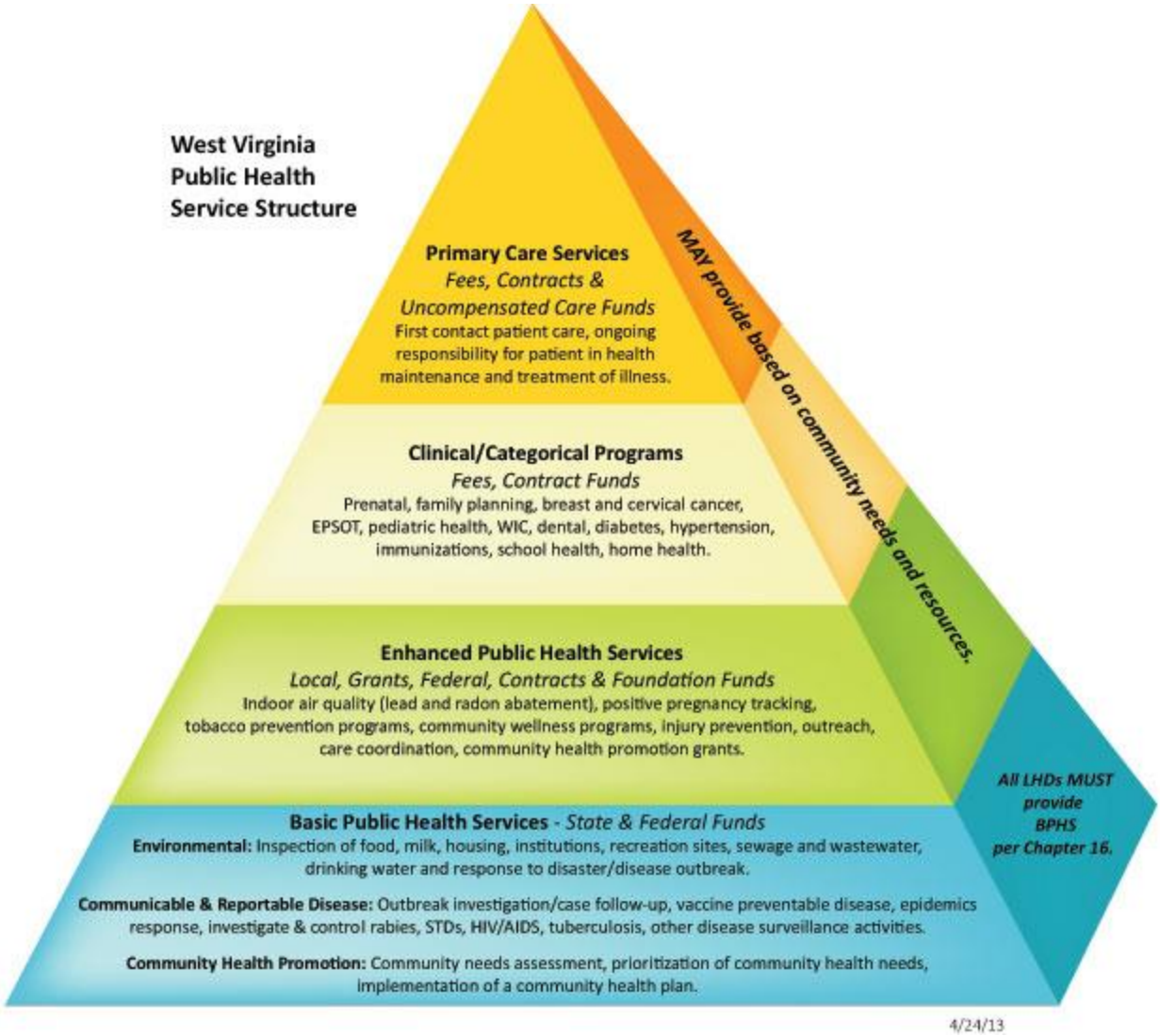

Figure 9.1 West Virginia Public Health Services and Funding Sources (Source: West Virginia Center for Local Health)

Many of the local health efforts and the work of BPH are supported through collaboration with CDC. This network of connected public health partners is part of the public health framework that may be leveraged to address the population health improvement objectives of SIM and the SHSIP. For example, programs aimed at tobacco cessation, clean indoor air regulations, youth

tobacco initiation prevention and public health environmental monitoring are important policy levers to address the social determinants of health. Additionally, the coordination between BPH and the autonomous local health departments represents an important policy lever of extending population health management resources into the local community health infrastructure. Policy levers will be covered in more detail in Section 10.

9.3 Opportunities to Leverage and Strengthen Public Health through Integration

There are significant opportunities to leverage the existing public health infrastructure to accomplish the population health improvement objectives and strengthen public health as part of health system transformation. A key part of this strategy will be to strengthen the existing linkages between the health and behavioral health portions of the state's public health infrastructure.

The SHSIP has been developed with a strong reliance on public health as a central part of the population health improvement framework. The population health assessment conducted by BPH serves as the foundation for the SHSIP population health improvement strategies and objectives, and SHSIP contemplates the integration of public health in payment and delivery reform though initiatives such as the Accountable Health Communities model and use of community health workers, recovery coaches and persons with life experience of mental illnesses.

In line with the recommendations of the American Public Health Association set forth in the 2015 issue brief "Integrating Public Health into State Innovation Models," public health representatives contributed to the SHSIP development process. Public health stakeholders served on SIM workgroups, and Dr. Gupta, as the State Health Officer, served on the SIM Steering Committee.

Linkages with Community Health Resources

A key component of the delivery system transformation plan is the linkage of community-based resources with the health care delivery system (see Section 5.2). As noted above, local health departments are already attuned to many of the social determinants of health in their communities and localities; as a

result, they are well-positioned to serve as the pivot point for these linkages. Integration and coordination of efforts will be important in enhancing patient-centered and culturally appropriate care delivery. Local health departments, regional behavioral health prevention specialists and other public health organizations can serve as the local nexus and attachment point for community resources such as diabetic educators, care coordinators and community health workers.

Integration with Technology

An important aspect of integration is to ensure that the public health infrastructure, including local health departments, is linked to the HIT and data infrastructure of the health care delivery system and value-based payment models. Many of the public health organizations, including local health departments and regional community behavioral health centers, have information systems that have been designed and implemented to meet programmatic requirements and expectations, including data collection and reporting mandates, that are based on funding sources. These organizations have not participated as eligible organizations in the HIT incentive programs described elsewhere in the SHSIP. Accordingly, connectivity, alignment and consistency in data structure and HIT use will be important considerations as integration of public health and other components of the health care system takes place.

As noted above, public health reporting systems are not well-designed to support the transition to value-based health care. Both HIT systems and workflow will require adaptation and modification to support participation in value-based models, including gain-sharing and risk-based models. Data in these public health systems will be important in a number of ways: first, to develop outcome measurement tools and global budget capabilities for communities and sub-populations; second, to inform risk stratification and predictive models for population health management. Integration of HIT systems and data use is vital to optimizing the improvement opportunities at the core of these new models of care delivery and payment. See Section 7 for additional information on HIT and data strategies supporting the SHSIP.

Integration with Primary Care

Another important component of integration is between public health and primary care—two fields noted by the American Academy of Family Physicians (AAFP) as having a common interest yet traditionally functioning

independently.[201] This integration is an important strategy to coordinate efforts toward population health management.

Primary care providers—especially via the PCMH model—have opportunities to influence population health through community-based care that addresses social determinants of health. However, AAFP also emphasizes the importance of the broader "medical neighborhood": the primary care unit as well as many others, including community behavioral health centers (CBHCs), other health specialists, allied health workers, community resources, schools, governmental organizations and public health bodies.

West Virginia also recognizes that for some people with serious behavioral health disorders who are accustomed to receiving care in a CBHC, it may be reasonable to integrate primary care in that environment so that it serves as the "health care home." Several of West Virginia's comprehensive CBHCs have participated in the SAMHSA Primary Behavioral Health Care Integration Grant Program through which they partner with primary care providers to offer primary care on site to people with serious behavioral health disorders.

For primary care providers, AAFP notes, one of the challenges of population health is a lack of resources for health educators, community health workers and other community-based outreach services: "With the public health sector already doing many of these things, it is imperative that practices connect to ensure they can dedicate personal resources to alternate areas and not duplicate this work that is already being done."

AAFP suggests the framework illustrated in Figure 9.2 for the intersection of primary care and public health as a means of better coordinating efforts for population health management.

[201] "Integration of Primary Care and Public Health (Position Paper)," American Academy of Family Physicians. Available at http://www.aafp.org/about/policies/all/integprimarycareandpublichealth.html.

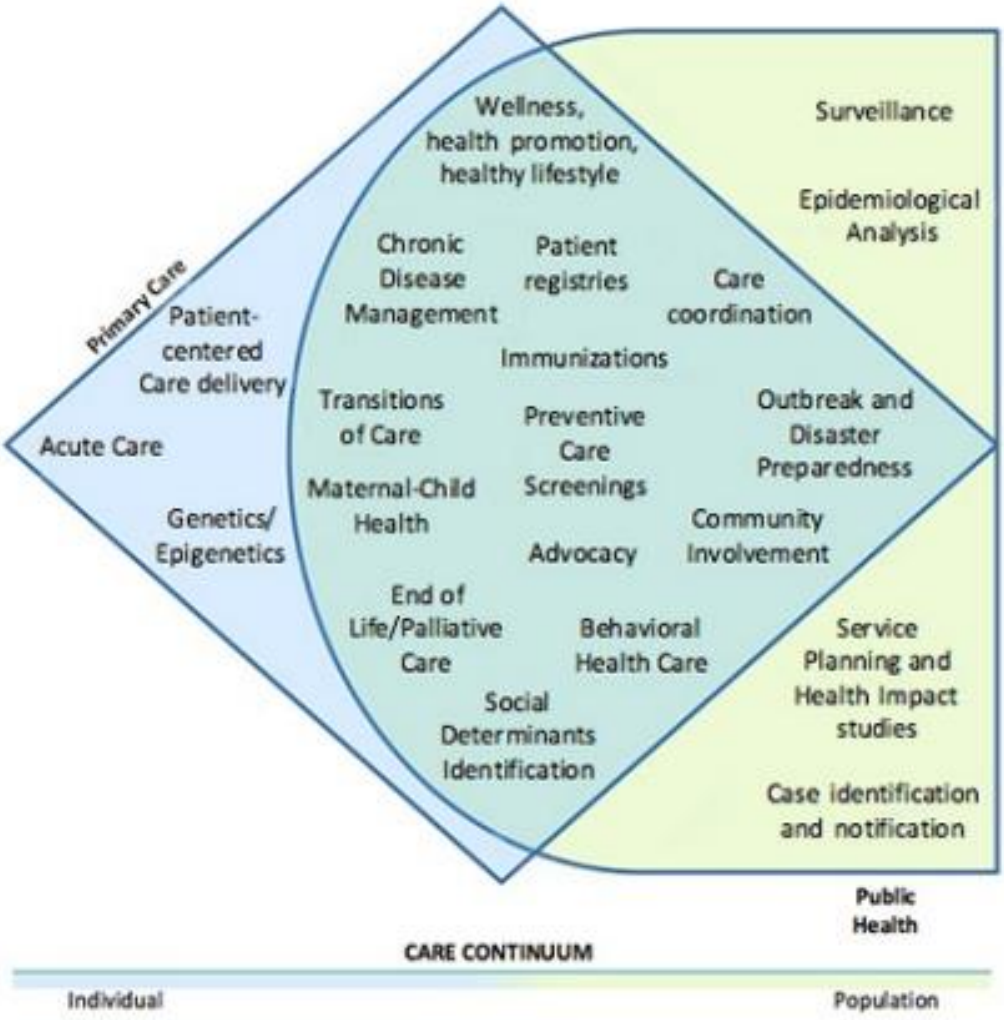

Figure 9.2 Framework for Integration of Primary Care and Public Health to Support Population Health Management (Source: AAFP)

9.4 Strategies for Rollout and Implementation

Public health is a major component of the SHSIP strategies for health system transformation. The overall strategies for delivery and payment redesign reflect the imperative to effectively leverage the existing public health infrastructure in West Virginia (see Section 5).

10.0 Use of Policy and Regulatory Levers

One of the objectives of the SIM design is to leverage the state and local policy and regulatory framework in support of the transition to value-based health care. As such, part of the SHSIP development involved a review of the existing policy and regulatory landscape to identify barriers to value-based health care and health system transformation, as well as opportunities to advance these objectives through policy and regulatory application rather than legislative action. This review will be ongoing as the health care environment adapts and adjusts to national initiatives supporting the transition to value-based care, particularly those emanating from CMS, CDC, HRSA, SAMHSA or other federal agencies, which may impact state and local policies and regulations applicable to West Virginia's health care system.

The Commonwealth Fund Commission on a High Performance Health System ("Commission") has declared that "no single policy will fix the fragmentation of our health care system. Rather, a comprehensive approach is required—one that might lead progressively to greater organization and better performance." The Commission recommend the following strategies related to the use of policy and regulatory levers in support of high-value health care:[202]

- Policies and regulations should incentivize and encourage payers and providers to move away from fee-for-service toward payment models that reward coordinated, high-value care.
- Global payment (i.e., full population prepayment—a single payment for the full continuum of services for a given patient population and period of time) should be encouraged. Such payments should be adequately risk-adjusted to avoid adverse patient selection.
- Primary care practices that provide comprehensive, coordinated, patient-centered care (e.g., certified medical homes) should be offered an alternative to fee-for-service payment.
- Patients should be given incentives to choose to receive care from high quality, high-value delivery systems. Regulatory and policy levers should promote transparency of outcomes and cost to permit meaningful comparisons and evaluation of care alternatives.
- The regulatory environment should be modified to facilitate clinical integration among providers. This may necessitate changes and safe-harbors under anti-trust, certificate of need, rate setting and insurance regulations to

[202] Stephen C. Schoenbaum et al., "Organizing the U.S. Health Care Delivery System for High Performance," The Commonwealth Fund. Available at http://www.commonwealthfund.org/publications/fund-reports/2008/aug/organizing-the-u-s--health-care-delivery-system-for-high-performance.

incentivize coordination, clinical integration, information sharing and risk assumption.

- There should be accreditation programs and network credentialing that focus on the attributes of high-value care delivery and outcomes. This may require narrower high-value networks, and "any willing provider" provisions may run contrary to the formation of these narrower networks based on outcomes and cost.
- Current training programs for physicians and other health professionals do not adequately prepare providers to practice in an organized delivery system or team-based environment. Provider training programs should be required to teach systems-based skills and competencies, including population health, and be encouraged to include clinical training in organized delivery systems.
- In rural and underserved areas, it may be necessary for intermediaries acting on behalf of public and private payers to foster development of organized delivery systems (by providing assistance in establishing care coordination networks, care management services, after-hours coverage, health information technology and performance improvement activities). Policies and regulations should foster sharing of resources for these goals, and liability limitations or apportionment vehicles may be needed to encourage collaboration and coordination without undue liability barriers to integration.
- Health IT provides critical infrastructure for an organized delivery system. Providers should be required to implement and utilize certified EHRs that meet functionality, interoperability and security standards, and to participate in health information exchange across providers and care settings within five years. These requirements need to be coordinated with licensing, credentialing and network participation policies and regulations.

These recommendations align with the CMS Quality Strategy, which includes the use of policy and regulatory levers to promote the following objectives:[203]

- Measuring and publicly reporting providers' quality performance and cost of services provided
- Providing technical assistance and fostering learning networks for quality improvement
- Adopting evidence-based National Coverage Determinations
- Creating incentives for quality and value
- Setting standards for providers that support quality improvement

[203] "2016 CMS Quality Strategy," Centers for Medicare and Medicaid Services. Available at https://www.cms.gov/medicare/quality-initiatives-patient-assessment-instruments/qualityinitiativesgeninfo/downloads/cms-quality-strategy.pdf.

- Creating survey and certification processes that evaluate capacity for quality assurance and quality improvement

The recommendations from CMS and the Commission help form and guide the policy and regulatory lever strategies in the SHSIP. While most of the policy and regulatory levers are described in the context of their respective subject-matter discussions throughout the SHSIP, this section describes in more detail some of the significant and overarching levers (and the administrative framework for their exercise).

As providers navigate the transition from traditional practice forms and payment models to new models such as accountable care organizations, integrated service networks, shared care management, bundled-payment and capitation, they will be forced to address complex (and, in some cases, antiquated) regulatory and policy frameworks that may hinder the intended operation and benefit of these new approaches to care delivery and payment. Examples include the web of interwoven federal and state laws and regulations covering the corporate practice of medicine, anti-kickback requirements and prohibitions on self-referral; insurance, antitrust, tax, licensure, privacy and securities laws; and provisions concerning charitable care obligations. Thus, the review of policy and regulatory levers must be ongoing as the transition to value progresses.

10.1 Public Health Policies

As discussed in Section 9.2, BPH operates within WVDHHR to direct public health activities at all levels within the state to fulfill the core functions of public health. Within BPH, the Center for Local Health supports the 49 autonomous local boards of health. This structure provides the administrative and regulatory framework for the use of policies and regulations in West Virginia to support public and population health improvement efforts. The policy and regulatory environment requires coordination of state public health initiatives with national efforts, such as those emanating from CDC and other federal agencies.

One of the overarching policy levers to promote public and population health is the CDC's Health in All Policies (HiAP) initiative. HiAP encourages the integration of health considerations into policymaking across sectors to improve the health of communities and individuals. HiAP aligns with the social determinants of health approach, recognizing that many factors—

beyond clinical care and traditional public health activities—contribute to health.[204] Consistent with the HiAP approach, public health policy levers play an important role in accomplishing the SHSIP health improvement objectives. Section 4 outlines in detail these objectives and the particular policies and regulatory levers for each of the targeted disease states.

The CDC's "buckets" approach to population health and prevention is described extensively throughout the SHSIP. (See Sections 3.2, 4.1, 5.2 and 11.3.) The third bucket advocates leveraging community-wide policies and interventions to improve population health. By taking this approach, public policies can assure coordination of efforts to address social determinants of health through a patient-centered, holistic model of health promotion and management.

As noted in Section 9.1, BPH has developed a policy framework to implement the recommendations of the Public Health Impact Task Force for structural and organizational changes to the public health system to more effectively and efficiently work with communities to improve health.

10.2 Insurance Regulations

The regulation of the insurance industry in West Virginia is governed by the provisions of Chapter 33 of the West Virginia Code. The West Virginia Offices of the Insurance Commissioner (OIC) is the statutorily designated agency that regulates the insurance industry and operates the state's health insurance marketplace to ensure that quality coverage is available throughout the state.

OIC oversees the rates, solvency and forms used by carriers to provide health insurance coverage in West Virginia. Through its regulatory and oversight activities, OIC affords an important regulatory and policy lever to engage the commercial payers in the health improvement and system transformation efforts of SIM. Some of these regulatory and policy lever opportunities are described below.

[204] "Health in All Policies," Centers for Disease Control and Prevention. Available at http://www.cdc.gov/policy/hiap/index.html.

Rate Review

West Virginia is an effective rate review state, meaning OIC requires insurance companies to file their rates, forms, rules, binders and advertising and receive approval from the state before implementation. OIC's Rates and Forms Division reviews rate filings to determine the consistency with statutory requirements so that they are not excessive, unjust or unfairly discriminatory. All health insurance rate filings are also reviewed by consulting actuaries for rate analysis and compliance with state statutes and the ACA. This rate review mechanism provides an opportunity for OIC to contribute to the transition to value-based health care by incorporating and coordinating health system and payment transformation principles into the rates of health insurers. It also allows OIC to encourage alignment among commercial health insurers with value-based payment models, data and outcome reporting and value-based benefit design elements.

Network Sufficiency Regulations and Tier-Based/Value-Based Narrow Provider Networks

Part of the regulatory oversight of OIC is to assure that health insurers have sufficient provider networks to provide reasonable access to health care services through the insured products. Part of a value-based design strategy recognizes that provider network participation may narrow based on performance and cost outcome measures. Some alternative payment and delivery models provide for tiered-provider networks based on value and outcome determinants.

According to America's Health Insurance Plans (AHIP), 90% of hospitals and physicians participate in health plan provider networks, and fewer than one percent of beneficiaries are covered under insurance products that do not use provider networks.[205] AHIP also notes that value-based provider networks can be developed through the use of provider tiers based on performance measures or through the creation of narrow networks with select high-value providers.

Insurance regulations can be used to encourage the development of value-based provider network tiers. As value networks are defined, there may be concerns about access to care in rural and medically underserved parts of the

[205] "High-Value Provider Networks," America's Health Insurance Plans. Available at https://ahip.org/wp-content/uploads/2016/04/High-Value-Provider-Networks-AHIP-Issue-Brief.pdf.

state. In the past, such concerns have resulted in "any willing provider" restrictions on MCOs; these types of limitations, if imposed on narrow networks based on value-based outcomes, could be counterproductive in designing and implementing APM strategies.

Quality Assurance Aspects of Health Insurance Marketplace Regulations

The provisions of the ACA that establish the West Virginia health insurance marketplace regulated by OIC require health insurers and group health plans to report their plan or coverage benefits and health care provider reimbursement structures that foster improved health outcomes and patient safety and reduced hospital readmissions and medical errors.

Health insurers offering qualified health plans (QHPs) through the health insurance marketplace must implement payment policies to encourage providers to achieve these goals while reducing health disparities. QHPs must also meet accreditation requirements for quality assurance and quality reporting, and the health insurance marketplace must rate QHPs on the basis of quality and price. QHPs must report to their enrollees, prospective enrollees and the marketplace their performance on health plan quality measures.

These regulations provide another means of using health insurance regulations to support the transition to value-based payment models for marketplace products.

Provider Risk-Bearing under APMs and Insurance Regulations

An evolving issue is that of provider assumption of risk under alternative payment models. As providers assume risk (even partial risk), they could potentially run afoul of insurance regulations mandating their registration as an insurance provider and compliance with the accompanying capitalization requirements.

A number of states are beginning to address this issue within health insurance statutes and regulations, as noted in a report for the New Hampshire Department of Insurance:[206]

[206] Joel Ario, Robert Belfort and Michael Kolber, "Provider Payment Reform in New Hampshire: Legal Considerations for Policymakers." Available at https://www.nh.gov/insurance/reports/documents/prov_payref_lgl_cons_plcymkrs.pdf.

> While business risk involves the risk that a particular business's own costs of performing will exceed its contracted prices, insurance risk typically involves assuming the risk of performance by a third party or other contingency, such as the future health of a patient population. Some states have begun to regulate the assumption of insurance risk by providers. For example, in Massachusetts, a provider that bears "downside risk"—when the provider "is responsible for either the full or partial costs of treating a group of patients that may exceed the contracted budgeted payment arrangements"—is required to obtain a "risk certificate" from the state.

New York, Oregon, Tennessee, Colorado and California also have statutes and regulations addressing provider risk assumption and insurance regulatory compliance.

At present, there are no specific regulatory policies in West Virginia addressing provider assumption of risk. Relatedly, OIC handles issues regarding risk on a case-by-case basis dependent on the specific nature of the particular arrangement.

The West Virginia Legislature authorized the creation of provider-sponsored networks (PSNs) to serve as Medicaid MCOs controlled by one or more FQHCs with specific capital reserve and operating requirements. One of the Medicaid MCOs, West Virginia Family Health Plan, has been chartered under this PSN legislation. However, the PSN charter requirements provide a limited opportunity for providers to use this type of arrangement as an alternative health care delivery model.

State Managed Care Quality Strategy

Under a CMS final rule on Medicaid managed care programs, on or before July 1, 2018, each state will be required to have its own quality strategy for the care provided through its Medicaid MCOs. The strategy must include the state's standards for MCO network adequacy and service availability and the state's goals, objectives and measures for quality improvement. At least once a year, states must publish their quality and performance measures online. Additionally, states must obtain public input on the quality strategy and, once

final, must post the strategy online to be reviewed and updated at least every three years.[207]

The required managed care quality strategy is an important policy lever for the SHSIP. As the strategy is reviewed every three years or more frequently, the WVHTA could play a role in reviewing the quality goals and measures for the Medicaid MCOs, ensuring they are consistent with the aligned quality measures and standardized provider scorecard discussed in Section 5.2.

10.3 Public Health Insurance Coverage

West Virginia has three public health insurance programs: Medicaid, the Children's Health Insurance Program (WVCHIP) and Public Employees Insurance Agency (PEIA).

Medicaid and WVCHIP

The West Virginia Medicaid program is administered by the Bureau for Medical Services (BMS) within WVDHHR. It is a federal-state partnership model with funding from CMS and a state participation funding requirement. WVCHIP is a free or low-cost health plan for qualifying children from birth up to age 19. Eligibility for coverage is based on income and other available coverage.

An important policy lever available to assist and support the SHSIP efforts is Medicaid's managed care contracting—specifically, the potential it has to set the vision for value-based delivery and payment through its contracts with insurers. As described in Section 5.2, the WVHTA will assist the state on ways to make its contracts more in line with value-based principles, such as better utilizing the Medicaid MCO quality withhold to drive quality improvement or requiring that a certain percentage of payments by Medicaid MCOs to providers have a link to value.

BMS requires participating MCO plans to maintain accreditation by the National Committee for Quality Assurance and to submit data on HEDIS, CAHPS and other performance measures, including all CMS-recommended

[207] Julia Paradise and MaryBeth Musumeci, "CMS's Final Rule on Medicaid Managed Care: A Summary of Major Provisions," The Henry J. Kaiser Family Foundation. Available at http://files.kff.org/attachment/CMSs-Final-Rule-on-Medicaid-Managed-Care.

core measures for adults and children. MCOs are also required to create policies for ongoing quality assessment and performance improvement projects, maintaining at least three projects at a time. Medicaid is launching a complex care management project in addition to a number of other initiatives such as the health home project described in other sections of the SHSIP. WVCHIP has a program to address inappropriate ED use by children and is coordinating efforts with Medicaid and other agencies to improve outcomes for covered children.

PEIA

The state established PEIA to provide hospital, surgical, group major medical, prescription drug, group life and accidental death and dismemberment insurance coverage to eligible state and local government employees. Benefits are made available to all active employees of the state and various related state agencies and local governments, as well as certain retirees. PEIA relies almost solely on the premiums paid directly by its participating employers and employees to fund benefits and coverage.

PEIA is an important early adopter in the transition to value-based health care. First, PEIA offers the Comprehensive Care Partnership (CCP) Program, whose purpose is to promote primary care health services, identify health problems early and maintain control of chronic conditions. Members who enroll in the CCP Program will have no co-payments or coinsurance for services at their CCP provider. CCP providers are expected to provide all primary care services, coordination of care and, with some CCP locations, pharmacy benefits. Participating practices are expected to offer PCMH services, including care coordination, and are encouraged to participate in the state HIE.

Participating CCP practices operate under global primary care budgets and are incentivized to contain costs with a "gain-share" model based on year-over-year costs comparisons for managed populations. This program is an important policy lever for promoting the development of PCMHs and provides an alternative payment and health care delivery model demonstration in alignment with the SIM objectives.

PEIA is also developing a program to evaluate coordination with EMS units to address appropriate use of emergency departments by PEIA members and to identify gaps in access to or utilization of primary care as a contributing factor

in inappropriate or unnecessary use of ED facilities.

The use of policy and regulatory levers specific to public insurance programs (individually and as part of multi-payer efforts) is described in the relevant discussion of the population health and transformation initiatives outlined in Sections 4 and 5.

10.4 Rate Review and Certificate of Need Regulations

One of the significant policy levers to address health care costs has traditionally been the rate setting and certificate of need authority granted to the WVHCA. However, part of this framework was changed during the most recent legislative session.

Rate Review

The West Virginia rate review framework for hospitals and health care providers has been in place since 1985. However, during the 2016 legislative session, the West Virginia Legislature passed Senate Bill 68, which ends the provider rate review authority of the WVHCA on July 1, 2016.

Certificate of Need (CON)

In West Virginia, all health care providers, unless otherwise exempt, must obtain a CON before adding or expanding health care services; exceeding the designated capital expenditure threshold; obtaining major medical equipment valued at more than the designated capital threshold; or developing or acquiring new health care facilities. The statutorily mandated CON review process primarily includes the determination of need, consistency with the State Health Plan and financial feasibility.

It is unclear how West Virginia's CON laws and regulations will be applied to new delivery and payment models. If new delivery models can be viewed as adding or expanding health care services, prudence may dictate impacted providers to seek a determination of non-reviewability from the WVHCA. As transformation progresses, it will be necessary to continue to monitor how CON law impacts the transition to alternative payment models. Interpretative regulations or guidance may be necessary to clarify the application or exemption of transactions from CON purview.

10.5 Professional Licensure Boards

Licensure of health care professionals in West Virginia is regulated by the following boards:

- West Virginia Board of Examiners for Registered Professional Nurses (RNs and APRNs)
- West Virginia Board of Examiners for Licensed Practical Nurses (LPNs)
- West Virginia Board of Dentistry (DMDs, DDSs and hygienists)
- West Virginia Board of Osteopathic Medicine (DOs and PAs)
- West Virginia Board of Medicine (MDs and PAs)
- West Virginia Board of Pharmacy (pharmacists and pharmacy business locations)
- West Virginia Board of Social Work (licensed independent clinical social workers)
- West Virginia Board of Chiropractic (chiropractors)
- West Virginia Board of Examiners of Psychologists (psychologists)

One of the objectives of the advanced primary care model is to clearly coordinate the role of care team members and encourage them to practice to the highest level of licensure and competencies. Scope of practice provisions will need to be continually reviewed and evaluated to prevent policies and regulations from posing undesired barriers to optimizing care team functioning. Workforce development efforts will need to incorporate requirements related to continuing education and training on care teams, value-based health care and alternative delivery and payment models. Section 8 proposes specific strategies related to workforce development.

As discussed in Section 8.5, the West Virginia Legislature passed HB 4334, giving advance practice registered nurses (APRNs) expanded practice authority. Previously, APRNs had been required to maintain collaborative relationships with physicians; this bill, however, reduces the mandate to a three-year requirement before APRNs can operate more independently. This change is significant as it allows APRNs to practice with relative independence or to serve in leadership roles in care teams.

10.6 Antitrust Laws and Regulations

Although federal law prohibits antitrust activity, the Supreme Court has held that legitimate state decisions to supplant competition should override federal antitrust law. Many states use this state action immunity doctrine to fashion coverage of collaborative and innovation delivery models to provide assurance to health care providers.

West Virginia has crafted a framework for state action coordinated activities in the West Virginia Code. However, while the West Virginia statute provides a general framework for collaboration to promote health improvement, there is sufficient ambiguity to leave room for doubt in the application of antitrust laws in particular arrangements and collaborations. Other states creating multi-payer initiatives to support value-based health care have adopted some framework (through legislation or executive order) to support the state action exemption for these collaborations, and it may be beneficial for West Virginia to model those efforts.[208]

Another challenge in navigating antitrust provisions is that the application of the laws, regulations and policy directives by the Department of Justice and Federal Trade Commission (FTC) have depended on the particular factual circumstances of each transaction or situation.

An example of a specific legislative directive relative to the state action exemption is SB 597, passed during the 2016 regular session. This bill allows for cooperative agreements between teaching hospitals within 20 miles of each other and gives the WVHCA decision-making powers regarding reduced competition when such a cooperative agreement involves acquisitions or mergers. The statute requires the state attorney general be consulted and concur with the approval by WVHCA before the transaction can proceed.

In approving any cooperative agreement, the following factors must be considered: enhancement and preservation of existing academic and clinical educational programs; enhancement of the quality of hospital and hospital-related care, including mental health services; preservation of hospital facilities in geographical proximity to the communities traditionally served by those facilities to ensure access to care; gains in the cost-efficiency of services

[208] Barbara Wirth and Mary Takach, "State Strategies to Avoid Antitrust Concerns in Multipayer Medical Home Initiatives," The Commonwealth Fund. Available at http://nashp.org/sites/default/files/1694_Wirth_state_strategies_avoid_antitrust_ib.pdf.

provided by the hospitals involved; improvements in the utilization of hospital resources and equipment; avoidance of duplication of hospital resources; participation in the state Medicaid program; and constraints on increases in the total cost of care.

One of the first applications of the new law involves a proposed merger of Cabell Huntington Hospital and St. Mary's Medical Center, which the FTC originally opposed based on anticompetitive concerns. The application of Cabell Huntington Hospital was approved by the WVHCA and the West Virginia Attorney General in June 2016. This law may serve as the foundation for extending antitrust protection to other types of collaborative arrangements formed in the transition to value-based health care.

10.7 Professional Liability

West Virginia law caps non-economic losses (which include pain and suffering, emotional distress and lost enjoyment) in medical malpractice claims at $250,000 per claim, or $500,000 in certain cases of catastrophic injury or wrongful death. This statute has already survived a constitutional challenge in litigation. While the state does have a Patient Injury Compensation Fund, SB 602 passed in the 2016 legislative session eliminates the fund effective July 1, 2016.

The Legislature also clarified the basis for liability of prescribers of certain medications in SB 7 passed during the 2016 session. That bill limits actions against a health care provider related to the prescription or dispensation of controlled substances unless the provider violated the law when prescribing or dispensing the drug and that violation caused the claimant's injury.

One of the questions presented by new delivery models is how professional liability will be assigned and apportioned for those sharing management of a patient. As alternative delivery models progress with care teams sharing management responsibility, the assignment of liability risk and the limits of joint and several liability may need to be addressed in the statutory framework.

Another question centers on how quality improvement activities should be factored into the defense of professional liability actions. If providers are mandated to conduct certain interventions, particularly for high-risk patients, as part of value-based population health management, it calls into question

how the responsibility for adverse outcomes will be treated under the professional liability framework.

10.8 Health Information Technology and Data

As part of the SHSIP development process, CMS and ONC have provided guidance on a number of HIT policy levers that can be used to support the transition to value-based health care. A number of these policy and regulatory levers are discussed in detail in Section 7 and are summarized in Appendix B, including a description of how these policy and regulatory levers are currently being utilized in West Virginia or will be as part of the implementation of the SHSIP.

11.0 Coordination with Other Health Care Innovation Initiatives

Innovation efforts are most effective when designed to complement and reinforce, rather than duplicate, each other. To that end, the West Virginia SHSIP will align and coordinate with transformation efforts at the national, regional and bordering state levels—although lessons learned and experiences of non-contiguous states may also offer guidance in implementation. On a local level, the SHSIP will leverage and coordinate with initiatives and innovations, some of which may span state borders due to the large portion of West Virginia's population that resides in border regions.

There are a number of other state and local initiatives summarized in this section and throughout the SHSIP. As noted in Section 5, the SHSIP includes the development of the West Virginia Health Transformation Accelerator to coordinate these diverse and complementary efforts to more effectively leverage pilot and demonstration projects and coordinate the multitude of initiatives taking place around health care transformation and innovation.

National Quality Strategies

The SHSIP aligns with the National Quality Strategy, which articulates broad aims and priorities that have guided the development of HHS and CMS programs, and with the corresponding CMS Quality Strategy. The SHSIP goals and objectives are coordinated with these strategies, aimed at assuring health care "that is person-centered, provides incentives for the right outcomes, is sustainable, emphasizes coordinated care and shared decision-making, and relies on transparency of quality and cost information."[209]

The SHSIP is organized and guided by the "Triple Aim" articulated in the National Quality Strategy and CMS Quality Strategy as follows:[210]

- **Better Care**: Improve the overall quality of care by making health care more person-centered, reliable, accessible and safe.
- **Smarter Spending**: Reduce the cost of quality health care for individuals, families, employers, government and communities.

[209] "2016 CMS Quality Strategy," Centers for Medicare and Medicaid Services. Available at https://www.cms.gov/medicare/quality-initiatives-patient-assessment-instruments/qualityinitiativesgeninfo/downloads/cms-quality-strategy.pdf.
[210] "2016 CMS Quality Strategy," Centers for Medicare and Medicaid Services. Available at https://www.cms.gov/medicare/quality-initiatives-patient-assessment-instruments/qualityinitiativesgeninfo/downloads/cms-quality-strategy.pdf.

- **Healthier People, Healthier Communities**: Improve the health of Americans by supporting proven interventions to address behavioral, social and environmental determinants of health, and deliver higher-quality care.

To advance these three aims, the National Quality Strategy identifies six health improvement and system priorities:[211]

- Making care safer by reducing harm caused in the delivery of care
- Ensuring that each person and family is engaged as partners in their care
- Promoting effective communication and coordination of care
- Promoting the most effective prevention and treatment practices for the leading causes of mortality, starting with cardiovascular disease
- Working with communities to promote wide use of best practices to enable healthy living
- Making quality care more affordable for individuals, families, employers, governments and communities by developing and spreading new health care delivery models

These national quality strategies align with state efforts, particularly the Quality Strategy adopted by the West Virginia Medicaid program through the Bureau for Medical Services in WVDHHR. Since originally releasing its Quality Strategy in 2008, BMS has updated the strategy several times, transitioning from a monitoring and oversight approach to one focused on improvement and outcomes. The BMS Quality Strategy aligns with the Quality Strategy Toolkit for States that CMS published in 2012 and has updated since then. Finally, the national quality strategies also align with the BPH population health improvement objectives, which follow CDC recommendations and policies.

Quality Initiatives

Most West Virginia acute care hospitals and physicians participate in CMS' quality programs, and there are a number of parallel or complementary initiatives at the state level. An overarching goal of the

[211] "2016 CMS Quality Strategy," Centers for Medicare and Medicaid Services. Available at https://www.cms.gov/medicare/quality-initiatives-patient-assessment-instruments/qualityinitiativesgeninfo/downloads/cms-quality-strategy.pdf.

SHSIP was to leverage these existing programs and adapt them to align with CMS enhancements rather than impose new expectations on hospitals and providers as part of the transition to value.

The SHSIP leverages the CMS quality program for hospitals and physicians as part of the system transformation and data/outcome strategies to migrate to value-based health care. In West Virginia, the WVHCA has a hospital quality reporting program similar to that of CMS. In addition to tracking similar measures (for example, hospital-acquired conditions and inpatient readmissions) the WVHCA aligns with CMS by requiring hospitals to report quality measures and using those measures to populate a consumer tool at http://www.comparecarewv.gov.

A significant contributor to the CMS quality initiatives in West Virginia is the West Virginia Medical Institute (WVMI). WVMI is the CMS quality innovation network-quality improvement organization (QIN-QIO) for five states (Delaware, Louisiana, New Jersey, Pennsylvania and West Virginia). It has engaged more than 2,800 physicians and 500 partners to collaborate on quality initiatives focused on the National Quality Strategy.[212] WVMI provides an important resource to be leveraged as part of the SHSIP and can assist in the coordination of CMS initiatives for both hospitals and physicians.

Another important contributor to quality improvement efforts focused on hospital outcomes is the West Virginia Hospital Association (WVHA). WVHA operates the Commitment to Excellence Honors Program, whose stated objectives are to reward successful efforts to develop and promote quality improvement activities; to inspire hospitals to be leaders in improving the health of West Virginians; and to raise awareness of nationally accepted standards of care that are proven to enhance patient outcomes.[213]

Finally, the SHSIP also leverages the Core Quality Measures articulated and to be developed by the CMS-sponsored Core Quality Measure Collaborative as part of West Virginia's strategy for standardizing and

[212] "Our Major Projects," West Virginia Medical Institute. Available at http://www.wvmi.org/projects.aspx.
[213] "Honors Program," West Virginia Hospital Association. Available at http://www.wvha.org/Quality/Honors-Program.aspx.

	aligning quality measures.
Alternative Payment Models	The SHSIP design elements align and coordinate with HHS and CMS programs that promote alternative payment models (APMs), including accountable care organizations (ACOs) and episode-based payments, value-based purchasing, integrated care, and medical and health homes. Importantly, the system and payment transformation strategies outlined in the SHSIP complement and align with CMS' goals of having 30% of Medicare fee-for-service (FFS) payments tied to quality or value through APMs by the end of 2016 and 50% by the end of 2018, and 85% of all Medicare FFS tied to quality or value by the end of 2016 and 90% by the end of 2018. To accelerate the adoption of value-based payments and APMs, HHS launched the Health Care Payment Learning and Action Network (HCPLAN). The SHSIP draws extensively from the HCPLAN framework for an orderly transition to value-based health care, including many of the concepts outlined in the APM Framework White Paper.[214]
Accountable Care Organizations	CMS recognizes several types of ACOs as part of its overall quality improvement program. ACOs are groups of doctors, hospitals, and other health care providers who accept responsibility for the coordination and management of a population of patients. For Medicare ACOs, there are several different programs and models. As of April 2016, 11 Shared Savings Model ACOs included West Virginia as part of the authorized service area, and 519 providers were participants in the Shared Savings Model ACOs in the state. Other organizations have formed or are exploring the formation of ACOs to provide services to other payers. Using the constructs of the ACO model is an important part of the SHSIP. The plan encourages providers to accept responsibility for populations of patients, to use data to drive improvement in outcomes and cost and to move to risk- and value-based models aligned with quality and outcome targets.
CPC+	CMS' Comprehensive Primary Care Plus (CPC+) aims to encourage the

[214] "Alternative Payment Model Framework," Health Care Payment Learning and Action Network. Available at https://hcp-lan.org/workproducts/apm-whitepaper.pdf.

delivery of advanced primary care supported by regionally based, multi-payer payment reform. The SIM project team facilitated discussions of this opportunity among project participants and has encouraged participation by eligible parties. To the extent West Virginia applicants are selected to participate, SHSIP goals and objectives will be advanced, and the lessons learned can be shared to scale with other parties through the WVHTA and other avenues.

MACRA

One of the most significant federal initiatives requiring careful coordination of the SIM efforts is the continued evolution of delivery and payment models under the Medicare Access and CHIP Reauthorization Act of 2015 (MACRA). MACRA repeals the Medicare Sustainable Growth Rate methodology for updates to the physician fee schedule and establishes two payment paths: the Merit-Based Incentive Payment System (MIPS) and Alternative Payment Models (APMs).

MACRA sunsets payment adjustments under three existing initiatives and consolidates aspects of those programs into the new MIPS. Going forward, MIPS participants will be measured on quality, resource use, clinical practice improvement and meaningful use of EHR technology.[215]

The second payment path for APMs allows participating providers to opt out of MIPS. From 2019 to 2024, providers qualifying for the APM track will receive a five percent annual lump sum bonus; beginning in 2026, these providers will receive a higher payment update rate. To qualify as an APM participant, providers must meet increasing thresholds for the percentage of their revenue they receive through qualifying APMs.[216]

One of the opportunities for multi-payer coordination lies in the provisions of MACRA that define qualifying APMs as those that require participating providers to take on "more than nominal" financial risk, report quality measures and use certified EHR technology. The

[215] "Quality Payment Program: Delivery System Reform, Medicare Payment Reform, & MACRA," Centers for Medicare and Medicaid Services. Available at https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/Value-Based-Programs/MACRA-MIPS-and-APMs/MACRA-MIPS-and-APMs.html.
[216] Eric Cragun, "The most important details in the SGR repeal law," The Advisory Board Company. Available at https://www.advisory.com/research/health-care-advisory-board/blogs/at-the-helm/2015/04/sgr-repeal.

	transformation of health delivery and payment models for physicians under MACRA will be a significant driver under the SHSIP to guide and spur similar efforts by other payers in West Virginia. The SHSIP accounts for coordination with these initiatives as outlined in Sections 5 and 14.
Accountable Health Communities	CMS' Accountable Health Communities (AHC) initiative is designed to test whether addressing health-related social needs through clinical-community linkages can improve outcomes and lower costs. As described in multiple areas of the SHSIP—Sections 3.2, 5.3 and 8.5—the AHC opportunity strongly aligns with the goals of SIM and bolsters the opportunities for health care transformation under the SHSIP. In fact, the AHC model inspired the SHSIP strategy (described in Section 5.2) to link community-based health and social support resources to the health care delivery system. Through the AHC model, West Virginia would be poised to address the social determinants of health that affect underserved populations and to accelerate the state's evolution toward value-based health care. Appendix D is a letter of support for the AHC opportunity from the West Virginia SIM Project Coordinator.
Million Hearts Campaign	An important initiative of CMS and CDC with which the SHSIP aligns is the Million Hearts campaign, discussed in Section 3.3.5. Million Hearts aims to prevent heart attacks and strokes by improving access to effective care and stressing the ABCS of heart health: aspirin when appropriate, blood pressure control, cholesterol management and smoking cessation. Million Hearts also works to focus clinical attention on the prevention of heart attack and stroke, encourage individuals to choose a heart-healthy lifestyle and improve the prescription and adherence to appropriate medications.[217] Many of the population health strategies in the SHSIP support and coordinate with Million Hearts.
Other States' Transformation	Where possible, the SHSIP aligns with and leverages transformation efforts in bordering states. Maryland, Ohio and Pennsylvania were SIM Round One Design states; Ohio is a Round Two Test state. Kentucky

[217] "About Million Hearts," Million Hearts, U.S. Department of Health and Human Services. Available at http://millionhearts.hhs.gov/about-million-hearts/index.html.

Efforts	and Virginia joined West Virginia as Round Two Design states. Thus, all the states contiguous to West Virginia are participating in SIM. The West Virginia SIM project team has reviewed information from the surrounding states to explore avenues of collaboration and coordination. The team hosted a presentation by members of the Kentucky SIM team and has engaged in conversations with neighboring and distant SIM states to leverage the experience, expertise and knowledge of these resources in developing the SHSIP for West Virginia.
National Governors Association (NGA)	The SHSIP also leverages West Virginia's ongoing participation in the National Governors Association's Complex Care Policy Academy. West Virginia was one of nine states working over an 18-month period to develop state capacity to address the needs of complex care patients. The goal of this initiative is to reduce costs and improve the quality of care delivered to high-risk and vulnerable Medicaid beneficiaries.[218] As part of the SHSIP development, NGA staff led a workgroup discussion on integrating the NGA Complex Care concepts into the SHSIP. Through the super-utilizer approach outlined in Section 5.2, the SHSIP addresses care coordination for individuals with complex care needs, also known as "super-utilizers," who suffer from chronic illness and multiple comorbidities and whose health may be influenced greatly by social determinants.

[218] "Complex Care Populations," National Governors Association. Available at http://www.nga.org/cms/home/nga-center-for-best-practices/center-divisions/center-issues/page-health-issues/col2-content/main-content-list/complex-care-populations.html.

11.1 Medicaid Managed Care, Demonstrations and Waivers

CMS permits states to use waivers as vehicles to test new or existing ways to deliver and pay for health care services in Medicaid and CHIP. These waiver programs include Section 1115 research and demonstration projects, Section 1915(b) managed care waivers and Section 1915(c) home- and community-based services waivers. West Virginia's Medicaid program operates under a number of waivers, including:[219]

- Aged and Disabled Waiver: Provides services that enable an individual to remain at or return home rather than receiving nursing home care.
- Intellectual/Developmental Disabilities Waiver: Provides an array of services for individuals with intellectual and/or developmental disabilities in achieving the highest level of independence and self-sufficiency possible.
- Traumatic Brain Injury Waiver: Provides home- and community-based services to individuals with traumatic brain injury.

West Virginia also has a Money Follows the Person (MFP) initiative to provide people with long-term care needs a greater choice of where to live and receive needed services and supports. West Virginia's MFP program is Take Me Home, West Virginia, which enlists "transition navigators" to support Medicaid beneficiaries in moving from a nursing home, hospital or other institution to a home- or community-based setting.

West Virginia also has adopted a State Plan Amendment under Section 2703 of the ACA to establish health homes for Medicaid enrollees with chronic conditions. The initial focus of the Medicaid Health Home project is on members in a six-county region who suffer from bipolar disorder and who may have hepatitis B or C. The six counties are Wayne, Cabell, Putnam, Kanawha, Raleigh and Mercer counties.

The SHSIP rests on the premise of incorporating elements of these programs into the transformation efforts and expanding these efforts where appropriate—for example, expanding the health home initiative for other chronic conditions in coordination with the Medicaid managed care organizations (see Section 5).

[219] "Medicaid Waiver Programs," Bureau for Medical Services, West Virginia Department of Health and Human Resources. Available at http://www.dhhr.wv.gov/bms/Programs/WaiverPrograms/Pages/default.aspx.

11.2 CMS Initiatives in West Virginia

West Virginia organizations are participating in two CMS Center for Medicare and Medicaid Innovation (CMMI) grant projects. One is the Southeastern Diabetes Initiative led by Duke University to support integrated teams implementing a model for improving health outcomes and quality of life for individuals with type 2 diabetes. West Virginia participants include residents of Mingo County, West Virginia, supported by the Center for Rural Health at Joan C. Edwards School of Medicine, Marshall University; the Mingo County Diabetes Coalition; and Williamson Health and Wellness Federally Qualified Health Center in Williamson, West Virginia.

Second, CAMC and Partners In Health are participating in the TransforMED award for a primary care redesign project across 15 communities to support care coordination among PCMHs, specialty practices and hospitals, creating "medical neighborhoods."

Other organizations from within West Virginia are also listed as participating in CMMI awards to Carilion New River Valley Medical Center and Pittsburgh Regional Health Initiative, along with an award to Community Health Center Association of Connecticut, Inc. for the Transforming Clinical Practices Initiative.

West Virginia also has one participant in the Model 2 Bundled Payment for Care Improvement (BPCI) initiative, Cabell Huntington Hospital, and two in Model 3 of BPCI, Genesis Care and Guardian Eldercare. There are five FQHCs participating in the Advanced Primary Care Practice Demonstration project, with one FQHC (WomenCare) participating in the CMS Strong Start for Mothers and Newborns Initiative. The West Virginia Medicaid program is participating in the CMS Medicaid Emergency Psychiatric Demonstration. West Virginia recently completed participation in the Tri-State Child Health Improvement Consortium, a CHIP Reauthorization Act Quality Demonstration Project funded by CMS, with Oregon and Alaska.

One of the most significant CMS initiatives in West Virginia in terms of the number of participants is the CMS HIT incentive program described in Section 7. As of 2015, 46 hospitals and more than 2,500 eligible providers have participated in this program, resulting in more than $230 million in incentives being earned by eligible West Virginia health care providers (per the Office of the National Coordinator West Virginia IT State Summary Dashboard).

11.3 Initiatives of Federal Agencies

CDC

In developing the SHSIP, the SIM Project Management Team has leveraged CDC resources to more effectively integrate CDC-recommended strategies and interventions into the SHSIP. As introduced in Section 3.2, the SHSIP strategies follow the CDC's three buckets of prevention approach to population health improvement.

The SHSIP incorporates elements of the Health in All Policies recommendations of the CDC to integrate health considerations into policymaking across sectors to improve the health of all communities and people. As described more fully in Section 9, the public health strategies outlined in the SHSIP align with the CDC objectives of integrating public health into health system transformation and leveraging the public health infrastructure to improve population health. As noted in the HIT and data section of the SHSIP (Section 7), the HIT strategies and objectives align with the CDC use of BioSense 2.0 and other electronic health surveillance and reporting tools to promote public health and safety.

In reviewing a preliminary draft of the SHSIP, the CDC noted its willingness to support West Virginia's strategies to accelerate population health management (see Section 5.2) through the following evidence-based activities:

- Utilizing Project ECHO to keep providers, especially those in rural areas, up-to-date in their practice by providing access to needed specialist consultations and Grand Rounds
- Creating community-based health linkages, including through the use of community health workers
- Leveraging non-traditional facilities for health support and related services (e.g., the National Diabetes Prevention Program)

HRSA

Many of the FQHCs are participating in one or more quality improvement initiatives by the Health Resources and Services Administration (HRSA). These initiatives include the HRSA Accreditation and Patient-Centered Medical Home Recognition Initiative supporting recognition for health centers that meet national quality standards; the Behavioral Health Integration Quality Initiative; and the Oral Health Integration into Primary Care. These are in addition to the various programs outlined in this section that also support the health improvement efforts by FQHCs and Rural Health Clinics, which are coordinated among HRSA and other federal agencies such

	as CMS and CDC.
SAMHSA	The population health improvement objectives of the SHSIP align with the focus of Substance Abuse and Mental Health Services Administration (SAMHSA) initiatives focused on increasing awareness and understanding of mental and substance use disorders, promoting emotional health and wellness, addressing the prevention of substance abuse and mental illness and increasing access to effective treatment. Specifically, the objectives in the BPH and SHSIP population health targets for behavioral health integration and substance abuse align with SAMHSA's "Leading Change 2.0: Advancing the Behavioral Health of the Nation 2015-2018" plan. The lessons learned from providers participating in the SAMHSA-sponsored Screening, Brief Intervention, and Referral to Treatment program are incorporated into the integration strategies set forth in the SHSIP. As of April 2016, there were 22 projects funded by SAMHSA addressing a range of behavioral health and substance abuse issues in West Virginia.
AHRQ	The SHSIP includes a number of Agency for Healthcare Research and Quality (AHRQ) initiatives and tools to improve patient outcomes. The integration strategy for behavioral health and primary care has been informed and shaped by AHRQ's Academy for Integrating Behavioral Health and Primary Care and Dr. Garrett Moran, the director of the Academy, who is also a subject matter expert and former behavioral health commissioner in West Virginia. The SHSIP also leverages AHRQ investments in prior projects in West Virginia, including the Boone County Community Care Network, which facilitated development of a county-wide health information system shared by providers.

11.4 West Virginia Insurance Marketplace

West Virginia established an insurance marketplace under the federal partnership model. The marketplace operates under the regulation of the West Virginia Offices of the Insurance Commissioner (OIC); acting as a clearinghouse, OIC accepts plans that meet federal and state certification criteria.

In collaboration with CMS, the OIC facilitates quality reporting to meet the mandates of the ACA related to the Quality Rating System, the Quality Improvement Strategy, enrollee satisfaction surveys and patient safety standards. This health care quality information informs consumer selection of a qualified health plan through the marketplace, guides decisions about plan certification by regulators and facilitates monitoring of plan performance. An expectation of the SHSIP is close coordination among OIC and other agencies and organizations involved in collecting quality data and providing access to such data to drive improvement efforts. Section 7 more fully describes the data coordination strategies.

11.5 Other Initiatives

There are a number of state, regional and local initiatives to be leveraged as part of the SHSIP. As noted in other sections of the SHSIP, an important initiative in the development of the SHSIP is the West Virginia Health Innovation Collaborative (WVHIC) formed in 2014 to map a new strategic vision to improve the health of the state. The WVHIC assisted in the development and submission of the SIM grant application for West Virginia and in the development of the strategies incorporated into the SHSIP.

There are also several WVDHHR and BPH initiatives to improve population health and strengthen the health care delivery system. These public efforts will be foundational for many of the SIM efforts. There are also a number of private efforts, including those funded by private foundations. The Claude Worthington Benedum Foundation is a major supporter of health initiatives in West Virginia. Benedum-funded health improvement projects include:

- Williamson Health and Wellness Center (Logan and Mingo counties in West Virginia and Pike County in Kentucky) and the Mid-Ohio Valley Health Alliance (10 counties in West Virginia's Mid-Ohio River Valley

region): Care coordination models using community health workers to treat high-risk patients with diabetes, COPD and/or congestive heart failure; in partnership with the Office of Rural Health Policy at the HRSA

- Cabin Creek Health Center, New River Health System, Boone Memorial Hospital and Lincoln Primary Care Center: Primary care and pulmonary rehabilitation project to improve COPD care in southern West Virginia
- West Virginia Medical Institute: To train and assist local rural practices as they transform their operations to PCMHs
- Cabin Creek Health Center, New River Health System and Lincoln Primary Care Center: Care coordination model for dual eligibles
- Marshall University Research Corporation: To create a model for community health workers that focuses on chronic disease prevention and control and utilizes AmeriCorps VISTA members as trainers and supervisors; to develop models to predict risk of readmission to hospitals and use of emergency department services

Other foundations such as the Sisters Health Foundation, Highmark Foundation and the Greater Kanawha Valley Foundation have also supported health innovation and improvement projects in West Virginia, focused on oral health, school-based health and community/local health improvement efforts.

These private efforts complement improvement initiatives of the academic training facilities in West Virginia. The Department of Family Medicine at WVU has created an academic PCMH fellowship to develop new physician leaders for West Virginia to evaluate, teach and lead PCMH implementation in the region. Similarly, Marshall University's School of Medicine offers support for population health management with the affiliated Marshall Health practice plan participating in Medicaid's health home project and PEIA's Comprehensive Care Program. As noted above, the Robert C. Byrd Center for Rural Health at Marshall offers support for innovative solutions to rural health problems. Finally, the West Virginia School of Osteopathic Medicine offers similar health system transformation support through its statewide campus and offers a training program for community health workers. All these activities are included in the SHSIP as resources to support transformation efforts.

12.0 Financial Analysis

The SIM SHSIP is intended to improve health outcomes and contain costs over time as its proposed strategies and interventions begin to take effect.

The need for health care cost containment is striking. Studies have shown that one-third to half of health care spending does not create value and could be saved through improved personal health behaviors and choices, delivery system improvements and administrative reforms. In 2010, 86% of all national health care spending was for people with one or more chronic medical conditions,[220] and up to 70% of health care costs are attributable avoidable consequences of individual behaviors such as smoking, alcohol abuse and obesity.[221] Experts predict a 42% increase in chronic disease cases by 2023, adding $4.2 trillion in treatment costs and lost economic output to national health care costs.[222]

These trends, combined with the continuing budget pressures for the West Virginia state government, create an impetus for execution of the SHSIP strategies and tactics to contain health care costs through population health improvement and system transformation.

Establishing Baseline and Projected Future Health Care Costs

To project potential cost savings associated with each class of interventions outlined in the SHSIP, it is necessary to establish a baseline of health care costs in West Virginia and project future costs in the absence of the interventions. West Virginia lacks an official source of aggregate health care spending. However, CCRC Actuaries, LLC (CCRC) provides actuarial services to state agencies such as PEIA and the WVHCA and has made a useful set of projections of future health care costs.

In 2009, the WVHCA engaged CCRC to prepare estimates of cost savings for health system improvements through the ACA—specifically, from the expansion of Medicaid to cover uninsured adults (with mandate alternatives), the use of the medical home model of primary care delivery and the adoption and use of EHRs with e-prescribing. These estimates by CCRC are based on historical health spending data from payers and assume a 6.4% rate of annual health cost increases. Although

[220] Jessie Gerteis et al., "Multiple Chronic Conditions Chartbook," Agency for Healthcare Research and Quality. Available at http://www.ahrq.gov/sites/default/files/wysiwyg/professionals/prevention-chronic-care/decision/mcc/mccchartbook.pdf.
[221] "Healthcare Cost Drivers White Paper," National Association of Health Underwriters. Available at http://www.nahu.org/legislative/policydocuments/NAHUWhitePaperCost.pdf
[222] Ross DeVol and Armen Bedroussian, "An Unhealthy America: The Economic Burden of Chronic Diseases," Milken Institute. Available at http://www.milkeninstitute.org/publications/view/321.

they have not been officially updated by CCRC based on more recent trend data, these estimates serve as a useful baseline for purposes of the cost savings projections. (As noted below, there was a 2015 estimate by CCRC for different purposes that contained similar data.)

To evaluate the reasonableness of the CCRC estimates, it is useful to compare them with forecasts using other sources of data. One avenue for this comparison is to use per capita costs with cost escalation projections and population estimates. In the absence of state-level data, federal data and rates have been used to estimate cost trends in West Virginia. As shown in Table 12.1, West Virginia has experienced a slightly higher growth rate than the national average; the use of national data is likely to underestimate West Virginia costs due to the particularly adverse health outcomes and socioeconomic trends in the state. For purposes of these comparative estimates, the data provide a conservative basis for making these computations.

Personal Health Care Spending Per Capita					
	1998	2004	2008	Average Annual Growth Rate 1998-2004	Average Annual Growth Rate 2004-2008
United States	$ 3,728	$ 5,411	$ 6,815	6.40%	4.70%
West Virginia	$ 4,045	$ 6,055	$ 7,667	7.00%	4.80%

Table 12.1 Per Capita Health Care Spending, U.S. and West Virginia (Source: Medicare and Medicaid Research Review)[223]

The National Health Expenditure (NHE) Data indicate the per capita personal health care expenditure for West Virginia was $7,667 for 2008-2009.[224] For purposes of developing a future cost trend, NHE health inflation rates can be used for 2010 to 2014, and a 4.9% projected annual future rate for the period of 2015 to 2022 can be used to adjust the baseline per capita costs by these annual rates of increase to establish a historical and projected per capita cost. This cost can be applied to the population rates to establish an overall heath cost to be compared to the CCRC estimates to validate reasonableness. As noted in Section 3.1, a subsequent CCRC report in 2015 projected total spending on health care in the state would grow to $20.3-$25 billion by 2025. This projection is consistent with the estimates in Table 12.2.

[223] "Health Spending by State of Residence, 1991–2009," Medicare & Medicaid Research Review 2011: Volume 1, Number 4.
[224] Health Expenditures by State of Residence, 1991-2009, National Health Expenditure Data, Centers for Medicare and Medicaid Services. Available at https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/Downloads/res-tables.pdf.

The U.S. Census Bureau reports the West Virginia population was 1,852,994 as of April 1, 2010.[225] This report also projects the West Virginia population to be 1,850,326 on July 1, 2014 and 1,844,128 on July 1, 2015. Future forecasts are for the state's population to decline slightly and then stabilize over the next seven years. For purposes of making the total cost calculations, the official Census population estimates are used for 2009 to 2015 and then a static estimate of 1,844,00 is used for 2016 to 2022. This results in a total cost estimate, compared with the CCRC estimates in Table 12.2.

Year	% Change	WV Per Capita	Projected WV Total Cost	CCRC Actuaries Estimates
2009	Baseline	$ 7,667	$ 14,206,904,998	$ 13,126,554,849
2010	4.00%	$ 7,974	$ 14,775,181,198	$ 13,986,722,427
2011	3.90%	$ 8,285	$ 15,351,413,265	$ 14,894,706,360
2012	3.80%	$ 8,599	$ 15,934,766,969	$ 15,852,704,170
2013	2.90%	$ 8,849	$ 16,373,266,466	$ 16,869,385,244
2014	5.30%	$ 9,318	$ 17,241,049,588	$ 17,945,101,908
2015	4.90%	$ 9,774	$ 18,025,279,171	$ 19,089,477,005
2016	4.90%	$ 10,253	$ 18,907,205,420	$ 20,298,521,695
2017	4.90%	$ 10,756	$ 19,833,658,485	$ 21,587,233,414
2018	4.90%	$ 11,283	$ 20,805,507,751	$ 22,953,530,271
2019	4.90%	$ 11,836	$ 21,824,977,631	$ 24,390,766,078
2020	4.90%	$ 12,416	$ 22,894,401,535	N/A
2021	4.90%	$ 13,024	$ 24,016,227,210	N/A
2022	4.90%	$ 13,662	$ 25,193,022,343	N/A

Table 12.2 West Virginia Per Capita and Total Health Care Cost Projections, 2009-2022[226]

While there are differences in the two estimates due to differences in population estimates and health care cost inflation assumptions, the trends are relatively close over the projection period. The per capita computations produce a more conservative estimate over the SHSIP implementation period, and they will be used for purposes of making the cost savings projections. These projected future cost estimates will be used to apply percent allocations attributable to the SHSIP interventions to project estimated savings.

[225] U.S. Census Bureau, QuickFacts. Available at http://www.census.gov/quickfacts/table/PST045215/54.
[226] See Appendix E for assumptions, conditions and limitations on these estimates.

Population Health Costs

To assist in the evaluation and projection of potential savings from population health improvement initiatives proposed in the SHSIP, it is useful to review the portion of overall health care costs that are attributed to chronic conditions and personal health choices. As noted above, there are national estimates indicating 86% of national health care spending is for people with one or more chronic medical conditions.[227] However, most experts note that only a portion of these costs are "impactable" through improvement initiatives. For example, interventions to improve obesity rates or tobacco cessation rates will be successful with only a portion of the population; it is unrealistic to project savings associated with getting all tobacco users to stop or all obese people to a healthy weight. These cost estimates attempt to apply realistic estimates of the impact of the proposed interventions in a population health environment.

As noted in Section 3, West Virginia has a high prevalence of chronic conditions. Table 12.3 shows the estimated prevalence rates and number of individuals with risk factors associated with chronic diseases and selected chronic diseases in the state.

[227] "Chronic Disease Prevention and Health Promotion," Centers for Disease Control and Prevention. Available at http://www.cdc.gov/chronicdisease/.

Risk Factor or Disease/Condition	Percentage Prevalence Estimate (%)	Estimated Number of Adults
Physical inactivity	31.4	452,580
Obesity (BMI 30.0+)	35.1	496,332
Current cigarette smoking	27.3	398,837
Smokeless tobacco use	9.4	138,199
Hypertension	41.0	602,044
High cholesterol	42.9	503,183
Have had a heart attack	7.8	114,371
Have had a stroke	3.9	58,051
Have any form of cardiovascular disease	13.7	200,330
Diabetes	13.0	192,017
Cancer	13.0	191,478
Current asthma	9.0	131,424
Chronic Obstructive Pulmonary Disease (COPD)	10.6	155,378
Arthritis	36.2	530,376
Depression	22.0	322,930

Table 12.3 Selected Chronic Disease Risk Factors and Chronic Conditions in West Virginia (Source: BRFSS 2013)[228]

A useful tool in evaluating the relative burden of chronic disease in West Virginia is the Chronic Disease Cost Calculator[229] developed by the CDC to provide estimates of state-level costs associated with certain chronic conditions (arthritis; asthma; cancer; cardiovascular diseases, including congestive heart failure, coronary heart disease, hypertension, stroke, and other cerebrovascular disease; depression; and diabetes).

[228] "West Virginia Behavioral Risk Factor Surveillance System Report 2013," Bureau for Public Health, West Virginia Department of Health and Human Resources. Available at http://www.wvdhhr.org/bph/hsc/pubs/brfss/2013/BRFSS2013.pdf.
[229] Version 2.0, accessed online at http://www.cdc.gov/chronicdisease/calculator/

The Calculator provides a 10-year cost estimate for the disease states (using 2010 data as the base-year for computation purposes), as displayed in Table 12.4.[230]

Year	CHF	CHD	Other Heart Disease	Diseases of the Heart	Hyper-tension	Stroke	Total CVD	Depres.	Diabetes	Arthritis	Asthma	Cancer	Total
2010	$177	$862	$493	$1,532	$994	$572	$2,759	$517	$1,119	$967	$206	$1,181	$6,749
2011	$185	$900	$515	$1,600	$1,037	$597	$2,881	$538	$1,168	$1,009	$214	$1,234	$7,044
2012	$194	$946	$542	$1,682	$1,086	$628	$3,026	$561	$1,227	$1,056	$223	$1,299	$7,392
2013	$203	$994	$571	$1,767	$1,138	$660	$3,177	$585	$1,288	$1,106	$233	$1,367	$7,756
2014	$213	$1,044	$600	$1,857	$1,191	$693	$3,335	$610	$1,352	$1,158	$243	$1,437	$8,135
2015	$223	$1,098	$632	$1,953	$1,249	$729	$3,506	$636	$1,420	$1,213	$253	$1,513	$8,541
2016	$234	$1,153	$665	$2,053	$1,308	$766	$3,681	$664	$1,490	$1,270	$263	$1,591	$8,959
2017	$246	$1,212	$700	$2,157	$1,371	$805	$3,866	$692	$1,564	$1,330	$274	$1,673	$9,399
2018	$258	$1,273	$737	$2,267	$1,436	$847	$4,061	$722	$1,640	$1,392	$286	$1,759	$9,860
2019	$271	$1,335	$774	$2,381	$1,503	$891	$4,261	$752	$1,719	$1,456	$297	$1,848	$10,333
2020	$285	$1,402	$814	$2,500	$1,573	$936	$4,473	$783	$1,802	$1,523	$309	$1,941	$10,831
% increase 2010-2020	60.70%	62.60%	65.20%	63.20%	58.30%	63.60%	62.10%	51.60%	61.00%	57.50%	49.90%	64.30%	60.48%

Table 12.4 Projected Costs (Millions) of Chronic Disease in West Virginia, 2010-2020 (Source: CDC)

Using these CDC estimates, the percentage of West Virginia health care costs attributable to the CDC-tracked chronic conditions reflected in the CDC Calculator remains within a relatively constant range of 45.7% to 47.4% over a 10-year period, as shown in Table 12.5.

[230] Costs reported in millions. Includes costs only for diseases that are selected and have cost values available. See Appendix E for assumptions, conditions and notes. Percentages may differ due to rounding and computation rules within Calculator formulas.

Year	Total WV Health Care Cost ($MM)	WV Cost of Chronic Disease ($MM)	Percent of Cost from Chronic Disease
2010	$ 14,775	$ 6,749	45.7%
2011	$ 15,351	$ 7,044	45.9%
2012	$ 15,935	$ 7,392	46.4%
2013	$ 16,373	$ 7,756	47.4%
2014	$ 17,241	$ 8,135	47.2%
2015	$ 18,025	$ 8,541	47.4%
2016	$ 18,907	$ 8,959	47.4%
2017	$ 19,834	$ 9,399	47.4%
2018	$ 20,805	$ 9,860	47.4%
2019	$ 21,825	$ 10,333	47.3%
2020	$ 22,894	$ 10,831	47.3%

Table 12.5 Cost Burden (Millions) of Chronic Disease as a Percentage of Total Health Care Costs in West Virginia, 2010-2020[231]

These estimates are low in comparison to national estimates of costs associated with overall disease burden; however, part of this difference lies in the types of disease states included or omitted in the CDC Calculator. For example, obesity is not a tracked disease, yet a recent report argues that it is one of the biggest drivers of preventable chronic disease and health care costs in the country, with cost estimates ranging from $147 billion to nearly $210 billion per year nationally.[232] In West Virginia, BPH reports that adult obesity results in $1.4 billion to $1.8 billion in preventable direct medical costs in the state, expected to rise to $2.4 billion by 2018.[233] Obesity-related costs are expected to represent approximately 10% of West Virginia's direct health care spending by 2018.

Also not represented in the Calculator is the cost associated with tobacco use in West Virginia, estimated at $800 million to $1 billion per year.[234] From 2009 to

[231] Costs reported in millions. Includes costs only for diseases in the CDC Cost Calculator. See Appendix E for assumptions, conditions and notes.
[232] "The State of Obesity: Better Policies for a Healthier America 2015," Robert Wood Johnson Foundation and Trust for America's Health. Available at http://stateofobesity.org/files/stateofobesity2015.pdf.
[233] "Addressing Obesity and Related Chronic Diseases," Bureau for Public Health, West Virginia Department of Health and Human Resources. Available at http://www.dhhr.wv.gov/hpcd/Documents/Obesity%20Plan%20January%202016.pdf.
[234] "Broken Promises to Our Children: A State-by-State Look at the 1998 State Tobacco Settlement 16 Years Later," Campaign for Tobacco-Free Kids. Available at http://www.tobaccofreekids.org/content/what_we_do/state_local_issues/settlement/FY2015/2014_12_11_brokenpromises_report.pdf.

2012, annual smoking-attributable economic costs in the United States were estimated between $289 billion and $332.5 billion, including up to $175.9 billion for direct medical care of adults, $151 billion for lost productivity due to premature death from 2005-2009, and $5.6 billion (in 2006) for lost productivity due to exposure to secondhand smoke.[235] Per Table 12.6, annual costs vary based on age and smoking status.

	18–24 years	25–44 years	45–64 years	65–74 years	≥75 years
People who have never smoked	1,870	2,570	5,040	7,790	9,810
Current or former smokers	2,010	2,940	6,170	9,230	11,580
Current smokers	2,010	2,850	5,540	7,940	8,750
Former smokers					
For <5 years	2,000	3,090	7,650	11,250	15,530
For 5–14 years	n.a.	2,920	6,580	9,760	12,280
For ≥15 years	n.a.	3,330	6,290	9,330	11,770

Source: Congressional Budget Office 2012.
Note: **n.a.** = not available (because of a lack of data to produce precise estimates). Based on data for 2000 to 2008 from the Medical Expenditure Panel Survey and for 1998 to 2007 from the National Health Interview Survey.
*The numbers shown here are rounded to the nearest $10.

Table 12.6 Annual Per Capita Spending on Health Care in the U.S. by Smoking Status and Age Group (Source: Surgeon General)

Adding in these behavior-associated direct health costs brings the estimated cost of chronic illness closer to the national estimates as a percentage of overall costs. The Partnership to Fight Chronic Disease estimates that costs attributable to chronic diseases in West Virginia could amount to $12.4 billion in medical costs and $5.2 billion in lost employee productivity on average from 2016 to 2030.[236] The CDC estimates that eliminating three risk factors—poor diet, inactivity, and smoking—would prevent 80% of heart disease and stroke, 80% of type 2 diabetes and 40% of cancer.[237]

As noted above, obesity is expected to account for 11-12% of health care costs in West Virginia by 2018 ($2.4 billion of approximately $20 billion total cost). Using recent health and medical spending surveys, researchers calculated that 8.7 percent of all health care spending is for illness caused by tobacco smoke, and public

[235] "The Health Consequences of Smoking—50 Years of Progress: A Report of the Surgeon General," U.S. Department of Health and Human Services. Available at http://www.surgeongeneral.gov/library/reports/50-years-of-progress/full-report.pdf.
[236] Partnership to Fight Chronic Disease. Available at http://www.FightChronicDisease.org.
[237] Mensah G., "Global and Domestic Health Priorities: Spotlight on Chronic Disease," National Business Group on Health Webinar. May 23, 2006.

programs like Medicare and Medicaid paid for most of these costs.[238] Research indicates that physical inactivity is estimated to account for 11.1% of aggregate health care costs.[239] Studies also suggest that people with diagnosed diabetes account for more than one in five health care dollars in the U.S., and more than half of that expenditure is directly attributable to diabetes.[240] About one in three deaths is attributable to and one of every six U.S. health care dollars is spent on cardiovascular disease. Thus, the contribution of the most common chronic conditions or factors to overall health care costs can be summarized as follows:

Condition	% of Total Health Care Costs
Obesity	11-12%
Smoking	8.7%
Lack of physical activity	11.1%
Cardiovascular disease	16.7%
Diabetes	20%
Total	67.5-68.5%

Table 12.7 Contribution of Chronic Conditions to Overall Health Care Costs

As noted, not all of the chronic disease costs can be avoided. However, these estimates provide a useful point of reference in evaluating the potential for cost saving associated with population health improvement.

Distribution of Health Care Costs

In attempting to estimate potential future cost savings from SHSIP interventions, it is important to recognize that these health care costs are not distributed evenly over the population. While there are no readily available studies of the distribution of health care costs within the West Virginia population, national research is instructive in considering this issue of "super-utilization" as discussed in Sections 3.8 and 5.3. As demonstrated in Figure 12.1, AHRQ reports that in 2012:[241]

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[238] Xin Xu, Ellen E. Bishop, Sara M. Kennedy, Sean A. Simpson, Terry F. Pechacek. "Annual Healthcare Spending Attributable to Cigarette Smoking," American Journal of Preventive Medicine.
[239] Susan A. Carlson, Janet E. Fulton, Michael Pratt, Zhou Yang and E. Kathleen Adams, "Inadequate Physical Activity and Health Care Expenditures in the United States," Progress in Cardiovascular Diseases. Available at https://www.cdc.gov/nccdphp/dnpao/docs/carlson-physical-activity-and-healthcare-expenditures-final-508tagged.pdf.
[240] "Economic Costs of Diabetes in the U.S. in 2012," Diabetes Care, American Diabetes Association. Available at http://care.diabetesjournals.org/content/early/2013/03/05/dc12-2625.
[241] Steven B. Cohen, "The Concentration of Health Care Expenditures and Related Expenses for Costly Medical Conditions, 2012," Agency for Healthcare Research and Quality. Available at http://meps.ahrq.gov/mepsweb/data_files/publications/st455/stat455.pdf.

- The top one percent nationally ranked by their health care expenses accounted for 22.7 percent of total health care expenditures with an annual mean expenditure of $97,956 for this group.
- The top five percent of the population accounted for 50% of total expenditures with an annual mean expenditure of $43,058.
- The top 10% of the population accounted for 66% of total expenditures with an annual mean expenditure of $28,468.
- Overall, the top 50 percent of the population ranked by their expenditures accounted for 97.3% of overall health care expenditures, while the lower 50 percent accounted for only 2.7% of the total.

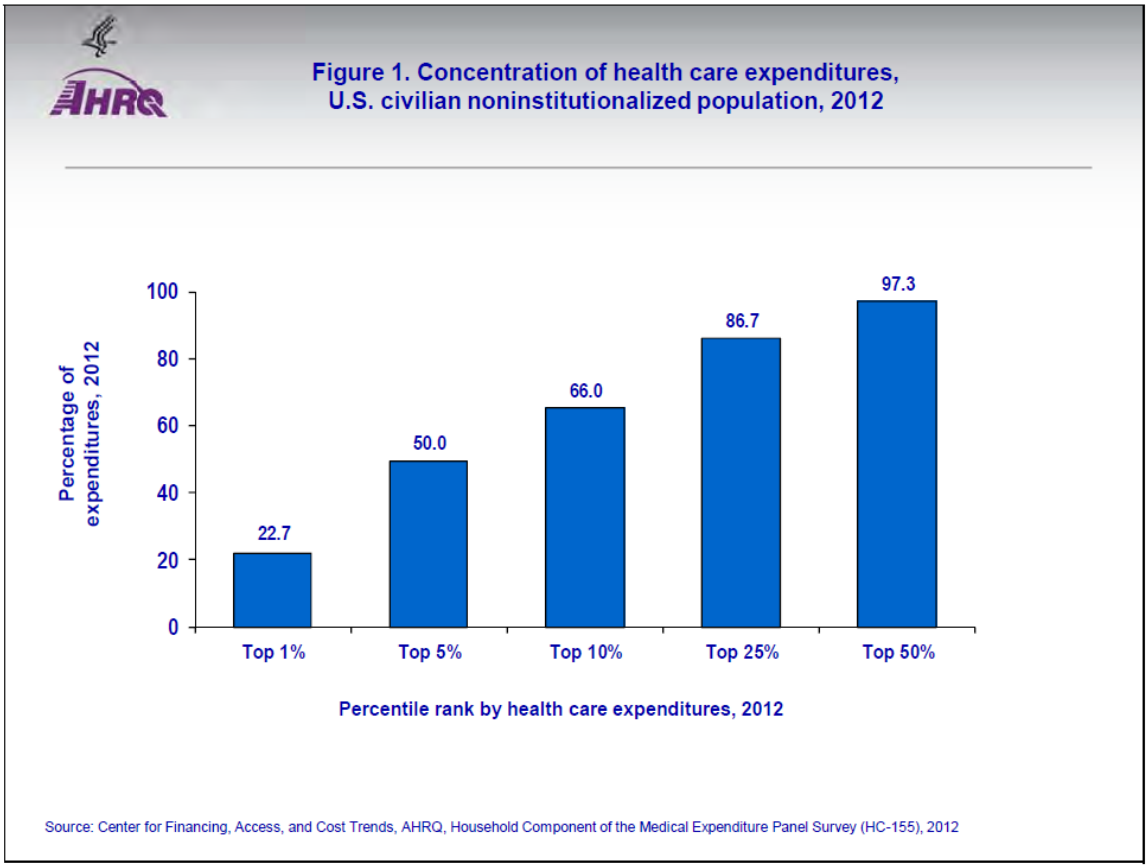

Figure 12.1 Concentration of Health Care Spending, 2012 (Source: Agency for Healthcare Research and Quality)

According to the ARHQ report, the most expensive medical conditions during 2012 in terms of health care expenditures nationally were heart disease, trauma-related disorders, cancer, mental disorders and COPD/asthma.

The distribution of spending is even more uneven within the Medicaid program.[242] Just five percent of Medicaid beneficiaries account for 54% of total Medicaid expenditures, and one percent of Medicaid beneficiaries account for 25% of total Medicaid expenditures. CMS indicates that among this top one percent, 83% have at least three chronic conditions and more than 60% have five or more chronic conditions.

Taking these national percentages and applying them to the West Virginia population and total health cost estimates permits an estimation of the concentration of health care costs that could be expected in West Virginia if the cost distributions were of the same proportion as represented in the 2012 AHRQ study.

Population Segments by Cost	WV Population	Percentage of Health Care Costs	Percentages Applied to 2016 Estimated Cost	Per Capita Costs
Top 1 %	18,440	22.70%	$ 4,091,738,372	$ 221,895
Next top 4%	73,760	27.30%	$ 4,920,901,214	$ 66,715
Next top 5%	92,200	16%	$ 2,884,044,667	$ 31,280
Next top 15%	276,600	20%	$ 3,605,055,834	$ 13,033
Next top 25%	461,000	11.30%	$ 2,036,856,546	$ 4,418
Bottom 50%	922,000	2.70%	$ 486,682,538	$ 528
Total	**1,844,000**	**100.00%**	**$ 18,025,279,171**	**$ 9,775**

Table 12.8 Estimated Concentration of Health Care Costs in West Virginia

In applying the population health improvement initiatives of the SHSIP, there is an initial focus on impactable high-cost populations. By bending the cost trends for these populations, which are relatively few in number but high in cost, the savings can be used to fund value-based incentive programs to sustain future health improvement efforts. This is particularly true within the Medicaid managed care environment due to the additional clustering of costs, as noted previously.

Another AHRQ study from 2006 illustrates how these costs are allocated over subpopulations. The study indicates older individuals (age 65 and over) made up around 13% of the U.S. population in 2002, but they consumed 36% of total U.S. personal health care expenses. The average health care expense in 2002 was

[242] Cindy Mann, "Targeting Medicaid Super-Utilizers to Decrease Costs and Improve Quality," CMCS Informational Bulletin, Centers for Medicare and Medicaid Services. Available at https://www.medicaid.gov/federal-policy-guidance/downloads/cib-07-24-2013.pdf.

$11,089 per year for older individuals, but only $3,352 per year for working-age people (ages 19-64).[243]

Health care costs tend to cluster in the top five percent of health care spenders. In the 2006 AHRQ study, people age 65-79 (nine percent of the total population) represented 29% of the top five percent of spenders. Similarly, people 80 years and older (about three percent of the population) accounted for 14% of the top five percent of spenders). The top five percent of older spenders (age 65+) accounted for 34% of all expenses by this group in 2002, while the top five percent of non-older spenders accounted for 49 percent of expenses by this group. The clustering effect can be seen in Table 12.9 from another AHRQ study.

Age Distribution of Persistent High Spenders Age Range (in years)	Percent of Persistent High Spender Population
65+	42.9%
45–64	40.1%
30–44	10.6%
18–29	3.1%
0–17	3.4%

Table 12.9 Persistent High Health Care Spenders by Age[244]

These data suggest the need to focus initial population health improvement efforts on adults ages 45 and older, with particular attention to senior adults with multiple chronic conditions and associated high risks of complications and potentially high health care costs.

The 2006 AHRQ report also indicates that 25% of the U.S. population has one or more of five major chronic conditions: mood disorders; diabetes; heart disease; asthma; and hypertension. Co-morbidities with these conditions are common and add to the costs associated with these conditions. When the other illnesses are added in, total expenses for people with these five major chronic conditions account for 49% of total health care costs (approximating the results shown in the CDC Cost Calculator for West Virginia).

The 2006 AHRQ report states expenses for people with one chronic condition were twice as great as for those without any chronic conditions. Spending for those with

[243] Mark W. Stanton, "The High Concentration of U.S. Health Care Expenditures: Research in Action," Agency for Healthcare Research and Quality. Available at http://archive.ahrq.gov/research/findings/factsheets/costs/expriach/.
[244] Steven B. Cohen and William Yu, "The Concentration and Persistence in the Level of Health Expenditures over Time: Estimates for the U.S. Population, 2008-2009," Agency for Healthcare Research and Quality. Available at http://meps.ahrq.gov/mepsweb/data_files/publications/st354/stat354.shtml.

five or more chronic conditions was about 14 times greater than spending for those without any chronic conditions.[245]

Those who have higher health care costs tend to have these costs over time. While the most expensive subpopulation tends to change from year to year, within the top 50% there is more consistency in cost. According to the 2012 AHRQ study, from 2008 to 2009:[246]

- 20% of the top one percent of health spenders remained in the top one percent.
- 38% of the top five percent of health spenders remained in the top five percent.
- 44.8% of the top 10% of health spenders remained in the top 10%.
- 54.4% of the top 20% of health spenders remained in the top 20%.
- 63.1% of the top 30% of health spenders remained in the top 30%.
- 75% of the top 50% of health spenders remained in the top 50%.

According to an Institute of Medicine report, about 40% of patients in the top five percent spending tier are younger with good or excellent self-reported health status, but land in the top group due to an accident or sudden illness, recovering and moving out of the high cost group in subsequent years.[247] Some of the high cost is attributable to end-of-life care—the IOM report indicates 11% of patients in the top five percent spender tier die within one year of the expense being incurred. An important characteristic of those in the highest spending tier is the widespread prevalence of behavioral health conditions—mental or substance use disorders. CMS reports that among those patients whose costs remain high over multiple years behavioral health conditions are particularly common.[248]A study by Rutgers University found that in New Jersey's Medicaid program, "86.2% of individuals in the top 1% spending group had a mental health or substance abuse diagnosis." [249]

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[245] Mark W. Stanton, "The High Concentration of U.S. Health Care Expenditures: Research in Action," Agency for Healthcare Research and Quality. Available at http://archive.ahrq.gov/research/findings/factsheets/costs/expriach/.

[246] Steven B. Cohen, "The Concentration of Health Care Expenditures and Related Expenses for Costly Medical Conditions, 2012," Agency for Healthcare Research and Quality. Available at http://meps.ahrq.gov/mepsweb/data_files/publications/st455/stat455.pdf.

[247] Committee on Approaching Death, "Dying in America: Improving Quality and Honoring Individual Preferences Near the End of Life," Institute of Medicine. September 17, 2014.

[248] Cindy Mann, "Targeting Medicaid Super-Utilizers to Decrease Costs and Improve Quality," CMCS Informational Bulletin, Centers for Medicare and Medicaid Services. Available at https://www.medicaid.gov/federal-policy-guidance/downloads/cib-07-24-2013.pdf.

[249] Rutgers Biomedical and Health Sciences Working Group on Medicaid High Utilizers, "Analysis and Recommendations for Medicaid High Utilizers in New Jersey." Available at

Confirming these observations, the Center for Health Care Strategies reports on analysis conducted by Johns Hopkins University as follows:[250]

> . . . the findings demonstrate that most beneficiaries with the highest hospitalization rates and costs have not one condition, but many. Mental illness is nearly universal among the highest-cost, most frequently hospitalized beneficiaries, and similarly, the presence of mental illness and/or drug and alcohol disorders is associated with substantially higher per capita costs and hospitalization rates. The findings confirm the need for programs that integrate physical and behavioral health care policies, programs, and service delivery.

Understanding the concentration of costs within these groups and the associated drivers is the basis for the interventions set forth in the SHSIP health system transformation goals and strategies.

Estimating Opportunities for Cost Savings through Enhanced Value

A number of studies have attempted to estimate the portion of American health care spending that does not create value in the current operating environment. Unfortunately, there are no relevant studies focused specifically on the West Virginia health care system; instead, the SIM team used national studies to estimate the parameters and categories of potential savings through the SHSIP initiatives. In one oft-cited article, the authors suggest 20% to 45% of health care spending does not create value, with a midpoint estimate of 34% (without taking into account patient behaviors).[251] An Institute of Medicine report estimated that $765 billion of spending (approximately 30% of total health care costs exclusive of patient behaviors) did not create value in 2009.[252] PWC estimated that up to 50% of health care spending did not create value, including patient behaviors and non-

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http://www.cshp.rutgers.edu/publications/analysis-and-recommendations-for-medicaid-high-utilizers-in-new-jersey.

[250] Cynthia Boyd, et al., "Clarifying Multimorbidity Patterns to Improve Targeting and Delivery of Clinical Services for Medicaid Populations," Center for Health Care Strategies, Inc. Available at www.chcs.org/media/clarifying_multimorbidity_patterns.pdf.

[251] Donald M. Berwick and Andrew D. Hackbarth, "Eliminating Waste in US Health Care," JAMA. Available at http://jama.jamanetwork.com/article.aspx?articleid=1148376#Abstract.

[252] "Best Care at Lower Cost: The Path to Continuously Learning Health Care in America," Institute of Medicine. Available at http://www.nationalacademies.org/hmd/Reports/2012/Best-Care-at-Lower-Cost-The-Path-to-Continuously-Learning-Health-Care-in-America.aspx.

compliance.[253] The results of these studies can be summarized as follows in Table 12.10.

Category	Low Estimate	Middle Estimate	High Estimate	Middle Estimate Percent of Total
Berwick Estimate (2011)				
Failures of care delivery	102	128	154	14%
Failures of care coordination	25	35	45	4%
Overtreatment	158	192	226	21%
Administrative complexity	107	248	389	27%
Pricing failures	84	131	178	14%
Fraud and abuse	82	177	272	19%
Total	558	910	1263	100%
Percent of Overall Spending	20.9%	34.1%	47.4%	
PWC The Price of Excess				
Behavioral	303	398	493	43%
Clinical	312	312	312	34%
Administrative and Operational	126	220	315	24%
Total	741	930	1120	100%
Percent of Overall Spending	34%	42%	51%	
Institute of Medicine (2009)				
Unnecessary Services		210		27%
Inefficient Care Delivery		130		17%
Excess Administrative Costs		190		25%
Inflated Prices		105		14%
Prevention Failures		55		7%
Fraud and Abuse		75		10%
Total*		765		100%
Percent of Overall Spending		30%		
*represents sum of components; unduplicated estimate is $750 billion				

Table 12.10 Estimates of Waste and Potential Savings in Health Care Spending—National Studies

The SIM team used these reports to create a framework for estimating the potential cost savings that SHSIP implementation could generate—specifically, through three

[253] "The price of excess: Identifying waste in health care spending," PricewaterhouseCoopers' Health Research Institute. Available at www.pwc.com/us/en/healthcare/publications/the-price-of-excess.jhtml.

categories: population health improvement, health system improvement and administrative improvement. In the national studies and research, these three cost improvement categories overlap, and it is difficult to assure non-duplication of cost savings. Estimates of potential savings from improved lifestyle choices require some element of health system improvement to support more effective patient behaviors; likewise, health system improvements and more effective administration will increase the opportunities for overall improved outcomes. As noted, some researchers include savings associated with improved lifestyles in cost calculations, while others do not directly include these components in the research studies. It is important to note that the studies cited are used to create a framework for projections of potential savings and an estimate of the upper limits of the optimal impact of potential interventions. These estimates serve as a check on reasonableness of projections of expected savings, given the high degree of variability of impact and expected outcomes under the SHSIP and the cited research studies.

The categories and estimates of potential national savings have been compared and averaged to convert the dollar estimates of the cited studies to percentages of overall health care spending (see Table 12.10), which can then be applied to the West Virginia estimates of current and projected future health care costs.

While research shows that a significant portion of these costs could be avoided through interventions such as those aimed at enhanced personal behaviors and lifestyle choices, researchers have estimated that only a fraction of these costs can be impacted through population health management programs and health system transformation efforts such as those contemplated in the SHSIP. The studies cited on eliminating waste and reducing health care costs through value-based delivery and payment estimate an optimized attainable savings in the range of 15-20% through population health programs focused on individual behaviors. For purposes of the computations shown in Table 12.11, the lower range of 15.13% has been assumed as the optimal result that could be achieved through full implementation of population health improvement programs. This represents the ceiling of the estimates, not the actual projections, which are significantly lower due to the implementation plan phase-in and the focus on sub-populations rather than the overall population. Likewise, the other estimates in Table 12.11 represent the upside ceiling for the projections associated with health system improvements and administrative enhancements, not the actual anticipated or projected results.

In summary, the purpose of Table 12.11 is to show the optimum improvement opportunities based on national research. It is anticipated that the financial impact

of the interventions in the SHSIP will be significantly below these optimal levels due to the constraints outlined in the projections. The projection of these optimal levels of savings in Table 12.11 serves as a reference point by which to judge the reasonableness of the projected savings from the SHSIP interventions set forth in the subsequent tables.

Cost Saving Category	Anticipated Upper Limits of Potential Savings as % of Total Health Care Spending
Population Health Improvement	
Patient Behavioral and Lifestyle Modification, Increased Adherence and Improved Self-Management	15.13%
Health System Improvement	
More Effective Care Delivery	4.19%
More Effective Care Coordination	1.14%
Elimination of Unnecessary, Duplicative and Ineffective Treatment/Care	6.30%
Administrative Improvement	
Reduction of Administrative Complexity	8.14%
More Effective Pricing and Value	4.30%
Reduction of Fraud/Abuse/Administrative Errors	5.80%
Total	**45.00%**

Table 12.11 Anticipated Upper Limits of Potential Cost Savings to West Virginia from SHSIP Implementation

12.1 Estimates of Anticipated Potential Savings through Population Health Improvement

As noted above, experts suggest there is the opportunity for value enhancement through population health improvement in the range of 15% to 20% of overall health care costs. For purposes of establishing an upper range to potential cost savings estimates, the SHSIP assumes the low end of the range at 15.13% as the opportunity for improvement. Applying this

percentage to the projected overall average health care cost of $21.8 billion during the five-year project period (2017 to 2022 from Table 12.2) results in an average annual upside savings opportunity of approximately $3.2 billion across all payers and payment sources.

The anticipated estimated cost impact of the SHSIP population health interventions is much lower than the optimum savings opportunity as reflected in Table 12.12.

SIM SHSIP Intervention	Trend Improvement per Year	# of Individuals Impacted	Avoided Cost per Person	Total Avoided Cost	Projected Cost of Intervention	Potential Net Savings per Year
Decrease the prevalence of obesity in adults from 35.1% to 35.0%	1.20%	16,800	$2,000	$ 33,600,000	$ 7,560,000	$26,040,000
Decrease the prevalence of diabetes in adults from 14.1% to 13% in 2020.	0.80%	11,200	$3,952	$ 44,262,400	$ 9,520,000	$34,742,400
Decrease the prevalence of pre-diabetes in adults from 8.6% to 8% in 2020.	0.50%	7,000	$1,297	$ 9,079,000	$ 3,150,000	$ 5,929,000
Increase the percentage of individuals with hypertension and pre-hypertension that achieve blood pressure control.	1.00%	5,600	$ 117	$ 655,200	$ 588,000	N/A
Decrease the prevalence of current cigarette smoking among WV adults from 27.3% to 24.5% by 2020	0.60%	8,400	$2,055	$ 17,262,000	$ 3,780,000	$13,482,000
Total		**49,000**		**$104,858,600**	**$ 24,598,000**	**$80,193,400**

Table 12.12 Estimated Potential Savings through SHSIP Population Health Interventions[254]

Section 3 notes that BPH has set a goal of decreasing the prevalence of obesity among West Virginia adults from 35.7% to 35.0% by 2020 (BRFSS 2014). Under current trends, West Virginia's obesity rate for adults is projected to increase to 60% by 2030 and approximately 43% by 2020 without

[254] See Appendix E for assumptions, conditions and limitations on these estimates.

intervention.[255] The BPH target of reducing the obesity rate to 35% by 2020 represents only a 0.7% reduction from the current rate but an overall reduction of 8% in the projected prevalence rate by that date (43%), representing an improvement rate of 5.6% per year based on the current prevalence. A lesser improvement trend as shown in Table 12.12 has been assumed due to the phased nature of the SHSIP implementation and the application of the interventions to targeted populations. The avoided cost per person is based upon projections of the excess cost associated with obesity, and the intervention cost of $450 per person is based upon the current reimbursement rates for intensive therapeutic lifestyle counseling under the Medicare program and estimated costs for the National Diabetes Prevention Program sessions.

The estimates of return for diabetes, hypertension and smoking cessation are likewise based on improvement rates compared to projected prevalence rates in the absence of interventions to develop an improvement trend percentage that is then applied to the prevalence population to determine the potential number of individuals to be benefited by the enhanced outcomes. That number is applied to the estimated excess cost of the condition and then reduced by the cost of the intervention based upon medical literature. These estimates and assumptions are described in greater detail in Appendix E.

The projected net return is 2.5% of the projected overall opportunity savings of $3.2 billion that might be achieved if the results of the interventions were optimized through immediate and widespread implementation across all providers and populations; the gross return is 3.25% of the savings opportunity for this category. These returns reflect the incremental approach taken in implementing the SHSIP interventions, are within ranges demonstrated in other population health programs and appear to be reasonable by comparison to other outcomes reported in published studies. These savings projections amount to an average of 0.37% of total projected health care costs annually over the project period.

Accelerated implementation of the SHSIP interventions would produce proportionally greater savings and rates of return. However, the ability to attain these higher rates will be constrained by the capacity of health care providers, particularly primary care providers, to provide the nature of

[255] Jeffrey Levi, Laura M. Segal, Rebecca St. Laurent, Albret Lang and Jack Rayburn, "F as in Fat: How Obesity Threatens America's Future," Robert Wood Johnson Foundation and Trust for America's Health. Available at http://stateofobesity.org/files/fasinfat2012.pdf.

services needed to produce the improved outcomes associated with these savings and by the readiness of patients to engage in the behavior modification necessary to achieve these outcomes. There is also a period of lead-time needed to prepare patients and providers for the interventions associated with these improved outcomes, and the improvement process is more likely to be stepped (with plateaus and interludes) than a linear progression. The foregoing estimates are approximations of averages over the period, instead of specific estimates for each year during the implementation period.

12.2 Estimates of Anticipated Potential Savings through Health System Improvement

The SHSIP interventions proposed for health system transformation will produce savings through better care delivery resulting in lower costs through avoidable admissions, readmissions, ER use and other clinical services. The research cited previously suggests an upside potential cost reduction of up to 11.6% (see Table 12.11) of overall health care costs, which would translate to a potential optimized savings of approximately $2.5 billion of projected costs in West Virginia. However, the phased approach to the SHSIP interventions will generate an incremental impact on costs, as shown in Table 12.13.

SIM SHSIP Intervention	Trend Improvement per Year	Annual Avoided Cost	Projected Cost of Intervention	Projected Net Savings per Year
More effective care delivery	0.50%	$ 109,000,000	$ 87,200,000	$ 21,800,000
More effective care coordination	0.30%	$ 65,400,000	$ 45,780,000	$ 19,620,000
Elimination of unnecessary, duplicative and ineffective treatment/are	0.40%	$ 87,200,000	$ 34,880,000	$ 52,320,000
Total	**1.20%**	**$ 261,600,000**	**$167,860,000**	**$93,740,000**

Table 12.13 Estimated Potential Savings through Health System Improvement

Unlike the estimates of potential savings from population health improvement interventions, the computations of the potential savings from health system improvement were made using percentage of cost estimates. The projected

costs of the interventions were likewise made using percentages based upon evidenced-based studies of similar interventions and cost models (see Appendix E for additional details).

The projected net return is 2.9% of the upside projected opportunity savings of $2.5 billion for the optimized results for this category of the plan; the gross return is 10.4% of the savings opportunity for this category. These returns reflect the incremental approach of the SHSIP interventions, are within ranges demonstrated in other population health programs and appear to be reasonable by comparison to other outcomes reported in published studies. These savings projections amount to an average rate of 0.33% of total projected health care costs during the project period.

As a means of validating these estimates, the SIM team used research related to projected avoidable costs associated with care failures. Research has shown that the percentage of spending for health care that is preventable or avoidable varies greatly by disease state. Researchers developed the Prometheus Payment Model[256] to approximate the percentage of spending for the most common diseases that is potentially avoidable due to complications from care failures resulting in preventable hospitalizations, readmissions, ED visits or provider visits. State-level data on these potentially avoidable costs are not readily available; however, using national data and projected rates for the Prometheus Payment Model, a proxy estimation can be calculated to approximate savings that may be available from more effective chronic disease management through a transformed health care delivery and payment model.

[256] Francois De Brantes, Amita Rastogi and Michael Painter. "Reducing Potentially Avoidable Complications in Patients with Chronic Diseases: The Prometheus Payment Approach," Health Services Research. Available at http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3029843/pdf/hesr0045-1854.pdf.

Condition	Prev.	Number Impacted [c]	Per Patient Annual Cost	Estimated WV Health Care Cost (Direct Cost) [b]	% of Overall Health Care Cost	PACs % [f]	Potentially Avoidable Cost of Complications (in thousand $)	% of Overall Health Care Cost
Heart Failure [a]	2.6%	36,400	$20,245	$736,918	5.90%	57.13%	$421,001	2.63%
COPD	10.6%	148,400	$5,413	$803,289	6.25%	46.14%	$370,638	2.32%
Diabetes	13.0%	182,000	$13,700	$2,493,400	15.58%	28.85%	$719,346	4.50%
Tobacco Use	27.3%	382,200	$3,391	$1,296,040	8.10%	[e]	$7,857	0.05%
Prediabetes	9.0%	126,000	$4,400	$554,400	3.47%	[d]	$166,600	1.04%
Asthma	9.0%	126,000	$3,300	$415,800	2.60%	28.71%	$119,376	0.75%
Hypertension	41.0%	574,000	$733	$420,742	2.63%	16.56%	$69,675	0.44%
Total		1,575,000		$6,720,589	42.00%		$1,874,493	11.72%

[a] National average; no WV-specific data available; WV prevalence rates per 2013 BRFSS (or BPH reports)

[b] Estimated total direct health care cost was $16B; cost is expressed in thousand $

[c] Not an unduplicated total; patients may have multiple conditions (prevalence rate applied to 1.4M adults in WV)

[d] Computed using national prevalence data and cost estimates (half of 10% developing diabetes/yr avoided)

[e] Calculated using annual estimated additional cost of $2,055.77 per smoker if 10% quit rate is achieved

[f] Prometheus Payment Model computations of Potentially Avoidable Complications

Table 12.14 Potential Cost Savings from Chronic Condition Management in West Virginia

These projections demonstrate the reasonableness of the estimates of potential savings from SHSIP system interventions. As shown in Table 12.14, up to approximately 11.7% of health care costs in West Virginia are potentially avoidable or preventable through more effective management of chronic conditions, particularly high-impact conditions.

- **Congestive heart failure** is a high-impact condition, as it impacts a relatively small percentage of the population who are at high risk for complications and avoidable cost through effective care management and coordination. These patients tend to require more complex care because of the co-morbidity of other conditions and the involvement of multiple providers in multiple care settings as part of the overall care delivery.
- **Diabetes and prediabetes** are high-impact conditions since many of the complications and costs can be avoided or prevented through lifestyle modification (nutrition and physical activity) and tight control of blood sugar levels. As noted in other sections of the SHSIP,

onset of diabetes for those with prediabetes can be avoided or delayed through sustained weight loss and physical activity, thus avoiding the consequences and costs of diabetes complications.

- **Respiratory conditions** such as asthma and COPD can be controlled through medication adherence and trigger avoidance, thus reducing ED visits, admissions and other costs associated with uncontrolled exacerbations of these conditions.
- **Hypertension** can likewise be effectively managed and controlled through medication and self-management protocols.

Accordingly, these high-impact conditions are target areas for the SHSIP improvement plan and focus areas for the health system transformation efforts.

As noted above, part of the avoidable cost of health care is attributable to unneeded or duplicative diagnostic tests or treatments such as imaging for lower back pain or the prescription of antibiotics when not medically necessary. The SIM workgroups endorsed patient education and engagement efforts on treatment options, such as those represented by the national Choosing Wisely campaign that is being coordinated in West Virginia as part of health system transformation.[257]

12.3 Estimates of Anticipated Potential Savings through Administrative Improvement in Transition to Value-Based Payment

The transition to a value-based payment model could produce savings up to 18.2% of overall health care costs from simplification in moving away from the fee-for-service payment model (see Table 12.11). This would translate to a potential optimized upside savings of approximately $3.9 billion of anticipated total health care costs over the project period. However, the anticipated rate of savings will be much more incremental due to the alignment of the transition to value-based care with CMS and the phasing-in of alternative payment models. The anticipated estimated impact of this transition is as follows in Table 12.15.

[257] Choosing Wisely in West Virginia. Available at http://consumerhealthchoices.org/choosing-wisely-west-virginia/.

SIM SHSIP Intervention	Trend Improvement per Year	Annual Avoided Cost	Projected Cost of Intervention	Projected Net Savings per Year
Reduction of administrative complexity (including enhancement of use of HIT systems and more effective use of claims and clinical data)	0.25%	$ 54,500,000	$ 21,800,000	$ 32,700,000
More effective pricing and value	0.40%	$ 87,200,000	$ 61,040,000	$ 26,160,000
Reduction of fraud/abuse and administrative errors	0.10%	$ 21,800,000	$ 8,720,000	$ 13,080,000
Total	**0.75%**	**$ 163,500,000**	**$ 91,560,000**	**$71,940,000**

Table 12.15 Estimated Potential Savings through Administrative Improvement in Transition to Value-Based Payment

Like the computations of the potential savings from health system improvement, the potential savings from administrative improvements were made using percentage of cost estimates. The projected cost of the interventions was made using percentages based upon evidenced-based studies of similar interventions and cost models (see Appendix E for additional details).

12.4 Summary of Anticipated Projected Savings through SIM SHSIP Interventions

In summary, the interventions recommended in the SHSIP are projected to have the following potential average annual cost impact during the implementation period (Table 12.16).

SIM SHSIP Intervention	Annual Avoided Cost	Projected Cost of Intervention	Projected Net Savings per year
Population Health Improvement	$ 104,858,600	$ 24,598,000	$ 80,193,400
Health System Improvement	$ 261,600,000	$ 167,860,000	$ 93,740,000
Administrative Improvement	$ 163,500,000	$ 91,560,000	$ 71,940,000
Total	**$ 529,958,600**	**$ 284,018,000**	**$ 245,873,400**

Table 12.16 Total Potential Projected Savings through SHSIP Interventions

These savings represent an average annual net savings of .87% of overall average projected health care costs during the implementation period. The average annual gross savings is 2.4% of average projected overall health care costs during the implementation period, assuming the interventions will be funded out of savings since there is no external source of funding of the population health improvement and health system transformation initiatives. As noted above, these estimates and returns are within ranges demonstrated in other population health programs and appear to be reasonable by comparison to other outcomes reported in published studies. Actual results will be influenced by a number of factors:

- The effectiveness of the support of organizations such as the proposed WVHTA in organizing and leveraging the resources necessary to support the intended goals and objectives of the SHSIP;
- The ability of practices to transform and adapt to the new models of health care delivery and payment;
- The integration of health IT and data to drive improvements as outlined in this plan; and
- The engagement of patients and their families and support groups to achieve the population health improvement and system transformation initiatives set forth in this plan.

Over the five-year project implementation, the potential estimated financial impact on specific programs can be summarized as follows in Table 12.17. One column assumes that the cost savings accrue to the various programs in the same proportion as the coverage of individuals by these programs, while another column assumes that the savings accrue in the proportion of payment of overall health care costs projected for 2016 in the 2009 CCRC Actuaries, LLC report by the various payer sources.

Program	Coverage	Percentage by Coverage [a]	Share of Projected Savings by Coverage (5-Year Total)	Percentage by Payment [b]	Share of Projected Savings by Payment (5-Year Total)
Medicaid	548,000	29.7%	$284,361,777	17.3%	$165,149,536
Medicare	396,000	21.5%	$205,487,707	21.7%	$207,184,085
Private Insurance	360,000	19.5%	$186,807,007	29.3%	$280,132,908
PEIA/Fed/Retirees	275,000	14.9%	$142,699,797	8.6%	$82,268,359
Uninsured	116,000	6.3%	$60,193,369	9.3%	$88,858,502
Other/Unknown [c]	149,000	8.1%	$77,317,344	13.9%	$133,273,610
Total	**1,844,000**	**100.0%**	**$956,867,000**	**100.0%**	**$956,867,000**

(a) Coverage per OIC and other sources as reflected in Figure 3.6 and Table 5.3 in the SHSIP.
(b) Payment percentage estimates per CCRC for 2016 as stated in its 2009 report, "Health Care Financing in the State of West Virginia: An Analysis and Projection of the Current System and Potential Transformations" for the WVHCA. Note: These projections by CCRC were made before full ACA implementation and Medicaid expansion, which may understate the percentage of costs incurred by Medicaid in the current market environment and may overstate the costs incurred by private insurance due to a reduction in the number of uninsured individuals in the current environment.
(c) Other includes WVCHIP, Veterans, Health Insurance Marketplace, Prison and Jail, Military and others who may or may not be insured.

Table 12.17 Projected Potential Financial Impact of Five-Year SHSIP Implementation by Program

12.5 Long-Term and Geriatric Care Enhancement Opportunities

As noted in Section 5 under Driver 5, long-term and geriatric care is a major cost driver for the health care system. According to the Kaiser Family Foundation, long-term care accounted for 7.1% of overall health care spending in West Virginia in 2009.[258] In 2015, the median annual cost for nursing facility care was more than $91,000, compared to $45,000 for home health services and about $18,000 for adult day care.[259]

As noted in Section 5, during the state's 2015 fiscal year,[260] West Virginia Medicaid spent $661.8 million on institutional care, with 13,315 individuals receiving services in long-term care institutional settings. The per capita cost for Medicaid beneficiaries receiving institutional care was $49,703.

[258] The Henry J. Kaiser Family Foundation, State Health Facts. Available at http://kff.org/state-category/health-costs-budgets/?state=wv.
[259] Erica L. Reaves and MaryBeth Musumeci, "Medicaid and Long-Term Services and Supports: A Primer," The Henry J. Kaiser Family Foundation. Available at http://kff.org/medicaid/report/medicaid-and-long-term-services-and-supports-a-primer/.
[260] July 1, 2014, to June 30, 2015.

Conversely, Medicaid's costs for home- and community-based services (HCBS) were $546.4 million for this period, with 19,024 individuals served. The per capita cost for Medicaid beneficiaries receiving HCBS was $28,720, or nearly $21,000 less than the cost of institutional care while serving almost 6,000 more individuals.[261]

Nursing homes provide most of West Virginia's long-term care. The WVHCA reports that West Virginia has 107 nursing home organizations with 9,905 licensed beds. For 2014, these nursing homes served approximately 25,100 residents, providing 3.2 million bed days. Patient charges for these services totaled just over $900 million. Medicare paid for 11.1% of nursing home services and Medicaid paid for 76.6% of these services.

Medicare remains the largest payer for hospital services, paying for 50% of the total discharges in 2014. Medicaid paid for 23.8% of inpatient hospital discharges; nongovernmental payers covered 19.9% of discharges, while the remaining 6.3% of discharges were covered by PEIA and other governmental payers.[262]

Cost Saving Opportunities Associated with Geriatric Care Improvements and Interventions Reflected in the SHSIP

Older patients tend to have different health care needs and use more services than younger adults. Patients 65 and older visit physicians an average of 11.4 times a year, compared with 7.2 visits for the population between the ages of 45 and 65. Patients age 85 and over average 15 physician visits each year. Although adults 65 and older made up only 12% of the population in 2000, they made 24.3% of all office visits that year. About 45% of all visits were made to primary care physicians.

For family practitioners, 20.4% of their total patient visits in 2000 were made by people age 65 and older, and for internists the rate was 39% of total visits. The percentages were higher for cardiologists (59.7%), urologists (53.1%), and ophthalmologists (51.5%).[263]

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[261] The West Virginia Bureau for Medical Services provided the data and statistics cited in this paragraph.
[262] "2015 Annual Report," West Virginia Health Care Authority. Available at http://www.hca.wv.gov/data/Reports/Documents/AnnualRp2015/AnnualRp2014.pdf.
[263] Greg O'Neill and Patricia P. Barry, "Training Physicians in Geriatric Care: Responding to Critical Need." Available at http://www.agingsociety.org/agingsociety/pdf/trainging.pdf.

Studies have shown that patients benefit when primary care practices have access to specialized geriatric resources to enhance geriatric care. According to The Aging Society:[264]

> In one study, patients who received inpatient and outpatient care in geriatric units experienced large reductions in functional decline and improvements in mental health at no additional cost. In another study, older patients cared for by nurses trained in geriatrics had fewer readmissions to the hospital and were less likely to be transferred from nursing facilities to a hospital for inappropriate reasons.

The Aging Society research continues:

> The Alliance for Aging Research estimates that proper geriatric care could reduce hospital, nursing home, and home care costs by at least 10 percent a year, saving $50.4 billion in the year 2000 and $133.7 billion in 2020. The GAO (GAO, 1995) has estimated that medication-related problems among the elderly, including improper dosing and adverse reactions, costs approximately $20 billion a year in hospital stays. According to the Centers for Disease Control and Prevention (CDC, 2000), fall-related injuries among older Americans cost $20.2 billion in direct medical costs each year. The CDC notes that the number of falls could be reduced substantially through a prevention strategy of exercise, vision correction, medication review, and home modifications, such as bathroom grab rails.

Massachusetts General Hospital participated in a three-year demonstration project to improve care and coordination of Medicare services for 2,500 high-cost beneficiaries. Care managers were integrated into primary care practices and worked with physicians to educate patients and providers and provide care and counseling. The team care approach, including extensive use of nurses in new roles, facilitated communication during transitions, effective use of electronic health records, and coordination of care across providers and sites of care. Improved care resulted in a 20% reduction in hospital admissions and a 25% reduction in emergency department visits as well as lower mortality rates (16% compared to 20% for the control group). The

[264] Greg O'Neill and Patricia P. Barry, "Training Physicians in Geriatric Care: Responding to Critical Need." Available at http://www.agingsociety.org/agingsociety/pdf/trainging.pdf.

evaluation found seven percent annual net savings among enrolled patients after accounting for intervention costs.[265]

Use of an interdisciplinary model of care focused on elderly patients has the potential to reduce costs and improve outcomes, according to a study on the cost-effectiveness of Acute Care for Elders (ACE) units at the University of Alabama at Birmingham medical center. The study compared the ACE units with a multidisciplinary usual care unit in treating hospitalized patients 70 or older. As a result, readmission rates were 7.9% for ACE patients, compared with 12.8% for usual-care patients. Similar research has shown through ACE pilots at 200 hospitals a decrease in length of stay from 7.3 days to 6.7 days and savings of $974 per patient.[266]

Cost Savings Associated with Improvements in Care Coordination and Management for Residents in Long-Term Care and at Risk for Falls

According to research cited in Health Affairs, "More than 15% of long-stay nursing home residents are hospitalized within any given six-month period. Approximately 40% of nursing home–hospital transfers have been deemed inappropriate, meaning that the resident could have been cared for safely at a lower level of care."[267]

Studies have found that five conditions were responsible for 78% of the potentially avoidable hospitalizations: pneumonia, congestive heart failure, urinary tract infections, dehydration and COPD/asthma.[268]

Researchers report that approximately one-third of elderly adults experience a fall each year. Falls are the most common cause of fatal and non-fatal injuries among elderly adults age 65 years and older. One study found fall-related treatment to account for 10.5% of all ED visits among the elderly. The majority of these cases (70.4%) were "treat-and-release" (i.e., the patient was

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[265] Nancy McCall, Jerry Cromwell and Carol Urato, "Evaluation of Medicare Care Management for High Cost Beneficiaries (CMHCB) Demonstration: Massachusetts General Hospital and Massachusetts General Physicians Organization (MGH)." Available at https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/Reports/downloads/McCall_MGH_CMHCB_Final_2010.pdf.
[266] Julie Bird, "Geriatric teams cut hospital costs, improve care," Fierce Healthcare. Available at http://www.fiercehealthcare.com/healthcare/geriatric-teams-cut-hospital-costs-improve-care.
[267] David C. Grabowski, A. James O'Malley and Nancy R. Barhydt, "The Costs and Potential Savings Associated With Nursing Home Hospitalizations," Health Affairs. Available at http://content.healthaffairs.org/content/26/6/1753.full.
[268] FOA, Initiative to Reduce Avoidable Hospitalizations among Nursing Facility Residents, CMMI, CMS-1E1-12-002, March 15, 2012.

released from the ED rather than being admitted to that hospital for further care); the remaining 29.6% of visits resulted in hospital admission.[269]

The CDC reports that in 2013, direct medical costs for falls totaled $34 billion (about 1.2% of total medical cost). Nationally, over 700,000 patients a year are hospitalized because of a fall injury, most often because of a broken hip or head injury. The average hospital cost for a fall injury is $35,000, and Medicare pays for about 78% of the costs of falls.[270] Research also indicates approximately 54% of older adults were discharged to skilled nursing homes after hospitalization for falls, and seniors who fall and fracture their hip have a 25-30% chance of dying after one year.[271]

Potential Cost Savings for Integrated Care for Alzheimer's and Dementia Patients

According to the Alzheimer's Association, one in nine Americans aged 65 and older has Alzheimer's disease. More than 15 million family members provide unpaid care for these individuals. Alzheimer's is the sixth-leading cause of death in the United States, and the only cause of death among the top 10 without a way to prevent, cure or slow its progression.[272]

According to a study published in the New England Journal of Medicine, Alzheimer's is the costliest disease in the United States. In 2013, Alzheimer's and other dementias cost an estimated $203 billion (approximately seven percent of health care costs), 70% of which is paid by Medicare and Medicaid. By 2050, this number is expected to grow to more than $1.2 trillion. The direct cost of care for dementia is similar to expenditures for heart disease and substantially higher than expenditures for cancer.[273]

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[269] Pamela L. Owens, C. Allison Russo, William Spector and Ryan Mutter, "Emergency Department Visits for Injurious Falls among the Elderly, 2006," Healthcare Cost and Utilization Project, Agency for Healthcare Research and Quality. Available at http://www.hcup-us.ahrq.gov/reports/statbriefs/sb80.pdf.
[270] "Costs of Falls Among Older Adults," Centers for Disease Control and Prevention. Available at http://www.cdc.gov/homeandrecreationalsafety/falls/fallcost.html.
[271] Scott Schnell, Susan M. Friedman, Daniel A. Mendelson, Karilee W. Bingham and Stephen L. Kates, "The 1-Year Mortality of Patients Treated in a Hip Fracture Program for Elders," Geriatric Orthopaedic Surgery & Rehabilitation. Available at http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3597289/pdf/10.1177_2151458510378105.pdf.
[272] "2016 Alzheimer's Disease Facts and Figures," Alzheimer's Association. Available at http://www.alz.org/facts/.
[273] Steven S. Foldes and Kirsten Hall Long, "The Minnesota Economic Model of Dementia: Demonstrating Healthcare Cost Savings with the New York University Caregiver Support Intervention," ACT on Alzheimer's Collaborative. Available at http://tcwebtech-

Among all nursing home residents, more than 64% have been diagnosed with Alzheimer's or another dementia. Average annual per-person Medicaid spending on seniors with Alzheimer's and other dementias is 19 times higher than that of all seniors without dementia. It is estimated that at least 74% of people with dementia have multiple chronic conditions, which increases cost and the complexity of care needs for these individuals.[274] In addition, most care for individuals with Alzheimer's and dementia is provided by a family or relative caregiver, taking a significant physical and emotional toll.

The West Virginia Chapter of the Alzheimer's Association and the Blanchette Rockefeller Neurosciences Institute at WVU are resources that can be leveraged to improve care coordination and support for patients and caregivers with Alzheimer's and dementia. Implicit in the interventions contemplated in Driver 5 is the integration of Alzheimer's and dementia care enhancement as part of the overall geriatric improvement program.

Summary of Projected Potential Cost Savings from Driver 5 Interventions

The cited studies reflect the opportunity for a reduction in costs associated with long-term care and geriatric health care. As noted in other sections of the SHSIP, complex care patients account for nearly 22% of health care costs while representing only one percent of the population. A recent study reported that the top 10% of Medicare patients by cost accounted for approximately 80% of inpatient costs. The study indicated that 10% of high-cost patients' costs and 19.1% of non-high-cost patients' costs were considered potentially preventable.[275]

Many of these high-cost patients could benefit from improved geriatric care and alternatives to long-term care placement. CMS estimates that 34% of health expenditures are for seniors age 65 and over, even though this group accounts for only 13% of the population.[276] As noted elsewhere in the SHSIP, West Virginia has the third oldest population in the country per capita. Using the national average of 34% as a proxy to estimate the potential cost savings

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server3.com/act2/sites/default/files/documents/MN%20Economic%20Model%20of%20Dementia%20White%20Paper%20Final.pdf.

[274] Alzheimer's Association Policy Statement, August 2013. Available at http://www.alz.org/national/documents/Long-Term-Care-Commission-8-16-13.pdf.

[275] Karen E. Joynt, Atul A. Gawande, E. John Orav and Ashish K. Jha, "Contribution of Preventable Acute Care Spending to Total Spending for High-Cost Medicare Patients," JAMA. Available at http://jama.jamanetwork.com/article.aspx?articleid=1699911.

[276] NHE Fact Sheet, Centers for Medicare and Medicaid Services, 2015.

of the Driver 5 interventions for geriatric health improvement and applying an opportunity capture rate of 2.5% to estimate a potential gross savings rate from the Driver 5 interventions results in an estimated savings rate of 0.8% for the project period (these savings are in addition to those reflected in Table 12.16). Applying this rate to the projected overall health care spending in West Virignia produces an annual potential gross savings of $175 million and an associated annual $17.5 million in potential net savings (assuming a 90% cost of intervention rate associated with the interventions listed in Driver 5 and including shared savings incentives to providers) during the project period. These estimates are based upon results from the studies cited and a review of evidence-based estimates from CMS and other sponsored demonstrations and pilots of similar focus and scope.

12.6 Projected Impact on Indirect Costs to West Virginia Employers: Improvements in Workforce Productivity and Reduction in Indirect Costs

It is widely recognized that improvements in population health will have a direct benefit to employers through not only reduced health care costs that are shared by employers via employer-sponsored health insurance, but also through increased worker productivity. One study places the ratio of health-related productivity costs to direct health care costs at 2.3 to 1.[277] That study suggests that chronic conditions such as depression/anxiety, obesity, arthritis and back/neck pain are especially important causes of productivity loss. Other experts place the ratio lower; as previously noted in this section, the Partnership to Fight Chronic Disease estimates that costs attributable to chronic diseases in West Virginia could amount to $12.4 billion in medical costs and $5.2 billion in lost employee productivity on average from 2016 to 2030.

As noted above, obesity not only results in higher direct medical costs, but is also associated with job absenteeism, costing approximately $4.3 billion annually in the United States. Obesity is associated with lower productivity while at work, costing employers $506 per obese worker per year. Using

[277] Ronald Loeppke et al., "Health and Productivity as a Business Strategy: A Multi-Employer Study," Journal of Occupational Environmental Medicine. Available at https://www.acoem.org/uploadedFiles/Healthy_Workplaces_Now/HPM%20As%20a%20Business%20Strategy.pdf.

national estimates and extrapolating the cost for West Virginia, it is estimated that the cost of obesity associated with lower productivity in West Virginia in 2013 was $141,417,357, which is 0.20% of the state's GDP.[278]

One of the challenges in making these estimates is identifying the portion of direct medical cost that is attributable to the workforce instead of the overall population. According to a report by the West Virginia Center on Budget and Policy, 53.9% of West Virginia's 1.49 million working age population participates in the West Virginia workforce.[279] Thus, the West Virginia workforce consists of slightly more than 800,000 West Virginia workers. The report indicates:

> There are about 687,000 West Virginians who are not in the labor force. These are people who are not working, but are also are not considered unemployed, because they are not looking for work. About 288,000 of these people in West Virginia are not working because they are retired, while another 81,000 are in school and not looking for work. Close to 100,000 West Virginians are not in the labor force because they are taking care of their homes and families, such as stay-at-home parents or those caring for aging relatives. Approximately 192,000 West Virginians are unable to work, either due to disability or illness. And there are about 27,000 people in West Virginia who are not in the labor force for some other reason, which includes those who don't want to work and those who are discouraged workers.

The average annual single coverage premium is $6,251 per worker for 2015, according to the 2015 Kaiser Family Foundation Employer Health Benefits Survey.[280] By comparison, it is estimated that Medicaid spent almost $7,540 per covered life and Medicare spent $10,830 per covered life in 2012.[281] Using the single premium as a proxy for worker health care costs, it is estimated that the total health care cost for West Virginia's workforce is slightly over $5 billion in 2015, approximately 27.7% of total health care costs.

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[278] See Appendix E for the calculations used in arriving at this estimate.
[279] "The State of Working West Virginia 2015," West Virginia Center on Budget and Policy. Available at http://www.wvpolicy.org/wp-content/uploads/2015/11/SWWV-2015.pdf.
[280] "2015 Employer Health Benefits Survey," The Henry J. Kaiser Family Foundation. Available at http://kff.org/health-costs/report/2015-employer-health-benefits-survey/.
[281] Tevi D. Troy and D. Mark Wilson, "Health Coverage Cost Per Covered Life: Government vs. Employment-Sponsored Programs," American Health Policy Institute. Available at http://www.americanhealthpolicy.org/Content/documents/resources/AHPI_STUDY_Cost_Per_Covered_Life.pdf.

The Milken Institute published an estimate of the impact of chronic disease in West Virginia using 2003 data with projections for 2023.[282] The publication indicates:

> The cost of treating these conditions—without even taking into consideration the many secondary health problems they cause—totaled $2.3 billion in 2003. These conditions also reduce productivity at the workplace, as ill employees and their caregivers are often forced either to miss work days (absenteeism) or to show up but not perform well (presenteeism). The impact of lost workdays and lower employee productivity resulted in an annual economic loss in West Virginia of $8.1 billion in 2003.

The Milken report uses an indirect cost to direct medical cost ratio of 3.5 to 1. The report also projects, "Reasonable improvements in preventing and managing chronic disease could reduce future economic costs of disease in West Virginia sharply, by 27% ($7.7 billion) in 2023. $6.1 billion of this would come from gains in productivity, and $1.6 billion would come from reduced treatment spending."

The Partnership for Prevention likewise indicates indirect costs (e.g., absenteeism, presenteeism) of poor health can be two to three times the amount of direct medical costs.[283]

Based on these sources, it is possible to estimate the range of impact on West Virginia employers of $5 billion to $15 billion in lost productivity due to health conditions of workers, and this represents an opportunity for additional savings and a secondary economic benefit of the SIM SHSIP interventions on the West Virginia economy.

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[282] "The Economic Burden of Chronic Disease on West Virginia," Milken Institute. Available at http://www.chronicdiseaseimpact.org/state_sheet/WV.pdf.

[283] "Leading by Example: The Value of Worksite Health Promotion to Small- and Medium-Sized Employers," Partnership for Prevention. Available at http://www.prevent.org/data/files/initiatives/lbe_smse_2011_final.pdf.

13.0 Evaluation and Monitoring

As part of the design process, the SIM Project Management Team and stakeholders developed an initial evaluation and monitoring (E&M) framework that will be expanded and enhanced as the SHSIP is implemented. The first phase of the E&M plan tracks deliverables under the SIM grant for model design and SHSIP elements. The second phase outlines efforts to evaluate the impact of SHSIP implementation.

Deliverables under SIM Model Design and SHSIP Elements

During the Model Design, the SIM project team, consisting of contracted advisors, conducted the monitoring and evaluation of the project. The team used the federal SIM FOA and development guidance, along with the approved SIM operational plan, to establish benchmarks for performance. During the SIM project period, monitoring and evaluation activities were closely coordinated with the designated CMS project officer and technical assistance resources made available in support of the West Virginia SIM efforts. The SIM project activities were also monitored by the SIM Steering Committee and the various stakeholder groups. The SIM Project Management Team was responsible for the timely completion of all SIM project tasks and accepted accountability for these tasks with the CMS support team, the Steering Committee and the various stakeholder and constituent groups.

The CMS SIM-required deliverables for the Model Design Phase entailed a series of planning meetings, stakeholder meetings, health care environment assessments and surveys as part of the development of the SHSIP. While the original objective of the Model Design was to prepare for a possible Model Test Phase, CMS has indicated there is currently no Round Three funding for testing of models for Round Two Model Design awardees such as West Virginia. This clarification necessitated a different approach to the development of the SHSIP. Consequently, the SIM project team consulted with other Round Two Model Design states and decided to pursue an incremental approach to health system transformation that could be implemented in the absence of Model Test funding from CMS.

The SIM team worked closely with BPH and other stakeholders to evaluate and validate disease prevalence data from the Behavioral Risk Factor Surveillance System, in consultation with CDC and other state data sources. The SIM project team also collaborated with BPH to identify and prioritize targeted disease states as part of a concurrent Population Health Assessment and Population Health Improvement Plan. This collaboration led to an agreed set of health priorities with associated disease prevalence rates and outcome measures by which progress in attaining the targeted goals will be evaluated; this work was accomplished with BPH and the

West Virginia Health Innovation Collaborative (WVHIC) stakeholder groups. Thus, the SIM team achieved the originally proposed framework in the West Virginia SIM application for evaluation and monitoring.

The recommendations of the stakeholder workgroups from the WVHIC were reviewed with the Steering Committee and taken to a representative Task Force to refine the recommendations into a specific and actionable series of drivers, goals, strategies and tactics that comprise the SHSIP. In each of these steps, the SIM Project Management Team monitored the progress of the SHSIP development for operational plan timelines and budget constraints. The Project Management Team requested and was granted a six-month extension of the project period to July 2016. This extension permitted an additional series of focused Task Force meetings to address critical elements of the Model Design, particularly addressing the phased implementation of alternative care delivery and payment models as set forth in Sections 5 and 14.

Tracking Progress of SHSIP Implementation

The second phase of the E&M plan is intended to provide implementation resources such as the West Virginia Health Transformation Accelerator (WVHTA) with a process for tracking progress in achieving the aims of the SHSIP. The E&M plan will track and monitor the implementation activities shown in Sections 5 and 14 so that the SHSIP management team can evaluate progress, identify barriers, and deploy and adjust resources in support of the SHSIP objectives. Since the SHSIP is a fluid plan that will change and expand over time based on a number of variables, the E&M process will allow management resources to continually evaluate plan objectives, accomplishments and expectations against pre-determined benchmarks.

The SHSIP management team will utilize a multi-level strategy to evaluate:

- The impact of SHSIP implementation on care and cost.
- The extent to which the elements of the SHSIP appear to be successful and efficient and the underlying drivers of success or lack thereof.
- The effect of the elements of the SHSIP on health care spending, health care quality and population health.

To evaluate the impact of implementation, the management team will utilize data from multiple sources, including providers and practices, patients and families/caregivers, payers, community organizations and researchers.

In accordance with the original FOA accompanying the West Virginia SIM grant, if

the SHSIP moves to a model test award, SHSIP management will provide data to enable CMS to evaluate the effectiveness of West Virginia's health system and payment transformation plan and its impact on the Triple Aim of population health, patient experience and costs. These data will include performance measure baselines and results, provider and patient survey results, community needs and social determinants of health assessments, cost and utilization trends and other key metrics to permit meaningful evaluation of the impact of the SHSIP implementation.

The E&M plan is based on the stated objectives of the SHSIP and includes performance and process measures that reflect the key elements of a successful system transformation. As part of the stakeholder engagement and model development process, key performance and process measures were discussed and a group was tasked with defining a set of common performance measures, leveraging to the extent possible the CMS Core Quality Measure initiative. These measures will be used to support evaluation early in the implementation (and/or model testing) period. Data sources for these measures have been identified, and the stakeholders will collaborate to reduce the burdens of data collection and reporting.

The timeline outlined in Section 14 sets forth key milestones and intended outcomes of the SHSIP, all of which are targeted to achieve the Triple Aim of improved health outcomes, improved quality and patient experience of care, and a phased reduction of overall health care costs. The E&M plan will use the Triple Aim objectives and specific implementation objectives of the SHSIP as the benchmark for measuring progress in health system transformation and population health improvement, along with value-based return on investment associated with the implementation elements. The E&M plan serves two core functions: It will provide a basis for evaluating and monitoring the impact and effectiveness of the SHSIP interventions, and it will provide continuous feedback to foster improvement and necessary adjustments, modifications and enhancements to the SHSIP during implementation.

Ongoing evaluation will make use of a balanced scorecard of measures that reflect the impact of the interventions and actions outlined in the SHSIP. These measures would include performance, process, patient-level and population health outcome measures, as well as patient and provider experience outcomes and cost-effectiveness measures (reduction in avoidable costs and enhancement in health outcomes). Cost measures will reflect incurred cost based on payer data and avoided cost projections using predictive tools and evidence-based metrics to evaluate the extent to which the SHSIP has achieved cost savings and cost offsets.

Patient, caregiver and provider surveys will be used to assess satisfaction and

quality of care. Site surveys will be leveraged based on existing payer and regulatory efforts. As needed, focus groups may be convened and used to define the patient experience of care and to foster feedback. The use of these types of tools will allow an in-depth analysis of patient and caregiver experiences of care and identify gaps and opportunities for improvement.

The WVHTA will serve as the coordinator for the collection and analysis of evaluation and monitoring data, relying on a combination of staff, contracted resources and vendors to perform these activities. In the implementation phase, the WVHTA may secure the assistance of one or more academic-based or quality-based evaluators (approved by CMMI, if associated with a model test grant) to refine a detailed E&M work plan associated with the implementation schedule. There are a number of well-suited entities in West Virginia (and external to the state) that could work through cooperative agreements to assist in program evaluation. These evaluation resources would be engaged early in the implementation phase so that the evaluation plan can be initiated on commencement of model testing (if model test funding is available and awarded).

Implementation Risk Mitigation

In addition to a plan for evaluating and monitoring implementation progress, it is important to consider the inherent risks of bringing the SHSIP to fruition. A number of hypothetical factors could threaten the implementation of the SHSIP, such as the failure to organize and launch the WVHTA; a lack of sustainable funding to support the WVHTA's operations; an inability to retain stakeholder collaboration necessary to drive progress in the state; and a lack of commitment due to competing priorities.

These considerations are valid concerns, particularly in light of the uncertain fiscal and political climate in West Virginia and the potential absence of SIM implementation funding. However, the original catalyst of the SIM process in West Virginia was a mutual understanding across many stakeholder groups that the current status quo of health care delivery and payment in the state is unsustainable. It stands to reason, then, that those stakeholders would not abandon their vision for better health care but rather be committed to carrying the SHSIP from design into implementation.

One of the most important outcomes of the SIM design process was the opportunity for collaboration between providers, payers (including governmental payers) and consumer groups. The stakeholders dedicated their time and energy to building a cohesive plan that would suit all parties and make health care better for West Virginians. It will now be up to these stakeholders to continue their partnership and

realize their plan for health care transformation.

Recognizing the time and bandwidth required for implementation, WVU has funded the core SIM staff, including the Project Manager, Project Coordinator and Administrative Assistant, for at least one year post-grant to facilitate implementation of the goals of the SHSIP. The key priority for these individuals will be completing the application for SIM implementation funding (if applicable), as well as assisting with establishing and providing technical support to the WVHTA.

14.0 Conclusion: Roadmap for Health Care Transformation Implementation

SHSIP Section 5.2 outlines the strategies and tactics that support the five drivers of health care transformation in West Virginia. Going one layer deeper, the transformation timeline that follows lays out West Virginia's year-by-year activities—from 2016 to 2021—to achieve its goals and implement its strategies.

Since this roadmap is the result of the SIM design planning process and developed under the assumption that there would be no implementation funding, the roadmap is subject to change once the WVHTA is convened and/or West Virginia receives SIM implementation funds.

This roadmap will carry West Virginia through the implementation of the SHSIP, setting it up for long-term transformational change of the state's health care delivery and payment models to improve the health of today's West Virginians and that of the generations to come.

West Virginia State Health System Innovation Plan Transformation Timeline						
	2016	2017	2018	2019	2020	2021
	Driver 1 Ensure all West Virginians are connected to a primary care provider and, where appropriate, have access to advanced primary care delivery systems					
Goal 1.1 Ensure every West Virginian is connected to a PCP responsible for monitoring his or her health and facilitating access to quality health care. Patients with complex or multiple chronic conditions should be affiliated with an advanced primary care delivery system.	A WVHTA task force will address patient attribution issues and refine the means of identifying and attaching those without a PCP or an advanced primary care delivery system. This task force will develop standards and criteria for meeting the needs of those high-acuity patients. Per Section 8, WVHTA will help establish a state Health Care Workforce Planning Group (HCWPG) to regularly assess	The HCWPG will work with the state to recommend expanding the Rural Health Initiative and BPH's State Loan Repayment Program. The HIT guidance group will identify barriers or gaps to using data systems to target patients unaffiliated with a PCP or an advanced primary care delivery system.	The HCWPG will engage with the state's three academic medical centers to recommend expanding their incentives offered through the Rural Health Initiative.	HIT and data systems will be fully aligned to identify and connect patients unaffiliated with a PCP or an advanced primary care delivery system. HIT alignment activities commenced in 2017 will reach culmination.	The HCWPG will work with the state's educational institutions to promote strategies aimed at retention of health care graduates in primary care.	The HCWPG will evaluate new models to address the PCP shortage (outlined in Section 8) and put forth recommendations for adoption.

	the need for PCPs and provide recommendations.					
Strategy 1.1.1 Coordinate efforts by providers, payers and other stakeholders to identify individuals without a regular connection to a PCP and connect such individuals to a PCP.	The WVHTA will work with payers and providers to identify individuals without connection to a PCP. Phase 1 will start with super-utilizers without a PCP connection (i.e., excessive use of ED for primary care). Existing data sources will be used with patient attribution guides and provider directories.	Education and outreach efforts will stress the importance of having a PCP. Providers will be incentivized to conduct outreach and education to patients seen only for acute care (non-continuity patients) on the need for a PCP. Based on CDC data, the WVHTA will consider 78.7% the baseline rate of PCP affiliation.[284] The HIT guidance group will develop a plan for creating voluntary, HIE-based patient registries for PCP	The WVHTA will leverage the AHC initiative and similar community-based efforts to identify social determinant barriers to connection to a PCP and address patient attribution issues to increase PCP affiliation rates. Improve the baseline rate of PCP affiliation by 5%.	The WVHTA will coordinate with payers on the use of value-based benefit design incentives (where permissible with public programs) for connection to a PCP. Improve the rate of PCP affiliation achieved in 2018 by an additional 5%.	Population health data will be analyzed to identify any remaining individuals without a regular connection to a PCP (i.e., urgent care users) so community health support resources can undertake targeted individual outreach and engagement. Improve the rate of PCP affiliation achieved in 2019 by an additional 3%.	Workplaces, social support services and other community-based connection points will be leveraged to reach individuals who have opted out of health insurance coverage and only access health services when sick to create a regular connection to a PCP. Improve the rate of PCP affiliation achieved in 2020 by an additional 2%.

[284] "State Variation in Health Care Service Utilization: United States, 2014," Centers for Disease Control and Prevention. Available at http://www.cdc.gov/nchs/products/databriefs/db245.htm.

		affiliation to cross-reference against payer members lists.				
Strategy 1.1.2 For the most costly Medicaid beneficiaries with qualifying conditions, pursue ACA Section 2703 regarding health homes to leverage the 90-10 federal match rate or encourage health home look-alikes by collaborating with the Medicaid MCOs.	The WVHTA will assist in conducting a root-cause analysis of weaknesses and strengths and lessons learned from its recently completed health home for Medicaid beneficiaries with bipolar disorder and hepatitis B/C or at risk of contracting it. The WVHTA will assist in the development of parameters and design of a health home program for high-need Medicaid individuals, incorporating the preliminary lessons learned from the National Governors	**Spring 2017 –** Finalize the health home and submit for CMS approval. Subject to approval, recruit providers and identify specific populations to participate in the health home. **Fall 2017, Phase 1 –** Enroll 10% of high-need Medicaid beneficiaries in a health home, which is an advanced primary care delivery system.	**Spring 2018, Phase 2 –** Enroll another 25% of non-duplicative high-need Medicaid beneficiaries in a health home. **Winter 2018 –** Phase 1 cohort continues to be served by the health home; enters quarter six of eight of 90-10 match. The WVHTA will collaborate with the Medicaid MCOs, other payers and providers to develop health home look-alikes or other advanced primary care delivery models for high-need Medicaid	**Spring 2019, Phase 3 –** Enroll another 25% of non-duplicative high-need Medicaid beneficiaries in a health home. **Summer 2019 –** Phase 1 cohort's 90-10 match expires; these Medicaid beneficiaries will be converted to the MCO-designed health home look-alikes or other advanced primary care delivery models. **Winter 2019 –** Phase 2 cohort continues to be served by the health home; enters quarter seven of eight of	**Spring 2020 –** Phase 2 cohort's 90-10 match expires; these Medicaid beneficiaries will be converted to the MCO-designed health home look-alikes or other advanced primary care delivery models. **Summer 2020 –** Enroll another 25% of non-duplicative high-need Medicaid beneficiaries in a health home. **Winter 2020 –** Phase 3 cohort continues to be served by the health home; enters quarter seven of eight of 90-10 match.	**Spring 2021 –** Phase 3 cohort's 90-10 match expires; these Medicaid beneficiaries will be converted to the MCO-designed health home look-alikes or other advanced primary care delivery models. **Summer 2021 –** Enroll the final 15% of non-duplicative high-need Medicaid beneficiaries in a health home. **Winter 2021–** Phase 3 cohort continues to be served by the health home; enters quarter six of eight of 90-10 match.

	Association Complex Care Program.[285]		beneficiaries, including those who do not meet health home criteria, as well as for other payer type members (e.g., WVCHIP, PEIA, Highmark BCBS, etc.).	90-10 match.	**Winter 2020 –** 85% of high-need Medicaid beneficiaries enrolled in a health home or an MCO-designed health home look-alike or advanced primary care delivery system.	
Strategy 1.1.3 Encourage reimbursement models that reward advanced primary care delivery systems and related core competencies.	A WVHTA task force will develop a definition of advanced primary care delivery systems.	The WVHTA will develop or deploy a tool or mechanism to assess the rates of providers and high-acuity patients using and affiliated with advanced primary care delivery systems. These will serve as the baseline rates.	Improve the baseline rates by 5%.	Improve rates achieved in 2018 by an additional 10%.	Improve rates achieved in 2019 by an additional 10%.	Improve rates achieved in 2020 by an additional 10%.

[285] West Virginia understands that Medicaid beneficiaries cannot be forced to participate in a health home. The percentages refer to targeting the high-need Medicaid beneficiary population as a whole—not ultimate participation rates. Moreover, terms such as "enroll," "affiliated," etc. are used for convenience and do not obligate Medicaid beneficiaries to join a health home.

Strategy 1.1.4 Launch a shadow TCPI initiative that provides a peer learning environment and a common set of performance metrics and national best practices.	The WVHTA will work with practice-based research networks, professional organizations and related stakeholders to assist in practice transformation and peer learning.	The WVHTA will develop or deploy a tool or mechanism to assess the rate of providers participating in a transformation and/or learning network. This will serve as the baseline rate.	Improve the baseline rate of providers participating in a transformation and/or learning network by 5%.	Improve rates achieved in 2018 by an additional 10%.	Improve rates achieved in 2019 by an additional 10%.	Improve rates achieved in 2020 by an additional 10%.
Strategy 1.1.5 Promote reimbursement models that facilitate the integration of community health workers with primary care programs and the use of related approaches to addressing psycho-social risks, patient engagement and self-care.	The WVHTA will collaborate with payers and providers working on models that incorporate social determinants of health, as it has for the CMS Accountable Health Communities funding opportunity.	The WVHTA will develop or deploy a tool or mechanism to assess the rate of West Virginia providers participating in reimbursement models that incorporate social determinants of health and enhanced care management. This will serve as the baseline rate.	Improve the baseline rate of providers participating in reimbursement models that incorporate social determinants of health and enhanced care management by 5%.	Improve rates achieved in 2018 by an additional 10%.	Improve rates achieved in 2019 by an additional 10%.	Improve rates achieved in 2020 by an additional 10%.

Driver 2 Accelerate population health management						
Goal 2.1 Implement the CDC's scaled intervention approach, which includes traditional clinical, innovative clinical and community-wide initiatives to improve population health.	The WVHTA will assist in the development of a toolkit for the integration of the three approaches in a community health improvement action and coordination plan supported by BPH.	The integration of the three intervention approaches will be an alignment expectation for providers participating in advanced primary care models and health homes.	Each of BPH's community health improvement strategies will be integrated into the training and learning networks and coordinated with LHDs and community-based resources (where possible).	Outcomes for the first two or more years of the program will be evaluated to drive adjustments in the clinical innovation and community-wide strategies and to leverage best practices.	The WVHTA will encourage innovative demonstration models (based on risk readiness) that incorporate the three intervention approaches.	The WVHTA will encourage innovative demonstration models (based on risk readiness) that incorporate the three intervention approaches.
Strategy 2.1.1 Focus on projects/programs to address super-utilizers.	The WVHTA, in partnership with WVDHHR, will facilitate the use of data to identify high-impact/ROI subpopulations for focused care coordination and population health management initiatives. Leverage HIT and data to identify super-utilizers.	Care coordination and population health management pilots for high-risk patients will be coordinated with the National Governors Association Medicaid Complex Care initiative.	Pilots with demonstrated ROI and scalable effectiveness will be expanded through the WVHTA and other avenues to advanced primary care delivery system and health home providers.	Providers progressing in the advanced primary care delivery system and health home transition will be given tools and training in optimizing the outcomes for high-risk populations.	HIT and data platforms will be integrated to provide real-time data and predictive analytics to drive further improvements for high-cost and super-utilizer populations and reduce avoidable costs.	It is expected that major health system practices will have matured in care coordination and risk management capacity to expand risk to include capitation and global budgets, including high-risk populations.

Strategy 2.1.2 Link community-based health and social support resources to the health care delivery system.	Submit application for the Accountable Health Communities funding opportunity and establish/leverage the HIT interface and infrastructure to support linkage with community-based health resources.	Include LHDs and community health resource integration (where possible) into APM valuation and incentive measures for affiliated health care providers.	Include LHDs and community health resources (where possible) in shared savings models affiliated with Accountable Health Communities initiatives.	Begin transitioning in funding streams for LHDs and community resources (where possible) tied to value-based health management within local delivery models.	The WVHTA will encourage innovative demonstration models (based on risk readiness) that include LHDs and community health resources (where possible).	The WVHTA will encourage innovative demonstration models (based on risk readiness) that include LHDs and community health resources (where possible).
Strategy 2.1.3 Build on successful community-wide health improvement programs and develop specific initiatives to address obesity.	The WVHTA will convene a Health Improvement Steering Workgroup to lead the design of a community health improvement initiative. Coordinate use of HIT and data infrastructure with HIT guidance group to support improvement objectives.	The workgroup will outline the state's top population health challenges—with obesity as the top priority—and develop a plan to address those challenges through collaboration among the public and private sectors and community-based organizations. The workgroup will follow the design principles outlined in Section 5.2.	The initiative will launch according to the plan developed by the workgroup.	The WVHTA will measure the initiative's progress against the goals laid out in its plan and adjust strategies as needed.	The WVHTA will measure the initiative's progress against the goals laid out in its plan and adjust strategies as needed.	The WVHTA will measure the initiative's progress against the goals laid out in its plan and adjust strategies as needed.

Strategy 2.1.4 Promote the integration of behavioral health and primary care.	Encourage formal care coordination agreements between local primary care and behavioral health organizations as part of health homes and advanced primary care delivery systems.	Include integration of primary care and behavioral health services as part of APM measures and expectations. Use HIT and data to facilitate and support integration.	Include bi-directional risk for effectiveness of primary care and behavioral health integration in APMs of advanced primary care health system and health home providers.	Use more coordinated APMs such as episodes of care or bundled payments to incentivize care integration for high-cost populations.	The WVHTA will encourage innovative demonstration models (based on risk readiness) that incorporate integration criteria and outcome expectations.	The WVHTA will encourage innovative demonstration models (based on risk readiness) that incorporate integration criteria and outcome expectations.
	Driver 3 Leverage data and information management capacity					
Goal 3.1 Enable stakeholders to have, share and analyze data about health status, utilization of services and environmental determinants.	The HIT guidance group, overseen by the WVHTA, will develop a progressive plan to coordinate West Virginia's HIT and data platforms to align with the transition to value-based health care and APMs. This group will also keep in mind the core concepts of assuring data availability, integrity, usability	As permitted by federal, state and local laws and regulations—and after securing data use agreements—permit early practices participating in advanced primary care delivery systems or health homes to be linked to the Medicaid data warehouse and have access to claims data and hospital discharge	The HIT guidance group will work with other state agencies to develop integrated data availability through the Medicaid data warehouse, including socioeconomic data.	The HIT guidance group will assess the data flow in support of population health management uses by providers and coordinate with HIT vendors to address barriers to data flow.	The WVHTA will coordinate provider training on electronic risk stratification, predictive analytics and population health management tools to guide enhanced risk readiness in APMs.	The WVHTA will coordinate with OIC and other agencies on the use of outcome and cost data from the Medicaid data warehouse to create a provider scorecard, as specified in Strategy 3.1.4.

	and security.	data (to the extent available) from participating payers.				
Strategy 3.1.1 Encourage providers to continue training staff in data management and analytics to support population health strategies and drive improvements in health outcomes.	The WVHTA will coordinate provider training on HIT tools and configurations to optimize use of data for population health management, including use of data for patient empanelment, risk stratification, patient progress monitoring, quality improvement and preparation for predictive modeling.	Training will be expanded to include care team members and coordinating resources such as referring providers, LHDs and community health resources.	Training will be integrated into all medical education and health profession/allied health training programs and coordinated with practice simulation centers to teach use of data to drive improvement.	The WVHTA and HIT guidance group will coordinate with HIT vendors to upgrade capabilities and with BPH and other public health agencies to use registries and other population health management tools in care coordination and management.	Same as 3.1 above.	The WVHTA will coordinate provider training on advanced population health management tools in support of global budgeting and capitation models.

Strategy 3.1.2 Leverage the Medicaid data warehouse as a repository for claims data.	The HIT guidance group and WVHTA will facilitate the development of data use agreements and other arrangements for using the Medicaid data warehouse for data collection and exchange consistent with MITA and the Medicaid HIT plan.	Same as 3.1 above.	Same as 3. 1 above.	The HIT guidance group will assess the data flow in support of population health management uses by providers and coordinate with Medicaid and other payers regarding use of the Medicaid data warehouse to address barriers to data flow.	The WVHTA will work with the HIT guidance group to assess readiness for providers to use electronic risk stratification, predictive analytics and population health management tools to guide enhanced risk readiness in APMs through the Medicaid data warehouse.	Same as 3. 1 above.
Strategy 3.1.3 Align quality measures across payers to facilitate consistent reporting, allow provider/payer benchmarking and reduce unnecessary burdens on health care providers.	The West Virginia Health Innovation Collaborative (WVHIC) will launch a public vetting process to align quality measures. The WVHIC will use the CMS Core Quality Measures Collaborative measures as the beginning discussion point for quality measurement alignment.	Following public feedback on quality measures, the WVHIC will determine a final slate of core quality measures for recommended adoption by payers and for use in the Medicaid managed care contract quality withhold.	The WVHIC or another appropriate structure/entity (potentially the WVHTA) will regularly assess the core quality measures and update as needed. As the state progresses in risk readiness and APM adoption, measures will likely evolve from a process focus to a population	The WVHIC or another appropriate structure/entity (potentially the WVHTA) will regularly assess the core quality measures and update as needed. As the state progresses in risk readiness and APM adoption, measures will likely evolve from a process focus to a population	The WVHIC or another appropriate structure/entity (potentially the WVHTA) will regularly assess the core quality measures and update as needed. As the state progresses in risk readiness and APM adoption, measures will likely evolve from a process focus to a population	The WVHIC or another appropriate structure/entity (potentially the WVHTA) will regularly assess the core quality measures and update as needed. As the state progresses in risk readiness and APM adoption, measures will likely evolve from a process focus to a population

	Coordinate with HIT guidance group to align use of HIT systems and data to support coordinated quality measures.		health focus.	health focus.	health focus.	health focus.
Strategy 3.1.4 Develop a standardized provider scorecard, supported by aligned quality measures and centralized claims data.	Same as 3.1.3 above. WVHTA and the HIT guidance group will coordinate with West Virginia Medicaid and other payers on the data sources for aligned quality measures and centralized claims data.	Same as 3.1.3 above.	As measures are aligned and the Medicaid data warehouse is optimized, the WVHTA will spearhead a process to develop a standardized provider scorecard.	The WVHTA will explore ways to create a portal where providers can view their performance and benchmark across peers.	The WVHTA will work with payers to incorporate the use of the scorecard into value-based programs. As noted above, measures will likely evolve from a process focus to a population health focus as the state progresses in risk readiness and APM adoption.	The WVHTA will explore ways to make the scorecard accessible to consumers to drive informed health care choices based on quality and outcomes.
Strategy 3.1.5 Optimize an HIE to enable sharing of timely health care information, including behavioral health information.	The WVHTA will facilitate coordination of resources for effective HIE using local, state and national platforms.	The WVHTA will facilitate coordination of resources to advance adoption and use of HIT tools to meet the population health objectives.	The HIT guidance group will work with payers and providers to assess the quality and quantity of health information data and the sources/access points for such data, intervening	The HIT guidance group and WVHTA will convene stakeholders to assess data flow in support of population health management and APMs to adjust the data strategy for advanced models.	The HIT guidance group and WVHTA will convene stakeholders to assess data flow in support of population health management and APMs to adjust the data strategy for advanced models.	The HIT guidance group and WVHTA will convene stakeholders to assess data flow in support of population health management and APMs to adjust the data strategy for advanced models.

			as needed to overcome data silos or dead ends and addressing barriers to data flow.			
	Driver 4 Advance value-based reimbursement models					
Goal 4.1 Encourage the adoption of value-based payment models, progressing based on risk readiness from shared savings models to more mature models that include global budgeting under a consortia approach.	Coordinate with the CPC+ and Medicaid health home initiatives. Move providers on a voluntary basis into APMs[286] based on quality metrics in high-risk and pre-Medicare populations (i.e., uncontrolled diabetics, heart failure) to align with CMS transition under MACRA. The WVHTA will develop or deploy	At least 10% of the health care market will be value-based.[287]	At least 20% of the health care market will be value-based.	At least 40% of the health care market will be value-based.	At least 60% of the health care market will be value-based.	At least 80% of the health care market will be value-based.[288]

[286] This includes categories two through four of the HCPLAN framework.
[287] This figure excludes Medicare payments, as West Virginia has no control over that program, nor does it have data on APM adoption within Medicare.
[288] West Virginia aims to have 85% of the health care market on value-based models by 2025. Given that securing APM adoption will become more difficult in the later stages, West Virginia anticipates an extended timeline of four additional years to meet the goal of 85%.

	a tool or mechanism to assess the rate of value-based payments in the state. This will serve as the baseline rate.					
Strategy 4.1.1 Set a vision for a value-based system through the state's public payer contracts.	The WVHTA will provide assistance to the state on ways to make its contracts more in line with value-based principles, such as better utilizing the Medicaid MCO quality withhold to drive quality improvement or requiring that a certain percentage of payments to providers have a link to value.	Align with Strategy 1.1.2 above; align MCO APMs with CMS quality incentives. Use HIT systems and data to support the determination of quality targets and withholds as coordinated among MCOs and providers and integrate these requirements into contractual provisions.	Align with Strategy 1.1.2 above; align MCO APMs with CMS quality incentives. Use HIT systems and data to support the determination of quality targets and withholds as coordinated among MCOs and providers and integrate these requirements into contractual provisions.	Align with Strategy 1.1.2 above; align MCO APMs with CMS quality incentives. Use HIT systems and data to support the determination of quality targets and withholds as coordinated among MCOs and providers and integrate these requirements into contractual provisions.	Align with Strategy 1.1.2 above; align MCO APMs with CMS quality incentives. Use HIT systems and data to support the determination of quality targets and withholds as coordinated among MCOs and providers and integrate these requirements into contractual provisions.	Align with Strategy 1.1.2 above; align MCO APMs with CMS quality incentives. Use HIT systems and data to support the determination of quality targets and withholds as coordinated among MCOs and providers and integrate these requirements into contractual provisions.

Strategy 4.1.2 Encourage payers to migrate toward value-based reimbursement by continuing to support pilot value-based programs and expanding programs that are demonstrating results.	The WVHTA will work with payers and providers to identify priority populations and leverage high-value pilot programs. Payers and providers may consider the use of HIT systems and data to identify, risk stratify and manage care of these patients.	The WVHTA and HIT guidance group will assess data needs to demonstrate ROI regarding population health management and will work with payers and providers to assure proper data flow.	The WVHTA will work with providers, payers and actuaries to demonstrate and document ROI regarding innovation models as part of deployment and APM data reporting requirements.	The WVHTA will convene stakeholders to assess ROI data flow in support of population health management and APMs to adjust the data strategy for advanced models.	The WVHTA will encourage innovative demonstration models (based on risk readiness) that incorporate ROI and outcome expectations.	The WVHTA will encourage innovative demonstration models (based on risk readiness) that incorporate ROI and outcome expectations.
Strategy 4.1.3 Establish regional self-organized health communities.	The WVHTA will coordinate support for capacity building for the organization of regional models.	The WVHTA will facilitate training on regional coordination as foundational for advanced APMs as part of the provider support training.	As the use of APM models progresses to a tipping point for adoption, elements needed for the formation of regional systems will be aligned with the progression of APM maturity.	Best practices on acceleration of regional systems of advanced and patient-centered care will be shared through the WVHTA and peer-learning networks.	The WVHTA will convene stakeholders to address barriers to formation of regional systems and review the data flow needs of the regional participants.	The WVHTA will encourage innovative demonstration models (based on risk readiness) that incorporate participation in regional systems.

Driver 5 Better address the unique needs of aging West Virginians						
Goal 5.1 Reduce spending on long-term care and strengthen the delivery of care to older adults.	Once formed, the WVHTA will work with West Virginia Medicaid to evaluate current levels of spending on long-term care and establish yearly improvement goals for reducing spending and improving quality.	Goals for reduction in spending and improvement in quality will be developed in concert with West Virginia Medicaid. Use of HIT systems and data will be coordinated with the Medicaid data warehouse and MCOs to identify patients at risk for long-term care use and to develop alternative strategies.	Goals for reduction in spending and improvement in quality will be developed in concert with West Virginia Medicaid.	Goals for reduction in spending and improvement in quality will be developed in concert with West Virginia Medicaid.	Goals for reduction in spending and improvement in quality will be developed in concert with West Virginia Medicaid.	Goals for reduction in spending and improvement in quality will be developed in concert with West Virginia Medicaid.
Strategy 5.1.1 Emphasize lower-cost, better-care settings: homes and communities, rather than institutions such as nursing homes.	The state will continue to administer its MFP program, Take Me Home, West Virginia, to transition individuals from long-term care institutions to their homes or communities.	Take Me Home, West Virginia will continue through the end of 2017, with a goal of transitioning as many eligible West Virginians as possible. WVHTA will promote the success of Medicaid's efforts	The state will implement its sustainability plan for Take Me Home, West Virginia. The state will incorporate the program's transition services into two Medicaid 1915(c) waivers for HCBS services.	The state will continue to leverage the successful transition services of Take Me Home, West Virginia through its Medicaid 1915(c) waivers for HCBS services. WVHTA will promote the	The state will continue to leverage the successful transition services of Take Me Home, West Virginia through its Medicaid 1915(c) waivers for HCBS services. WVHTA will promote the	WVHTA will promote the success of Medicaid's efforts with commercial insurers to recommend similar programs for transitions to HCBS.

	WVHTA will promote the success of Medicaid's efforts with commercial insurers to recommend similar programs for transitions to HCBS.	with commercial insurers to recommend similar programs for transitions to HCBS.	WVHTA will promote the success of Medicaid's efforts with commercial insurers to recommend similar programs for transitions to HCBS.	success of Medicaid's efforts with commercial insurers to recommend similar programs for transitions to HCBS.	success of Medicaid's efforts with commercial insurers to recommend similar programs for transitions to HCBS.	
Strategy 5.1.2 Establish geriatric medical homes to ensure continuity of care, intervene early to address health problems and reduce unnecessary utilization of EDs and institutional settings.	The WVHTA will establish a group to study previous pilot projects on the geriatric medical home model. The group may consider recommending the use of HIT systems and data to integrate geriatric care tools (i.e., fall risk assessment, functional capacity) into care management processes.	The group will study expansion of the Triple Arrow for the Triple Aim and other successful projects.	The WVHTA will finalize the plan for a statewide initiative and conduct engagement efforts to garner provider interest.	The initiative will roll out statewide with established yearly goals and metrics.	The WVHTA will monitor the initiative's progress and measure cost/outcome results.	Based on results and continued monitoring, the program will be refined as needed.
Strategy 5.1.3 Identify and implement best practices to improve care transitions, creating seamless	The WVHTA will convene a specialist group to study national best practices for care transitions,	The group will review literature on best practice interventions and select specific interventions to	The WVHTA will develop an educational module for safe and successful transitions.	The group will conduct an educational tour of care sites around the state to share the module and	The WVHTA will explore building the module online to allow care teams to access it digitally.	The WVHTA will work with West Virginia academic institutions to incorporate the module into

flow and minimizing disruption for patients.	including leveraging HIT systems and data to support more effective care transitions and to identify gaps in care.	implement in West Virginia.		educate care teams on transition best practices.		academic curricula for health care students and training for residents.
Strategy 5.1.4 Develop a consultative peer network for rural PCPs to address case-based practice issues.	The WVHTA will identify one or more West Virginia academic institution partners for a state Project ECHO program focused on geriatrics. Integrate technology use best practices (including remote monitoring) into consultative network and training program.	The WVHTA and its academic partner will identify experts to develop the curriculum for a state Project ECHO program and conduct engagement efforts to recruit providers to participate. The program will be rolled out to participating providers.	Participating providers will have the opportunity to provide feedback, and the program will be modified accordingly to better meet provider needs.	The WVHTA and its academic partner will continue conducting outreach efforts to non-participating providers and incorporating feedback from participating providers.	The WVHTA and its academic partner will continue conducting outreach efforts to non-participating providers and incorporating feedback from participating providers.	The WVHTA and its academic partner will continue conducting outreach efforts to non-participating providers and incorporating feedback from participating providers.

15.0 Appendices

Below is a list of appendices supporting the West Virginia SHSIP. To keep this document as streamlined as possible—and in consideration of file size limitations on many mail servers—the following appendices can be found on the on the SIM page of the West Virginia Health Innovation Collaborative website.

Appendix	***Contents***	***Corresponding SHSIP Section***
Appendix A	SIM Workgroups: Meeting Summary Notes and Attendance Tracking	Section 6.0 SHSIP Development Process
Appendix B	ONC HIT Policy Levers and Corresponding West Virginia Initiatives	Section 7.0 Health Information Technology and Data Strategy
Appendix C	Data on Active Licensed Psychologists and Nurse Practitioners in West Virginia	Section 8.0 Workforce Development Strategy
Appendix D	Letter of Support, Accountable Health Communities Funding Opportunity	Section 11.0 Coordination with Other Health Care Innovation Initiatives
Appendix E	Financial Analysis	Section 12.0 Financial Analysis

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