Green Mountain Care Board Data Analytic Plan

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Executive Summary

The Green Mountain Care Board (GMCB) has been given responsibility for one of the most complicated and significant issues we face as a state – how to reduce the rate of growth in health care costs while improving the health of the population, without compromising health care quality. Health care accounts for nearly one-fifth of the state economy. Spending is growing faster than any measure of our ability to pay. At the same time, there are tremendous opportunities to improve Vermont's health care system to reduce confusion, improve organization, increase efficiency, and improve population health and health care quality.

Specific responsibilities assigned to the GMCB include:

- Implement a health care budget for the state that guides spending on and allocation of health care resources.
- Approve, modify, or disapprove requests from health insurers to increase their premiums, based on considerations of insurer solvency, affordability, quality and availability of health care services, and the impact of insurer activities on the health of Vermonters.
- Approve, modify, or disapprove hospital budget requests, based on similar criteria.
- Implement changes to health care provider payment that move away from fee-for-service and reward improvements in care quality and system efficiency.
- Approve, modify, or disapprove recommendations from the Executive Branch for benefit packages to be offered in the Vermont health benefit exchange, and to be included in the modeling of a single payer system for Vermont.

To succeed at these tasks, the Green Mountain Care Board must construct a foundation of information to support policy analysis, evaluation and decision-making. This report is aimed at guiding the board as they develop that foundation and begin early analyses of the information at hand to support the decisions described above and general health policy-making. The more the Board and all Vermonters know about the factors that influence health, health spending, and the outcomes of care, the better the job we can do improving the system. Information available to the board, in a timely manner and accurate form, must include:

- a clear picture of Vermonters' health and health care spending
- an understanding of **why** health care spending is at current levels, and how it relates to health
- the ability to model the consequences of policy initiatives that might influence Vermonters' health and health care spending
- a system to evaluate the actual outcome of policy initiatives, and to modify them as indicated

Vermont is fortunate to have a wide range of health data resources. These include regular surveys that assess health insurance coverage, barriers to care, health-related behaviors and health status. In addition, the state's all-payer claims database, the Vermont Health Care Uniform Reporting and Evaluation System (VHCURES), captures data related to health care services used by Vermonters who have health insurance. VHCURES currently includes data related to services used by Vermonters who have private insurance or Medicaid. We expect that the data set will include services used by and payments for Vermont Medicare beneficiaries in the near future. In addition, the state's advanced

primary care practice model, the Blueprint for Health, captures data from a variety of sources to assess the impact of enhanced primary care on health care quality and health spending.

This report identifies the major areas of information needed in order to support Vermont's health care policy development, analysis and evaluation – health care spending, health, and value of services provided (the relationship between spending and health). At the highest level, the report identifies five critical questions:

- How healthy are Vermonters?
- How much is spent on health care?
- Where does that money come from?
- What is driving health care spending increases?
- Where are the most significant opportunities to improve the value of health care (to increase health, decrease spending growth, or eliminate inefficiencies)?

While answering each of these questions is important to the Board's work, ultimately the critical questions will be how much value the health care system provides -- have we improved the health of Vermonters while reducing the rate of spending growth to a level that we can afford and sustain?

This report finds that current data resources can support a number of critical analyses that can begin immediately to support the GMCB's decision-making. Recommendations for priority action include:

1. **Develop appropriate definitions of populations for analyses:** Populations can be defined by geography, markets, care-seeking patterns, demographics, or health needs. Policy makers should identify the most important subgroups to examine and assess where health and health care use patterns differ across these groups, what are the most costly subgroups and disease conditions and why. The GMCB also must develop, in connection with its responsibilities for payment reform and overall health care budgeting, methodologies for "attributing" Vermonters to health care systems that will have some degree of responsibility for managing their health and health care use.
2. **Develop detailed expenditure analyses:** Document utilization and spending patterns, within Vermont regions and compared to national benchmarks. This includes both patient-level patterns of service use across providers, and provider-based analyses, by service and by disease episode. This will identify efficient providers for particular types of care and areas of greatest potential value. These analyses will help guide decisions about overall health care budgeting and resource allocation, as well as considerations of the extent to which insurers and providers are addressing the most pressing needs related to health care costs and quality.
3. **Develop a funds flow map:** Document the mechanisms by which health care costs are allocated, including channels by which funds leave households, spending by public agencies including complex funding mechanisms such as the provider tax. This will help the GMCB understand the effect of potential or actual policy changes on the allocation of health care cost burden within Vermont.
4. **Map the current payment landscape**: Document the methods of payment, including payments to hospital systems and medical groups, and payments to providers within those groups. This will help the GMCB, as they implement new models of payment, to understand the impact (if any) of provider payment methodology, at both the macro and micro-level, on health care cost growth, quality of care and populations health.
5. **Develop "what-if" modeling capabilities**: Develop data and tools to estimate the impact of changes in health service organization and payment methods over time on population health;

on the burden of health care spending on the state and individuals. This includes assessing the impact of reallocating resources to management of high-need populations, primary care services and prevention.

6. **Develop methodologies to estimate health status from claims data**: Compare the relationship between self-reported survey data and health care utilization, to estimate the true impact of health services on health) and develop methodologies to quantify health through available data sets. This is critical to the GMCB's evaluation of the impact of health spending on health.
7. **Develop population and system-based value measures**: Develop and validate measures of comparative value among populations or the delivery systems that serve those populations. This will be important to evaluating the overall impact of reforms on health care value, and in comparing the effect of various policy interventions.

While existing data resources can support the above analyses, it is essential at the same time to enhance these resources, especially VHCURES. Enhancements to VHCURES should include:

- Development of a mechanism to collect non-claim based payments. This will become critical as payment reform efforts mature.
- Development of a system to include information on insurance benefits and employer characteristics.
- Improvement of the unique identifier that links patients across insurers. Currently, it appears that this information is not always consistent when beneficiaries change their source of coverage, often due to missing Social Security numbers.
- Development of a mechanism to link individual providers with practice settings and to link practice settings with larger organizations (e.g. individual practice sites to an FQHC).

With these recommendations implemented, the GMCB should be on a firm footing to carry out its planning and regulatory responsibilities.

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Introduction

The Green Mountain Care Board has been given responsibility for one of the most complicated social issues that we face as a state - how to reduce the rate of growth in health care costs while improving the health of the population, without compromising health care quality. Health care accounts for nearly one-fifth of the state economy. Spending is growing faster than any measure of our ability to pay. At the same time, while the ability of the health care system to save lives expands at a remarkable pace, the system is confusing, badly organized, inefficient, and does not maximize outcomes such as population health improvement and health care quality.

Specific responsibilities of the Green Mountain Care Board include the following:

- Implement a health care budget for the state that guides spending on and allocation of health care resources.
- Approve, modify, or disapprove requests from health insurers to increase their premiums, based on considerations of insurer solvency, affordability, quality and availability of health care services, and the impact of insurer activities on the health of Vermonters.
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- Approve, modify, or disapprove recommendations from the Executive Branch for benefit packages to be offered in the Vermont health benefit exchange, and to be included in the modeling of a single payer system for Vermont.

To succeed, the Green Mountain Care Board must construct a foundation of information to support policy analysis, evaluation and decision-making. This report is aimed at guiding the board as they develop that foundation and begin early analyses of the information at hand.

The more both the Board itself and all Vermonters know about the factors that influence health, health spending, and the outcomes of care, the better the job we can do improving the system. This information must include:

- A clear picture of health and health care spending in Vermont
- An understanding of **why** health care spending is at current levels, and how it relates to health
- The ability to model the consequences of policy initiatives that might influence health and health care spending
- A system to evaluate the actual outcome of policy initiatives, and to modify them as indicated

This report was developed in response to the Green Mountain Care Board's "Request for Proposal for Data Analytic Plan," issued in November, 2011. The RFP asks for assistance in developing an analytical plan to support the Board's broad range of responsibilities. As the RFP says, "In order to have successful delivery system reforms and control health care costs while improving the health of Vermonters, the GMCB needs to know and make use of key pieces of data about the Vermont population and their use of medical and health resources.

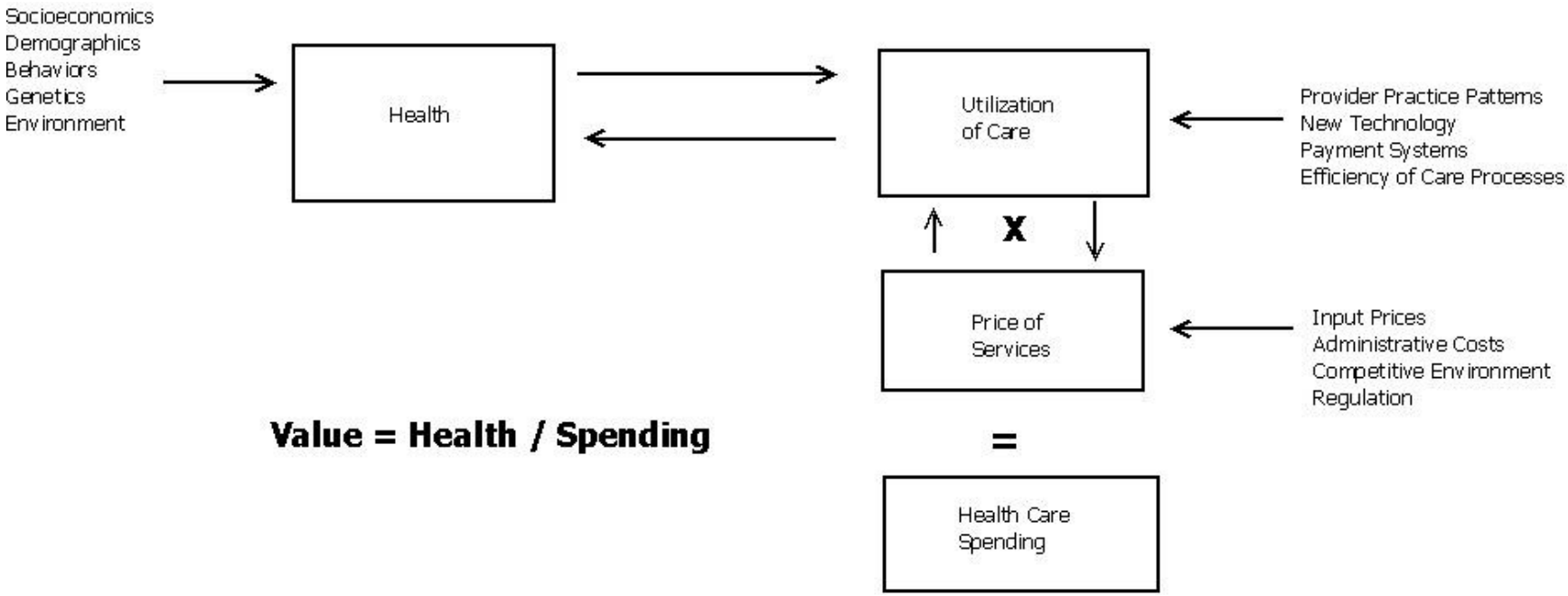
The report is built around the concepts shown in **Figure 1**, below. The guiding principle upon which the recommendations on this report are based is that value – the relationship between health and health

care spending – should drive our decisions in state-level health policy. Our recommended analyses focus on understanding the two components of value, how each varies across time and geography, what influences each, and how the two interact. This understanding can be used to inform policies designed to improve health or reduce the rate of spending growth, or both, thereby increasing the overall value of health care (the health we derive from our spending).

There are several important concepts in this figure. First, health is influenced by several different factors, not just health care. Second, the relationship between health and health care goes in two directions – the quantity of care used is dependent on health, and health is dependent (in part) on the use of care. Third, while there are innumerable details that contribute to health spending, the total amount spent is the product of the quantity of care provided and the price paid for each unit of care. This final point means than any effort to control the rate of growth in health care spending must address prices, number of services provided, or ideally, both.

Data analytic support for health reform should be able to provide a means for measuring the contribution of each component to health care and health improvement, and identify which are the greatest drivers of health costs, to move toward a more efficient system. Analyses should estimate the relationships between each of the components in **Figure 1**, and the impact of changing any one component on the rest of the system and on health care quality. In order to do this, analyses should examine individual components, such as the role of price variation in health spending, or what services are most costly to the system, but should also look more broadly at how the components interact to treat the most high cost diseases and populations, and what patterns achieve the best outcomes. This requires identifying the patterns of care and services used by individuals across providers and organizations, for particular high cost conditions and populations, attributing costs to each. It also requires looking in depth at providers to examine markets, and the relative efficiency with which services are provided and to whom. Information such as this will inform initiatives such as payment reform and care coordination. Such analyses are possible through use of administrative claims data, combined, with survey data. At present, and with certain enhancements described in this report, Vermont's Vermont Healthcare Claims Uniform reporting and Evaluation System (VHCURES) data will be able to accomplish this.

Figure 1


Socioeconomics
Demographics
Behaviors
Genetics
Environment
Health
Utilization of Care
Provider Practice Patterns
New Technology
Payment Systems
Efficiency of Care Processes
X
Price of Services
Input Prices
Administrative Costs
Competitive Environment
Regulation
Value = Health / Spending
=
Health Care Spending

Key Analytic Questions

This section identifies the major areas of information needed in order to support Vermont's health care policy development, analysis and evaluation – health care spending, health, and value of services provided (the relationship between spending and health). At the highest level, the report identifies five critical questions that will allow us to understand the relationships shown in Figure 1 and to guide health reform efforts:

- How healthy are Vermonters?
- How much is spent on health care?
- Where does that money come from?
- What is driving health care spending increases?
- Where are the most significant opportunities to improve the value of health care (to increase health, decrease spending growth, or eliminate inefficiencies)?

Accurately measuring the health of Vermonters is essential to the reform process. Because of the complexity of the concept of health, and the multiplicity of factors that influence it, current measures must be enhanced and new measures must be developed. One essential analytic approach will be development of ways to measure health from claims data.

Vermont has been a leader in developing analyses that address total spending on health care, where the money is spent (defined by types of care) and where the money comes from (defined by type of payer). These analyses, included in the state's annual "Expenditure Analysis," provide a base upon which more sophisticated analyses can be built. For example, how much is spent in Vermont caring for people with chronic illnesses? How do spending patterns vary geographically? Combining this question with the health question, how does value vary geographically and what can we learn from those differences?

The Expenditure Analysis focuses on spending at the point of care – how much does Medicaid spend on hospital services – but it does not address where that money originates. Ultimately, Vermonters pay for care in three ways – premiums, taxes, and out of pocket. A better understanding of the origin of the health dollar can help address questions of fairness and equity – how should each Vermonter's contribution to health spending be calculated?

It is one thing to measure the rate at which health spending is increasing. It is another to understand why spending is increasing, and what are the greatest drivers of cost growth. Are Vermonters less healthy than they were in the past? Are expensive services being used more often (and if so, with what impact on health)? Are patients demanding more care? How much do increases in administrative costs contribute to the growth in health spending? Without an accurate sense of these drivers, it is impossible to develop policy initiatives to slow the rate of growth.

Finally, the most important question of all – one that combines the prior four. Where are the best opportunities to improve value? What steps can we take that will produce the largest gains in health and the sharpest reduction in cost growth?

Available Data

Vermont is fortunate to have a wide range of health data resources. These include regular surveys that assess health insurance coverage, barriers to care, health-related behaviors and health status. In addition, the state's all-payer claims database, the Vermont Health Care Uniform Reporting and Evaluation System (VHCURES), captures data relates to health care services used by Vermonters who have health insurance. VHCURES currently includes data related to services used by Vermonters who have private insurance or Medicaid. We expect that the data set will include services used by and payments for Vermont Medicare beneficiaries in the near future. In addition, the state's advanced primary care practice model, the Blueprint for Health, captures data from a variety of sources to assess the impact of enhanced primary care on health care quality and healthy spending.

Although we still need to work toward a comprehensive health data system, few if any other states can access the scope of information available to Vermont decision-makers. The challenges lie in converting raw data into usable information, performing valid analyses, developing reliable measures of our desired outcomes and learning to integrate this information into the policy development process.

Specific Analyses

The main goals of an analytic plan in support of Vermont health policies are to examine current structures, populations and markets, examine the relationships between health and health care, identify inefficiencies in the system to promote financial sustainability, and understand the components necessary achieve a high-value health care system.

Based on the relationships between health, health care, costs and value identified in **Figure 1**, recommendations for an analytic plan are listed in the following areas: Key questions for analysis; action steps; analytic approaches; special methodological considerations; data infrastructure and recommended enhancements; and a time line for short and longer term implementation of analyses.

Key Questions for Analysis

Given the importance of the key components of health and health care, we recommend that the Board's data analysis efforts focus on answering the following questions. Answering these questions will contribute to a better understanding of health care value and how to increase it.

How healthy are Vermonters?

- What factors contribute to health status and to what degree? To what extent do sociodemographics, behavior, genetics, environment and health services play a role?
- How does health status or its contributing factors vary by geography, population subgroup, and by health care provider, organization, or payment methodology?

How much is spent on health care?

- What are the services, medical conditions and populations that are the most costly and why, both inpatient and outpatient? What is the mix of provider services to which resources are devoted (e.g., primary care versus specialists)?
- What is the concentration of spending on medical care for the most complex patients and populations?
- What are the factors that contribute to health spending? What services, populations, and medical conditions are the most costly? How do prices of similar services vary across providers and insurers?
- How does health care spending in Vermont compare to available norms either in the region, similar states, or nationally, in terms of utilization of services, and prices for services?
- How do spending and its contributing factors vary by geography, by population, and by health care provider, organization, or payment methodology?

Where does the money for health spending come from?

- What is the burden of health care spending for Vermont families (including taxes, premiums, and out of pocket spending)?
- How does that vary by income, health status, insurance type and benefits, or family structure?

What is driving health care spending increases?

- What are the factors that drive spending growth?
    - How much of the increase is from changes in the amount of care being provided and how much is from changes in how much providers are paid for each service?
    - What is the role of new technology in driving spending increases?

    - What is the role of changes in health, especially factors such as obesity, in driving spending increases?
    - How does the rate of increase vary by population subgroup, geographic area, type of provider, or type of payer?
- How has the concentration of health spending changed over time (e.g., who are the highest cost individuals, how has implementation of programs such as care coordination changed the trajectory of health spending in these populations)

Where are the most significant opportunities to improve the value of health care (to increase health and decrease spending growth)?

While documenting existing health care patterns is critical to setting the stage for policy, the most important questions for a sustainable health care system include:

- Where are the most significant opportunities to improve the value of the health care system?
- Where are the most significant opportunities to improve health?
- Where are the most significant opportunities to reduce the rate of spending growth?
- What is the most effective allocation of resources to enhance health system value (e.g., primary care, prevention, or community programs)?
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Action Steps

This section describes specific activities that we recommend that the state undertake. While the steps are classified as analytic or infrastructure enhancements, it is important to recognize that analytic work is always built on available data. In Vermont, the most valuable data resource is VHCURES.

Analysis Plan

Sustainable health reform in Vermont must address health spending growth, with analyses designed to identify and understand the drivers of this spending. As shown in **Figure 1**, total expenditures are the result of price per unit of services times the volume of services provided. Thus, to manage the overall rate of growth of health expenditures, analyses supporting health financing and reimbursement policies should examine the current level of price, utilization and spending, as well as the rate of increase in both.

Additionally, it is important that analyses look at the range of services and providers of health services, including hospitals, other acute and long term care facilities, health systems, and physicians. This requires a more integrated approach to analyzing treatment costs, specifically through studying cost and utilization patterns within episodes of care.

This section describes an integrated set of analyses to inform Vermont health policy initiatives. We were guided in our choice by the overarching goals of improving health of the population, increasing efficiency in the health care system, and reducing the rate of growth in health care expenditures in Vermont, without compromising health care quality.

Develop Appropriate Populations for Analyses

Many of the analyses proposed in this report are population-based (e.g. disease prevalence, utilization rates, spending per capita). Historically, these populations have been created two ways. The first is to use administrative structures (states, counties). The second relies to some extent on behaviors. For example, hospital service areas are based on where patients elect to go for their care.

The choice of population (denominator) is as important as accurately measuring the statistic of interest (hospital discharges, total spending). Because no single population definition will be appropriate for all analyses, the state will need to develop a portfolio of definitions to support different analyses.

Develop Detailed Expenditure Analyses

Macro comparisons and trends: The first set of policy analyses should be aimed at understanding how the Vermont health system compares to the nation and bordering states, and how it has changed over time comparatively. This analysis should build upon earlier analyses completed by BISCHA using national health accounts and incorporating Vermont claims data, to examine at a high level how health system expenditures and major providers compare and have changed in Vermont by site of care. Major questions building on the initial BISCHA spending analysis should examine, for instance, whether proportionally more is being spent in hospitals and long term care than comparable states and national trends.

To the extent possible, these trends should be analyzed also by the current health service areas in Vermont (e.g., per capita expenditures, hospital and long term care capacity , and health personnel. . These analyses will provide the GMCB with a good picture of how Vermont's structure and expenditure patterns differ within the state and compare externally. Potential observations that have cost and quality implications should be highlighted. For example, observations such as the number of hospitals beds per capita over time compared to the nation reveal that bed ratios have been stable over time in Vermont, in contrast to national trends, and that in Vermont and that there have been no hospital closures since 1990. These observations have relevance for looking into whether efficiencies within the current system could be encouraged.

Expenditure analyses should be done from the individual (utilization and spending patterns, care seeking patterns across providers) and by the provider (market area, variations in services provided, variation in costs for services).

Decompose health spending growth in Vermont. Currently, spending growth is reported as an aggregate change over time. At a minimum, growth should be decomposed into price and utilization changes. This analysis should be applied to total spending, individual sectors, and individual payers. In addition to providing a better understanding of the forces behind spending increases, this approach can provide a valuable context for the evaluation of health insurance rate filings.

Health spending growth should be analyzed from the patient and the provider perspective: measuring health status, price, and utilization, across regions. This includes analyses from both the population (health status and where individuals are seeking care for what at what cost) and provider perspective (patient origin, variation in services provided and costs). Where applicable, analyses should include potential comparisons of Vermont across geographic areas within Vermont, and compare Vermont to other states and the nation.

Given the rural character of the state, small hospital facilities, and changing treatment patterns, it is important to understand where individuals living in the different areas of Vermont get their care for a range of services, as well as the current and market areas of Vermont providers. As an example, given the increased complexity of services delivered in the hospital, it is important to know where residents are going for standard procedures such as hip and knee replacements and cardiac procedures, as well as non-surgical services, such as pneumonia and respiratory ailments: are there some hospitals that attract more patients or certain types of services.

Develop analyses to identify inefficiencies in health care spending. Several recent analyses have highlighted the role of inefficiency or waste in health care spending. One article[1] identified six sources of waste:

- Failures of care delivery
- Failures of care coordination
- Overtreatment
- Administrative complexity
- Pricing failures
- Fraud and abuse

[1] Berwick DM, Hackbarth AD; "Eliminating Waste in US Health Care" Journal of the American Medical Association; March 14, 2012

Understanding the contribution of each of these in Vermont will enable us to focus interventions in areas with the highest potential to reduce wasteful spending. A useful unit of analysis for studying inefficiencies is the episode of care, in which patterns of care can be examined across providers, and the impact of care coordination, duplication of services, and pricing variation can be assessed. The most efficient providers and services can be identified. In addition, resources can be allocated most efficiently to the care sector that provides the most value.

Develop funds flow map.
The current Vermont expenditure analysis focuses on spending only at the point where funds are received by a provider. In order to understand the true burden of health care costs on populations and providers, and the mechanisms by which those costs are allocated, Vermont needs to develop a funds flow map that would include channels by which funds leave households (taxes premiums, and out-of-pocket spending), measure the impact of tax policies, recognize the dual nature of spending by public agencies (tax-financed but privately paid) and more accurately reflect complex funding mechanisms such as the provider tax. To the extent possible, this map should also include payments from organizations to individual providers.

Map the current payment landscape. This topic includes developing an understanding of how much payments vary among payers and insurers for the same service, and the current structure and prevalence of payment systems other than fee-for-service. Payment analyses should include both simple fee-for-service mechanisms such as payment linked to CPT codes along with prospective payment systems, such as DRGs.

Develop "What if" capabilities.
The state will need the ability to explore a wide range of alternative payment systems, including all-payer, episodic payments, capitation, and fixed budget. By comparing those systems to the current landscape, aggregate effects, as well as winners and losers, can be identified. Note that this type of analysis can operate under two assumptions. The simpler assumption is that payment reforms do not affect utilization. This means that the amount of care provided does not change – only the way that it is paid for does. The more complex assumption factors in expected changes in utilization and models the interactions between financial and utilization factors. This means that the amount of care provided will vary to some extent depending on how that care is paid for.

Develop methodologies to estimate health status from claims data.
Currently, the state has access to self-reported health status from both the BRFSS[2] and VHHIS[3]. While self-reported status has been validated as a measure, the addition of claims information can provide valuable additional information such as diagnoses contributing to health status and relationship between health status and costs.

While it is important to consider the contribution of overall health status in any population-based expenditure analysis, the ability to isolate and adjust for individual differences in health status in any population-based payment system is essential. For example, while we may choose to put a delivery system at risk for its practice patterns, we may choose to hold the system only partially accountable for

[2] http://healthvermont.gov/research/brfss/brfss.aspx
[3] http://www.dfr.vermont.gov/health-care/research-data-reports/vermont-household-health-insurance-survey-vhhis

the health of its population, recognizing the contribution of factors outside the delivery system's control (see discussion of determinants, below).

There are a number of tools that can be used to measure health status from claims data. For example, Onpoint has used OptumInsight (formerly Ingenix) Episode Risk Groups when analyzing VHCURES data. Another example is the Medstat Episode Grouper (MEG). The Prometheus system, based on criteria established with the American Medical Association and medical specialties, identifies patterns of care, complications, and inefficiencies. These all should be evaluated for their applicability to specific analyses.

Develop methodologies to decompose determinants of health.
While the focus of health care reform efforts is on financing and the health care delivery system, several other factors exert a substantial influence on the health of a population (and thus on the costs of care). These include demographic and socioeconomic factors (age, gender, education, income, etc.); behaviors and personal choices; genetics; and the environment.

The ability to isolate these factors is important for several reasons. First, in developing payment reforms, it is helpful to understand the proportion of variation in health care costs that is attributable to delivery system factors (organization, patterns of care) and the proportion that is attributable to factors partially or totally outside the control of the delivery system.

More broadly, quantification of non-health system factors such as economic status and community characteristics can help to identify areas where investment in social programs or public health initiatives can have a higher return than investments in care. In order to do this, it will be necessary to create linkages between care-based information systems such as VHCURES and other sources of information such as the Vermont Household Health Insurance Survey (VHHIS) or the federal Behavioral Risk Factor Surveillance System (BRFSS), both of which include information that can help directly or indirectly measure other determinants.

Develop a population-based value measure.
As we improve our capability to measure both health and spending, we can make progress toward a true measure of value – the relationship between funds spent and health. A measure of comparative value among populations or the delivery systems that serve those populations can help identify best practices ("What does system A do to produce higher value than system B?") and to set targets toward which systems must move.

Data Infrastructure

While Vermont is fortunate to have a wide range of data resources that can support the Green Mountain Care Board's work, it is essential to identify areas where these resources have gaps, and to work to remedy those shortcomings.

Vermont Healthcare Claims Uniform reporting and Evaluation System (VHCURES)
In its current form VHCURES is the cornerstone of the health data structure. In order to both accurately reflect the reform initiatives currently under way and to expand its usefulness, we recommend a small number of enhancements.

Payment reform is central to the Green Mountain Care Board's work. It is essential that as payment mechanisms move away from fee-for-service models, alternate mechanisms be developed to collect both financial information (e.g. capitation payments) and clinical information. Historically, when providers were paid a capitation, they had little incentive to submit information on the services that they rendered.

Collect insurance group and benefit information. Currently, VHCURES is focused on individuals. However, many of the factors that influence the costs and outcomes of health care are determined at the employer group level. These include:

- Group size (determines which market coverage is obtained in, whether the group will participate in the exchange)
- Benefits (scope of coverage, cost sharing). In any analysis of spending trends, it is important to include adjustments for change in actuarial value over time.
- Renewal date
- Total premium
- Employer / employee share

There are a number of possible avenues for collecting this information. One possibility is to piggy-back on the Vermont Department of Labor's periodic benefits survey. Another is to collect information from payers, such as was done for the state's exchange analysis. Collecting information from payers would be more accurate and comprehensive, but would require a mechanism to link covered individuals with the groups through which they obtain coverage.

The ability to create a complete picture of care in the state is dependent on the ability to identify and consolidate the care experience of each individual. Because the most reliable identifier, encrypted social security number, is not reliably present on all enrollment records and other identifiers such as name are also encrypted it is difficult to create the type of picture necessary to evaluate reforms such as the Blueprint for Health. We recommend that a more reliable personal identifier be created that preserves patient privacy, but also supports the evaluation of the care process.

A similar situation currently limits our ability to explore the delivery of care from a provider perspective. The state needs an provider identifier which is consistent across payers and supports creation of organizational views. This means that professional providers will need to be connected to the organizations for which they work, and complex organizations such as Federally-Qualified Health Centers will need to be decomposed into individual practice sites.

Enhance and Integrate Other State Information Systems

The state has several information systems that can contribute to our understanding of health and health care in Vermont. For example, there are two different ways to qualify for the current VHAP or Catamount programs – through length of time without insurance or through loss of coverage for reasons outside the beneficiary's control (job loss, divorce, etc.). While an eligibility worker must make this determination, the results are not retained in the current system.

Remedying this type of problem is a longer-term project, tied to redesign of systems such as the Medicaid eligibility system (currently under way).

Timing and Schedules

It is difficult to develop a true schedule for analyses because of the dependence of many of the action steps on other steps or on processes outside the Board's control (such as development of a mature analytical capability in-house). That said, some activities can be identified as immediate priorities, while others can (or must) be deferred.

Immediate

Initial analyses should focus on understanding the current situation. In particular, initial analyses should examine differences in health status, delivery system efficiency and structure, and decomposition of the determinants of health and the drivers of health care spending growth.

While many of these analyses can be done using VHCURES in its current state, we recommend that work on enhancing VHCURES begin immediately. This recommendation is made for two distinct reasons. The first is that much of the Board's analytic agenda (along with that of other parts of state government) relies on this resource. This includes both current activities and those recommended in this report. For example, the Board is currently working on development of population definitions for both evaluation and reimbursement. It is essential that patient-provider linkages be clean and reliable for this work to be useful. This analysis can be done by editing existing data.

Similarly, the development of benefit packages should be informed by what benefits Vermonters have currently. We know very little about benefits in the private market. We do not have a mechanism to compare Medicaid and private benefits. This analysis will require development of new data sources and methodologies. Initial benefit designs for the Health Insurance Exchange are due in 2012.

The second is that changes to VHCURES will require either regulatory or statutory changes – a process that can take substantial time.

The other effort that we recommend starting immediately is mapping the current payment landscape. The behavioral consequences of payment methodologies operate on two levels – individual and organizational. We have a fairly good sense of the mechanism by which organizations (institutions and practices) are paid, but much less information about how individual practitioners are paid. It is at the second level that we are most interested in producing behavioral change.

Next Steps

The "Expenditure Analysis" has been a cornerstone of our understanding of health financing, and will become even more important as reform progresses. The development of a funds flow map will enable a much better understanding of the current true burdens of health costs on families and employers and will support exploration of the impact of policy changes. For example, how will costs be shifted among participants under a more tax-reliant financing system? How do economic burdens change under different benefit structures (catastrophic, comprehensive)? This set of analyses can be done with existing data.

The decomposition of spending growth is a powerful tool in improving our understanding of why health care costs are increasing. At a minimum, changes in spending are divided between changes in price and changes in utilization. At a more sophisticated level, a third factor, intensity, is included. Changes in intensity reflect the use of different diagnostic and treatment modalities (e.g. X-rays, CT scans, MRIs,

and PET scans). Cost containment policies will differ, depending on the relative contribution of each factor.

This analysis will rely heavily on VHCURES, and progress will follow the development of that data system. For example, it is currently possible to do this decomposition for commercial health insurance. As soon as Medicaid data are incorporated, it will be possible to do the same analyses, and to understand the difference in growth rates between public and private coverage plans. Finally, when Medicare data are included, a nearly full4 picture of health care spending will be possible.

Longer-Term

While Vermont has developed a portfolio of tools to measure health financing, its capacity to measure the other part of the value equation, health, is more limited. In order to evaluate the true impact of reform, we will need to monitor the ongoing health of Vermonters, not just the amount we spend. Because health is a complex concept, and is determined by many different factors, development of measures of health will be a long-term process. Incorporating information from a variety of sources, including VHCURES, surveys (VHHIS and BRFSS), and ultimately, measures of a wide range of non-care determinants, from socioeconomics to nutrition and from behaviors to environment.

Some of these measures are available immediately, but are not well-integrated into a unified picture of health. Others will need to be developed over time.

Vermont will need to develop a plan to meet its information needs as payment reforms are implemented and use of fee-for-service payments (claims) is reduced. This means that the source of clinical information will be disconnected from the source of financial information.

[4] Information on the utilization of those without coverage will need to be developed from other sources.

Appendices

Appendix 1 - Detailed Analytic Question List

This section presents specific analytical questions, categorized by the broad topic areas described above. These questions are classified into three categories – immediate (**), medium-term (*), and longer-term. This classification system attempts to recognize several factors, including the state's strategic plan, the availability of information, and the dependence of some questions on the answers to others.

1. How healthy are Vermonters?
What are the variations across the state by geographic region in disease prevalence, and compared to national data and neighboring / similar states? **

What are the variations across the state by geographic region in self-reported health status, and compared to national data and neighboring / similar states? **

What are the high cost/high prevalence diseases? **

What socioeconomic factors are correlated with health spending? **
How does self-reported health status compare with disease prevalence?

What populations are at the highest risk for selected diseases? *

What socioeconomic factors are correlated with health status? *

How does coverage vary by source, region, income, health status? *

How serious a problem is churning? *

How does physical access to providers vary across the state? How does this affect health status?

How does having specific diseases affect access to care?

2. How much is spent on health care?
How does Vermont spending per capita compare to other states, both in aggregate and by sector of care (hospital, physician, pharmaceuticals, etc.)? Is there a relationship between sector-specific per capita spending and aggregate? For example, does higher spending on physician care correlate with lower aggregate per capita spending? **

How does per capita spending vary within Vermont both in aggregate and by sector of care (hospital, physician, pharmaceuticals, etc.)? **

How does per capita spending vary within Vermont by availability of care resources (beds / 1,000, physicians / 1,000)? **

What share of total Vermont spending is by each major payer (Medicare, Medicaid, major private insurers)? How does this compare with proportion of total population covered by that payer? **

How much do payers spend on administration? For private payers, distinguish between actual administrative costs, change in reserve / surplus, and profit / net income. For public payers, develop ways to compare different measurements of administrative cost (direct, as reported in order to draw Medicaid match). **

How does utilization of / spending on primary care in Vermont affect total spending? **

For each major payer, what are the components of administrative spending? Distinguish between personnel and non-personnel costs. Identify major activities such as marketing, claim processing, customer/beneficiary relations, and provider relations. **

How do provider choices / patterns of care affect costs? How much of variation in costs across Vermont can be explained by differences in practice patterns, controlling for other factors such as socio-demographics. **

How much of Vermont spending falls into the category of "waste"? What are the specific types of spending? **

How do prices paid by payers on behalf of Vermont residents vary? Expand on historical "Provider Reimbursement Reports" to cover more professional services and major institutional services (e.g. most common DRGs).*

How much is spent by Vermont providers on administration, based on generally-accepted definitions of provider administrative costs? This analysis should include both institutional and professional providers. *

How much of provider administrative costs are attributable to billing, collection, and insurance-related activities? *

How does the organization of provider systems affect the costs of populations for which they care? Controlling for other factors, are more integrated delivery systems in Vermont more or less efficient than less integrated systems? *

How do different payment mechanisms affect the cost of care in Vermont? This analysis will need to consider both the mechanism under which the billing organization is paid and in the case of professional providers, how those providers are paid by their organizations (straight salary, performance bonuses, etc.). *

How does underlying population health affect costs? *

How do benefits affect costs? What is the relationship between actuarial value and total payer + patient spending, controlling for other factors? How consistent is this pattern across insurance markets? *

How does population health vary among payers in Vermont? Are Medicaid beneficiaries healthier or less healthy than the population covered by private insurance? Does this vary by eligibility category? For example, how does the Medicaid population whose eligibility is not tied to disability compare with the privately-insured?

How does administrative spending vary by type and size of provider?

How does the presence / absence of competition affect the costs of care in Vermont?

How does coverage / lack of coverage affect costs? How does spending on the uninsured population compare to spending for an equivalent insured population. Spending should be defined both in terms of what would have been paid and actual receipts net of free care. This will be important to understand in order to quantify cost growth attributable to the federal coverage mandate.

How well do Vermont's current cost-containment programs work?

How well will savings attributable to different initiatives be recaptured?

3. Where does the money that we spend on health care come from?
What is the true burden of health care costs on Vermont families? Distinguish among out-of-pocket spending, premiums (employer, employee, individual), and taxes. For the tax category, distinguish between taxes that directly support care (e.g. cigarette taxes, Medicare payroll tax) and taxes that support public employee benefits. **

How does this vary by family characteristics? **

How has this changed over time? **

What additional analytics are necessary for the rate review process? **

What is the relationship between statewide drivers and the components of requested rate increases? **

How do benefits compare among payers, markets, and sources of coverage? *

How does offer of insurance vary among employers? What factors (size, average wage, industry) best predict likelihood to offer insurance? *

How is risk distributed within the system currently? Distinguish among self-insured employers, insurance companies, and providers (e.g. capitation).

Which organizations are currently carrying reserves to address these risks?

Are these reserves adequate, excessive, or inadequate?

How should reserving be regulated under payment reform?

How does distribution of risk affect provider and patient behaviors, and costs?

4. How has spending changed over time?
How does Vermont spending growth compare to other states? **

How does this vary among sectors of care? **

To what extent have changes in utilization and prices driven spending increases? How does this vary among payers? **

What is the relationship between premium increases, benefit changes, and payer pure premium (spending for medical care)? **

How does the blend of drivers in Vermont compare to other states and national patterns? **

How has spending distribution among payers changed over time? *

How much of the spending increase is attributable to changes in payer and provider administrative costs? *

How much of utilization change is attributable to changes in population health? How much to changes in practice patterns?

How has the concentration of spending changed over time?

5. Where are the most significant opportunities to improve the value of the health care system?

Where are the most significant opportunities to improve health?

How much of care provided to Vermonters is based on best practices? *

How much could spending be reduced and health improved if more preventive services were provided? *

What is the current relationship between health care spending and the broader economy? *

How will proposed reforms affect Vermont's economy? *

Which non-care determinants of health and spending would have the highest return on investment?

Where are the most significant opportunities to reduce the rate of spending growth to address immediately?

What are the high-cost or high-volume services? How does this vary by payer? **

How much of current care is unnecessary, inefficient, overpriced, or fraudulent (IOM Health Care Imperative)? How much of that spending could be recovered? *

How much of current care can be provided with equal quality and effectiveness in a lower-cost setting? *

How much could costs be reduced and outcomes improved with more integrated delivery systems? *

What are the high-cost or high-volume services? How does this vary by payer? **

Are there ways to improve on Vermont's current model mixing of competition and "franchise"?

How do epidemiologic studies match health care utilization? What are differences in survey reported data regarding disease with claims-based findings by region?

What is the distribution of services and costs within episodes (acute, post-acute, physician vs. hospital), and how does it differ by region, and between Vermont and other states/regions?

What is the distribution of health care spending by individual and by disease?

What is the concentration of health expenditures within the population?

What is the relationship of post hospital discharge services to primary care overall and in association with readmissions?

What is the geographic distribution of patients from the population perspective (service areas), including how far are people traveling to providers (primary and specialist)?
geographic analysis of care patterns of care (where individuals originate and where they receive care, inpatient and outpatient?)

What proportion of individuals seek care outside of local service area?

What is the pattern of networks of physicians and referrals within and across systems? (Self-referral care versus primary care referrals).

What is the distribution of services within episodes (e.g. how much is in post-acute care, etc.)

How fragmented are episodes (i.e., within episodes, where do individuals seek care during or after the episode?)

What is the variation across hospitals in types of services offered and used (are there some services that certain hospitals have larger markets)?

Efficiency analysis: What is the variation in cost of episodes for high use services? What are drivers across providers for services: episodes, specific services, and bundles of services?

Price analysis: What is the price of a standardized set of services or individual services, and how has this changed over time?

How has the use of expanded outpatient services i.e. imaging costs - changed over time, including utilization location and prices for specific services across providers?

What is the duplication of services within an episode, by patient and hospital?

What are the potentially avoidable admissions through ED; (this includes the mental health system , including the younger dually eligible)

Appendix 2 – Analytic Techniques

There are a number of analytical techniques that underlie these analyses. These include:
Decomposition of expenditures – basic economics tells us that expenditures are the product of prices and quantities. The first level of expenditure analysis would be to identify the contribution of each of these factors to total change in spending. Within each factor, several different influences are operating. The more the contribution of each of these influences can be quantified, the more valuable the analysis will be. Additional influences include:

- Population growth
- Population health
- Other population characteristics
- Practice patterns

Risk Adjustment – risk adjustment is a process by which the impact of factors other than the ones of direct interest is controlled for, to allow more meaningful comparisons. For example, age is one of the strongest predictors of health care consumption. Many analyses are age-adjusted, which is a way to look at the question "What If these two populations had the same age characteristics?" Risk adjustment techniques have been developed to compensate for differences in other factors such as population health, sociodemographic factors, and insurance benefits.

Development of market baskets – when comparing prices for a mix of services across areas, average price can be influenced by the quantity of each service purchased. For example, if two areas have the same price of each service, but use a different mix, it is important to go beyond average price to identify the difference in mix. One way to create a more meaningful price comparison is to create a market basket – a shopping list in which the items purchased and the quantity of each is fixed. Each area's prices are then applied to the list to allow a meaningful comparison of price among areas.
Episode of care analyses – while much can be learned through studying the care process on a service by service basis, important information can also be obtained by aggregating services into episodes of care. For example, pre-operative services, surgery (both institutional and professional claims) and post-operative care can be combined into an episode. This shifts the analytical focus from individual parts to the finished product. Much of the work in payment reform is also focused on shifting payment from the individual parts to the finished product, so analyses in support of reform will need to be able to model the consequences of this shift.

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