

WASHINGTON STATE DEPARTMENT OF HEALTH

Public Health Improvement Partnership Cost Model Development Cost Model Framework

August 2012

Public health services in Washington State are provided through a combination of federal, State, and local efforts with the primary responsibility residing at the local level. The Public Health Improvement Partnership is tasked by the Legislature to provide overall leadership and coordination of public health issues to improve and protect health across the State. The Partnership includes representatives from the State Board of Health, the State Department of Health, Washington State Association of Local Public Health Officials, Local Health Jurisdictions (LHJs), Local Boards of Health, Tribal Nations, the American Indian Health Commission, and the Department of Health and Human Services. The Partnership is organized into four work groups: the Activities and Services Workgroup; the Standards Workgroup; the Indicators Workgroup; and the Agenda for Change Workgroup (A4C).

A key element of the A4C 2012 work plan is to develop a framework for defining what should constitute the essential public health benefit package to be available statewide, and to provide sufficient information about the cost of providing this package of services and capabilities to support future discussions that will focus on paying for statewide core public health services. The A4C Subgroup on Public Health Funding was established to assist the A4C Workgroup in developing a long-term strategy for predictable and appropriate levels of financing for the capacities, activities, and services that should comprise the core public health services available statewide and funded by state and local funds.

BERK was retained by the Washington State Department of Health, Office of Public Health Systems Development (OPHSD) on behalf of the Public Health Improvement Partnership's (PHIP) A4C Subgroup on Public Health Funding to assist the Subgroup with the task of estimating the costs of providing the "Core Public Health Services" statewide.

The primary objective of this technical memorandum is to describe in greater detail the approach to the cost estimating effort and the overall structure of the model that will be used to develop a statewide estimate of the cost of providing the core public health services.

DEFINITION OF CORE SERVICES

The A4C Subgroup on Public Health Funding has been developing a definition of what should constitute the "Core Public Health Services" that would be available statewide. The emerging definition is shown in the following table and is organized into two types of services: Foundational Capabilities and Essential Programs. This definition, which encompasses a wide range of services and organizational capacities, will be the basis for the cost estimating effort.

Emerging Definition of State Core Public Health Services

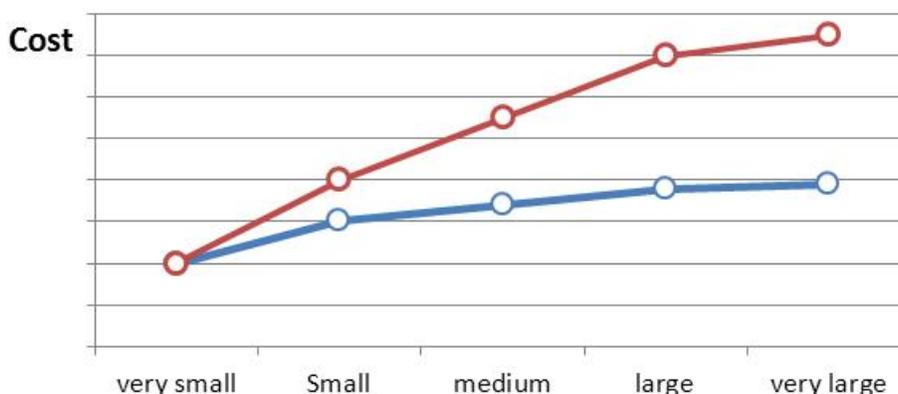
Washington's Foundational Capabilities	Washington's Essential Programs
<p>Assessment (Surveillance and Epidemiology)</p> <ul style="list-style-type: none"> Access to lab services Data collection/analytic capabilities Data response/report preparation Community health assessment capability <p>Emergency Preparedness and Response (All Hazards)</p> <ul style="list-style-type: none"> Develop and rehearse strategies and plans Lead Emergency Support Function 8 - Public Health Activate, coordinate, operate incident management system Promote preparedness through communication <p>Communication</p> <ul style="list-style-type: none"> Interface with media via press release and press conference Communication strategy on risks, behaviors, prevention & culturally/linguistically appropriate <p>Policy Development and Support</p> <ul style="list-style-type: none"> Develop evidence-based policy recommendations Work with partners/policy makers to enact policies Utilizing cost benefit information to develop action plans <p>Community Partnership Development</p> <ul style="list-style-type: none"> Create and maintain relationships with partners Select/articulate/coordinate roles and activities with partners <p>Business Competencies</p> <ul style="list-style-type: none"> Leadership Accountability/Quality Assurance Quality Improvement Information Technology Human Resources Fiscal Management, Contract, and Procurement Facilities and Operations Legal Services 	<p>Communicable Disease Control</p> <ul style="list-style-type: none"> Provide timely, relevant, accurate information Identify assets, develop plans, advocate for initiatives Receive lab reports, conduct investigations, respond to outbreaks Per CDC, assure availability of notification services Per CDC, assure treatment of active TB Coordinate/integrate other programs and services <p>Chronic Disease and Injury Prevention</p> <ul style="list-style-type: none"> Provide timely, relevant, accurate information Identify assets, develop plans, advocate for initiatives Reduce tobacco use Increase healthy eating and active living Coordinate/integrate other programs and services <p>Environmental Public Health</p> <ul style="list-style-type: none"> Provide timely, relevant, accurate information Identify assets, develop/implement plan to prevent/reduce exposure Inspections to protect food, water, waste Identify/address priority notifiable public health threats Protect workers and public from unnecessary radiation exposure Participate in land use planning and sustainable development Coordinate/integrate other programs and services <p>Maternal/Child/Family Health</p> <ul style="list-style-type: none"> Provide timely, relevant, accurate information Identify, disseminate, promote information that optimize development Identify assets, develop plans, advocate for initiatives Coordinate/integrate other programs and services <p>Access/Linkage with Clinical Health Care</p> <ul style="list-style-type: none"> Provide timely, relevant, accurate information Assure safety through inspection, licensing, monitoring, discipline of healthcare facilities/providers Identify assets, develop plans, advocate for initiatives Coordinate/integrate other programs and services <p>Vital Records</p> <ul style="list-style-type: none"> Assure a system of vital records Provide certified birth/death certificates

COST MODEL FRAMEWORK

This project presents a significant analytical challenge: estimating statewide costs for a subset of public health services delivered through a mix of local providers and the Washington State Department of Health. In any cost estimating effort, the key to developing a reliable estimate is to understand to the greatest extent possible the quantity of the services delivered and the unit cost of providing those services. There are three major technical issues that must be accounted for in the cost modeling framework:

- **Developing cost factors.** Given the disaggregated nature of the public health system, the cost estimates will be built on a series of cost factors that will relate the cost of providing a particular unit of service and the quantity provided. These cost factors will be developed through a sampling of representative service providers at different points along the organizational scale spectrum.
- **Extrapolating cost data to the statewide system.** Once cost factors have been developed based on the sample providers, the costs will be factored up to represent the likely statewide cost of providing the core health services. Developing the scaling factors will be a critical step that will need to be informed by an understanding of the underlying drivers of demand for each service.
- **Properly accounting for economies of scale.** The graph below conceptually shows how costs might be correlated with the scale of operations for two generic public health services. The blue line depicts a service with relatively low marginal costs (costs do not grow significantly as output increases) while the red line shows a service where costs do scale more dramatically as quantity increases. Understanding the economies of scale for each element of the core package will be a critical step in informing the statewide estimate of costs.

Relationship Between Costs and Underlying Cost Drivers



General Approach

BERK will develop a cost model that will form the foundation for estimating the costs of delivering the core services statewide. The model will be assumption-driven and allow for evaluation of alternative concepts and changes in key assumptions regarding each of the core services. In particular, the model will:

- Be built on the basis of actual cost experience for each of the core services and based on information collected from selected benchmark service providers.
- Have costs disaggregated in such a way as to allow for reasonable scaling, both in terms of varying the level of service that is assumed to be the core level and in providing a mechanism to apply unit costs to develop statewide estimates.
- Provide flexibility to develop alternative scenarios for discussion at the Subgroup. These scenarios could include variations in service levels, additions/deletions from the list of core services, and alternative service delivery options (where applicable).

The model will be developed in close collaboration with the Subgroup to ensure that, to the maximum extent practical, there will be sufficient functionality to support decision making regarding the definition of the core public health services. The following are the key steps in the model development process:

- **Data collection.** The reliability of the estimate will be directly correlated to the quality of the data collection effort. The primary approach to data collection will be in-depth reviews and analyses of a sample set of service providers, augmented by detailed interviews.
- **Developing cost factors.** The raw data and qualitative inputs collected through the interview process will be used to develop cost factors for each of the essential services and foundational capabilities. The cost factors will focus on direct costs and identify appropriate overhead markups to capture the full cost of service delivery. The factors will also identify the costs of meeting the standard in the minimum package which may require adjustments to the raw data to reflect where services are over or under served.
- **Development of scaling factors.** For each of the cost factors, appropriate scaling factors will be developed using the understanding of underlying cost drivers that emerges from the interviews. The combination of the cost and scaling factors will provide the basis for estimates of service costs for all service providers in the state.
- **Estimating statewide costs.** Statewide costs will be estimated and may include appropriate ranges depending on the level of uncertainty around particular cost or scaling factors.
- **Review and iterate around key assumptions.** We will work collaboratively and iteratively with the Subgroup to refine the statewide estimates and to ensure that the knowledge of the group is properly leveraged to enhance the overall reliability of the final estimates.

Developing Cost Factors

The key step in developing the cost factors will be to collect “real world” information about how specific public health service providers (principally DOH for state services and a sample of LHJ’s for local services) are currently providing the core services and the costs associated with them. Since it is not clear that all providers are providing the specific level of service identified in the minimum package, it is also important to discuss the degree to which the current services meet, exceed, or fall short of this standard.

This data collection effort will be done through a series of interviews with service providers. The purpose of the interviews will be to collect data and other relevant information which will form the basis for the development of cost factors for each of the foundational capabilities and core public health services. The key questions that we are going to be using to focus these efforts are:

- **Current operations.** How does your organization currently meet the requirements identified for each of the foundational capabilities and core public health services?

**DOH PUBLIC HEALTH IMPROVEMENT PARTNERSHIP
DEFINITION OF CORE SERVICES: COST MODEL FRAMEWORK**

- Number and type of staff assigned (training, educational experience, professional designation, etc.)
- Share of each staff member's time allocated to the specific tasks associated with the foundational capability or core public health service.
- Other costs associated with meeting these requirements, which could include contract services, materials and supplies, training costs, facilities and equipment, or other costs directly related to the provision of these services.
- If the capability or service in question is a shared responsibility between multiple jurisdictions (state/local or regional partnership), identify the portion that your agency is responsible for and qualitatively describe how the other jurisdiction(s) participate in meeting the requirement.
- **Desired level.** To what degree do you feel that the current approach to meeting the foundational capability or core public health service is consistent with the current definition of the basic health package?
 - If you feel that the current service is less than the desired level, how would you bring the service up to the level as currently defined in the basic public health package?
 - If you feel that the current service is greater than the minimum standard as defined, what elements of your current operation go beyond the minimum standard? How much of your current costs might be related to these “extra” services?
- **Cost drivers.** For each of the foundational capabilities and core public health services, what are the key drivers of cost?
 - Cost drivers are the factors that increase or decrease the demand for a particular service or capability. For example, the demand for a particular service may be related to population served, rates of infection, number of restaurants, etc.
 - The relationship between costs and cost drivers also needs to address the degree to which costs may be “lumpy”, for example some services can only be increased in larger steps. In these cases, costs may be relatively flat until a provider reaches another plateau and must absorb a substantial increase in costs to meet the new demands.
- **Source of funding.** Some services are funded or partially funded through fees or categorical funding (i.e. a limited federal grant). Since the main objective of this cost estimating effort is to identify the cost of the minimum package of public health services, it is necessary to understand the degree to which these core services are funded from local and state flexible funds. Therefore, for each of the foundational capabilities and core public health services, how are the current services funded?
 - **Fee supported** – please identify the types of fees involved and any particular limitation on how the fees are established and how the revenues can be used.
 - **Categorical funding (grants)** – please identify the sources of categorical funding, the limitations on the use of these funds, information regarding the stability and predictability of these funds and whether there is a risk that the funding could be reduced or eliminated in the future.

- **Flexible funds** – it is not necessarily a requirement to explicitly track flexible funds, as it can be inferred that any costs that are not covered by fee or grant funds would need to be covered by local and state funds.

Estimating direct service cost factors. Based on the data collected through the interviews, cost factors will be developed for each of the foundational capabilities and essential programs reflecting an integration of the relevant data from all of the respondents. The resulting “generalized” cost factors will describe the relationship between direct service costs and the specific cost drivers (i.e. population, rates of infection, etc.) as well as identify the degree to which some costs are fixed (at least up to a certain level of demand) and any other factors that might affect the scalability of the estimate (e.g. local variations in labor costs).

The cost factors will be designed to reflect the desired level of service and, as such, will incorporate appropriate adjustments to the current cost data to reflect where the current service does not match the standard. Also for some cost factors, it will be necessary to split the costs according to the source of funds, either flexible local and state funding, fees or categorical.

Estimating indirect cost factors. Indirect cost factors will also be developed based on the data collected that will allow for appropriate scaling of the direct service costs to a total cost of service. These indirect factors will be designed to capture the relevant costs associated with organizational overhead and facilities. Since some of the foundational capability elements are sometimes considered to be part of the overhead of an organization, it will be important to avoid double counting any of these costs when developing the indirect cost factors.

Accounting for economies of scale. In general terms, economies of scale allow for a reduction in the average cost of a service as the total output level is increased. In other words, by increasing the level of production of a good or service, the average cost of producing each individual unit is decreased. The basis of an operation’s economies of scale is typically some combination of the following factors:

- Labor and Managerial Specialization
 - Frequent practice leads to greater skill, efficiency
 - High-paid workers can focus on high-value tasks, with support staff addressing lower-level tasks
 - Less loss of time shifting from one job to another
- Efficient capital
 - A larger budget allows for more advanced technology which may operate more efficiently
- Lower input costs
 - Costs of inputs may be less due to volume discounts, lower transaction costs, reduced inventories, etc.
- Distribution of costs over a larger base
 - Distribution of fixed costs, such as administration and management expenses and the cost of the physical infrastructure
 - Distribution of advertising costs
 - Distribution of “start-up” costs
 - Distribution of research, planning, design, roll-out costs

Wherever possible, the interviews will seek to improve our understanding of these economies of scale issues so that the estimation of the statewide costs does not inappropriately leverage these economies nor ignores the potential for savings when applying cost factors to the various local health jurisdictions.

Developing an Estimate for the Statewide Package

The final step in developing a statewide estimate of the cost of the minimum package of public health services will be to extrapolate from the observed data to fill in information about the rest of the state. This extrapolation will be based initially on the cost factors derived from the interviews and collected information regarding the identified cost drivers for all of the state's public health providers.

The estimates are likely to include alternative scenarios, which could involve variations in the quantity of services offered, the list of core services, and/or assumptions about service delivery. We anticipate that it may be beneficial to conduct an interactive work session with the Subgroup using the model to test alternative definitions of core services. We have found this approach is particularly effective when there are a number of policy variables that are in play and real time discussion/evaluation can offer an efficient way to work through a significant number of potential combinations and permutations.