ANALYSIS METHODOLOGY

Criteria and Guidelines for the Analysis of Long-Term Impacts on Healthcare Costs and Public Health

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The California Health Benefits Review Program (CHBRP) must report on the cost and public health impacts of health benefits mandate legislation, per provisions included in statute (California Health and Safety Code, Section 127660). However, the statute does not specify a time-period for considering these impact analyses.

The reports produced by CHBRP during 2003-2008 produced cost and public health estimates with a one-year time horizon post-mandate. In certain circumstances, when a specific health insurance mandate has clear long-term public health and cost impacts, CHBRP has summarized the literature to provide the legislature context on these potential impacts.

For example, in analyzing Senate Bill 576 (Ortiz, 2005), a bill that would have mandated coverage of Tobacco Cessation treatment, CHBRP recognized that while there are a few effects that can be realized within one year (e.g., reduction in low-birthweight babies of pregnant women who quit smoking, reduction in the risk of myocardial infarction), many of the impacts affecting lung disease, cancer and premature death are realized over a much longer period of time. To address this important point, CHBRP reported that[1]:

> "Medical care makes up the largest proportion of the direct costs of smoking. The CDC reports that men who smoke incur $15,800 (in 2002 dollars) more in lifetime medical expenses than non-smokers, and women who smoke incur $17,500 more than non-smokers (Fellows et al, 2002). According to the California Department of Health Services, in 1999, the state spent [in thousands:] $8,564,623 in total health care costs directly attributable to smoking, including $4,016,568 in hospital care, $2,060,234 in outpatient care, and $1,133,432 for prescriptions (Max et al, 2002). A 1995 study by Wagner and colleagues estimates that tobacco cessation resulted in significant decreases in use of outpatient and inpatient health care services (Wagner et al, 1995)."

> "Due to the multiple effects of smoking on the body, a significant proportion of the death and disease burden of smoking will not be evident until many years after smoking is initiated. Indirect costs in terms of loss of productivity, quality of life, and life years lost are difficult to estimate for outcomes that may develop over a 30-year time period. California's Department of Health Services reports that in 1999, 12.4 years of potential life were lost due to smoking related disease, with an associated [in thousands:] $5,175,678 in lost productivity for men and $2,019,478 in lost productivity for women (Max et al, 2002). A recent study by Mulder and colleagues estimates that smokers who successfully quit report improved quality of life relative to current smokers (Mulder et al, 2001). Another study, by Taylor and colleagues, estimates the life extension achieved by tobacco cessation. Cessation at an early age (35 years old) resulted in an additional seven to eight years of life for men and an additional six to

[1] See CHBRP's analysis of SB 576(2005), available at: https://www.chbrp.org/analysis/completed-analyses .

seven years of life for women. Cessation at a later age (65 years old), although resulting in significantly fewer life years gained, one to two for men and two to three for women, illustrates the benefits of cessation at any age."

Short-Term Analysis

CHBRP has limited its post-mandate cost and public health impact analysis to one-year time horizon in the past for several reasons:

1. The CHBRP cost impacts model for premium and total expenditure estimates mimics most insurers' internal processes for determining premium changes in a given year. In general, insurers would determine what benefit design changes (resulting from market, statutory or regulatory forces) would occur in the next contract year and how these changes would affect utilization, costs, and the resulting effect on premium rates for their various large group, small group, and individual product lines. The premium and expenditure information reported in CHBRP reports, therefore, provides the legislature the "real world" perspective on how decisions would be made by health insurers.

2. CHBRP has limited capacity for modeling the long-term cost and health consequences of benefit mandates. To conduct such analyses usually requires sophisticated, disease-specific simulation models that permit analysis of the progression of a disease over the course of individual lifetimes and allow for individual variability in disease progression, health outcomes, and subsequent costs. Studies reporting on the cost-effectiveness of medical interventions commonly utilize such models to analyze the lifetime costs and benefits of specific technologies, including devices, surgical procedures, pharmaceuticals, and diagnostic tests. However, it is essentially impossible to construct such models within the 60-day time frame allotted for CHBRP analyses by the legislature.

3. Given the specific nature of most mandates analyzed by CHBRP, the long-term cost impacts or public health impacts that are a result of the mandate are not necessarily addressed in the literature. In addition, the longer the time horizon, the greater the uncertainty due to compounding factors including changing technology, changing demographics, changes in the economy, and changes in the practice, organization and delivery of medical. In order for CHBRP to estimate the long-term cost implications for a mandate, for example, the literature would need to provide the following information:

    - whether and the extent to which a mandated benefit or services affects mortality/morbidity and the time frame for realizing specific health outcomes.

    - the associated services (e.g. substitute services, services that may be avoided due to increased use of the mandated benefit or service, or additional services incurred due to increased use of the mandated benefit or service).

    - the costs and cost-savings associated with avoided or newly-incurred services (or the frequency/volume and per-unit cost of these services so that CHBRP can estimate the costs or cost-savings).

All of these data elements may not be addressed in the literature and therefore limit CHBRP's ability to make long-term quantitative estimates of cost impacts.

Long-term Analysis

Nevertheless, some benefit mandates analyzed by CHBRP involve diseases or conditions with significant long-term health consequences and costs that are well-documented in the literature— screening and other preventive or disease management services are good examples. Ignoring these long-term consequences because of time constraints may result in analyses that substantially underreport the health benefits and possible cost savings associated with a proposed

mandate. Therefore, CHBRP now follows these guidelines and criteria when examining the potential long-term impacts of a proposed mandate:

1. During the initial assessment of a proposed mandate, the CHBRP analytic team will determine if there are likely to be long-term health impacts and cost savings based on consultation with the appropriate content experts identified to assist in the analysis.

2. The faculty lead for the mandate analysis will work with the medical effectiveness, public health and cost teams, as well as the medical librarian, to determine search terms and parameters that will help identify key literature on the possible long-term cost and public health impacts of the proposed mandate, including cost-effectiveness studies, which typically analyze lifetime health benefits and costs, as well as longitudinal epidemiological cohort studies. The medical effectiveness team will provide a summary of the long-term costs and health benefits associated with the proposed mandate to the public health and cost teams.

3. Per the provisions of CHBRP's authorizing legislation, the public health section is to address the "economic loss associated with the disease." Therefore, the public health team lead independently conducts a literature review to summarize existing studies. To the extent that this literature search yields articles on the long-term cost and long-term health impacts of a specific mandate, the public health team will share those with the analytic team.

4. The cost team lead will work to review relevant literature, including cost-effectiveness studies that may have modeled long-term costs. The literature on cost-effectiveness analysis will be summarized to inform the reader as to what are the costs associated with a life saved (or a 'quality-adjusted life year' saved).

5. The public health team lead will quantify the effect of a mandate on lifetime morbidity and morbidity, if data are available. As mentioned, if sufficient information is not available to quantify impacts, then available qualitative information will be presented.

Additional Examples of Long-term Impact Analyses in CHBRP Reports

CHBRP analyzed the long-term cost and health outcomes for Senate Bill 1245 (Figueroa, 2006), a bill enacted in September, 2006. This bill requires insurers and health plans to cover the test for the human papilloma virus (HPV) for cervical cancer screening. While CHBRP did not estimate any cost or public health impact specifically as a result of the mandate, the analysis offered an alternative scenario in the case that the mandate would spur increased utilization (by 1 percentage point) as a result of a public awareness campaign and providers continued to adopt the new guidelines regarding HPV testing and Pap screenings.

Based on existing cost-effectiveness models, CHBRP was able to report the following:

> "It is estimated that 7.6 million women are in health insurance plans affected by this mandate. Therefore, a hypothesized 1 percentage point increase in HPV triage screening would result in 76,000 more women shifting from lifetime conventional Pap tests to lifetime HPV triage screening. A shift from lifetime conventional Pap screening to HPV triage would result in a 29% reduction in lifetime cervical cancer risk and a 9% increase in lifetime costs.
>
> In this scenario, for each increase by 1 percentage point in the rate of women screened for cervical cancer using the HPV triage screening strategy (compared to lifetime conventional Pap tests), over the lifetime of the 76,000 women newly subject to this screening strategy, this would result in a reduction in cervical cancer cases from 290 to 205 with an associated cost increase of 14.3 million dollars.

> It is estimated that 6.0 million women age 30 or older are in health plans affected by this mandate. Therefore, a hypothesized 1 percentage point increase in HPV primary screening would result in 60,000 more women shifting from lifetime conventional Pap tests to HPV/Pap primary screen at age 30 and older. A shift in the rate of HPV/Pap primary screening in women ages 30 and older (compared to lifetime conventional Pap tests) would result in a 39% reduction in lifetime cervical cancer risk and a 45% increase in lifetime costs. For each increase by 1 percentage point in the rate of women screened for cervical cancer with Pap and HPV concurrent screening (compared to lifetime conventional Pap tests) over the lifetime of the 60,000 women newly subject to this screening strategy, this would result in a reduction in cervical cancer cases from 224 to 137 with an associated cost increase of 57.6 million dollars". [2]

Taking the total lifetime projected costs, a present day value was calculated and included in an alternative estimate on impacts to premiums and total expenditures. This was presented in a table that may be found in Appendix C of Analysis of Senate Bill 1245: Health Care Coverage: Cervical Cancer Screening Test.

CHBRP also considered long-term costs and health outcomes in its report on Assembly Bill 1429 (Evans, 2007), a bill that passed the Legislature and was vetoed by the Governor in 2008. In that analysis, CHBRP provided the following information regarding long-term costs and benefits:

> "HPV vaccination will likely produce several important health benefits, including reductions in CIN 2 and 3 [pre-cancerous lesions], cases of cervical cancer, and cervical cancer deaths. Several cost-effectiveness studies have been published recently examining both the long-term costs of vaccination as well as the long-term savings associated with reductions in these adverse health events (Sanders and Taira, 2003; Goldie et al., 2004). These studies found that the lifetime costs and benefits of HPV vaccination for a hypothetical cohort of females aged 12 years, where the vaccine is most effective, produces incremental cost effectiveness ratios (ICERs) of $22,755 and $20,600 per quality-adjusted life-year (QALY) saved. These estimates mean that the net cost, after accounting for all savings associated with the reductions in adverse health events, ranges from about $20,600 to $22,755 per additional QALY saved, using different assumptions on length of immunity and other such details. Although there is no consensus about the most appropriate threshold, policy makers have routinely accepted technologies with estimated ICERs much higher than these". [3]

In addition, CHBRP estimated that the new mandate would add coverage for a subset of the insured population and

> "…approximately 1,000 cases of HPV could be averted over the lifetime of the women impacted by AB 1429, thereby preventing almost 30 cases of cervical cancer and 10 cervical cancer-related deaths."

[2] See CHBRP's analysis of SB 1245 (2006), available at: https://www.chbrp.org/analysis/completed-analyses .
[3] See CHBRP's analysis of SB 1429 (2007), available at: https://www.chbrp.org/analysis/completed-analyses .

References

California Health Benefits Review Program (CHBRP). (2005). Analysis of Senate Bill 576 Health Care Coverage: Tobacco Cessation Services. Report to Calif. State Legislature. Oakland, CA: CHBRP. 05-07.

California Health Benefits Review Program (CHBRP). (2006). Analysis of Senate Bill 1245: Health Care Coverage: Cervical Cancer Screening Test. Report to Calif. State Legislature. Oakland, CA: CHBRP. 06-04.

California Health Benefits Review Program (CHBRP). (2007). Analysis of Assembly Bill 1429: Human Papillomavirus Vaccination. Report to California State Legislature. Oakland, CA: CHBRP. 07-02.

About the California Health Benefits Review Program (CHBRP)

Drawing on the experience and assistance of multi-disciplinary faculty, researchers, and analysts based at the University of California, CHBRP provides the California Legislature with timely, independent, and rigorous evidence-based analyses of introduced health insurance benefits-related legislation. Most frequently, CHBRP analyzes proposed health insurance benefit mandates (e.g., mandates to cover a test, treatment, or service, such as continuous glucose monitors). For more about CHBRP's 60-day analysis process, see the resource **Academic Rigor on a Legislature's Timeline**.

To read any of the 200+ bill analyses CHBRP has completed, see the **Completed Analysis** page on **CHBRP's website**. In addition to analysis of introduced legislation, CHBRP produces **other publications** including several annually updated resources, as well as issue briefs and explainers.