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Issue Brief

Maximizing Quality and Value in Medicaid: Using Return on Investment Forecasting to Support Effective Policymaking

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ABSTRACT: In order to serve increasing numbers of Medicaid beneficiaries, particularly during an economic recession, states must find ways to maximize the impact of available funds. Some states are identifying new ways of organizing, financing, and delivering health care in order to lower costs without sacrificing quality of care or enrollment capacity. An important tool for helping policymakers design such “value-added” strategies is return-on-investment (ROI) analysis. ROI forecasting has long been used to inform the allocation of limited resources in the private sector. This brief outlines what ROI can do, and in a few cases has already done, in the public sector, to improve quality and control costs in Medicaid.

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OVERVIEW

Medicaid provides care to more than 67 million Americans at a combined cost to the federal and state governments exceeding \$364 billion.¹ The sheer size of this publicly-funded program and its role in serving millions with significant health care needs suggests a unique opportunity for Medicaid to use its purchasing power to drive improvements in the quality and cost-effectiveness of care. This opportunity becomes even more pressing in economic downturns, as Medicaid outlays can represent up to 33 percent of a state’s total expenditures—making the program a huge target for state policymakers needing to balance their budgets.² During recessions, Medicaid enrollment increases and the demand for services requires more, not fewer, resources.³ In order to serve a growing population of Medicaid beneficiaries—particularly those with complex and costly health care needs—states must find ways to maximize the impact of what funds are available.

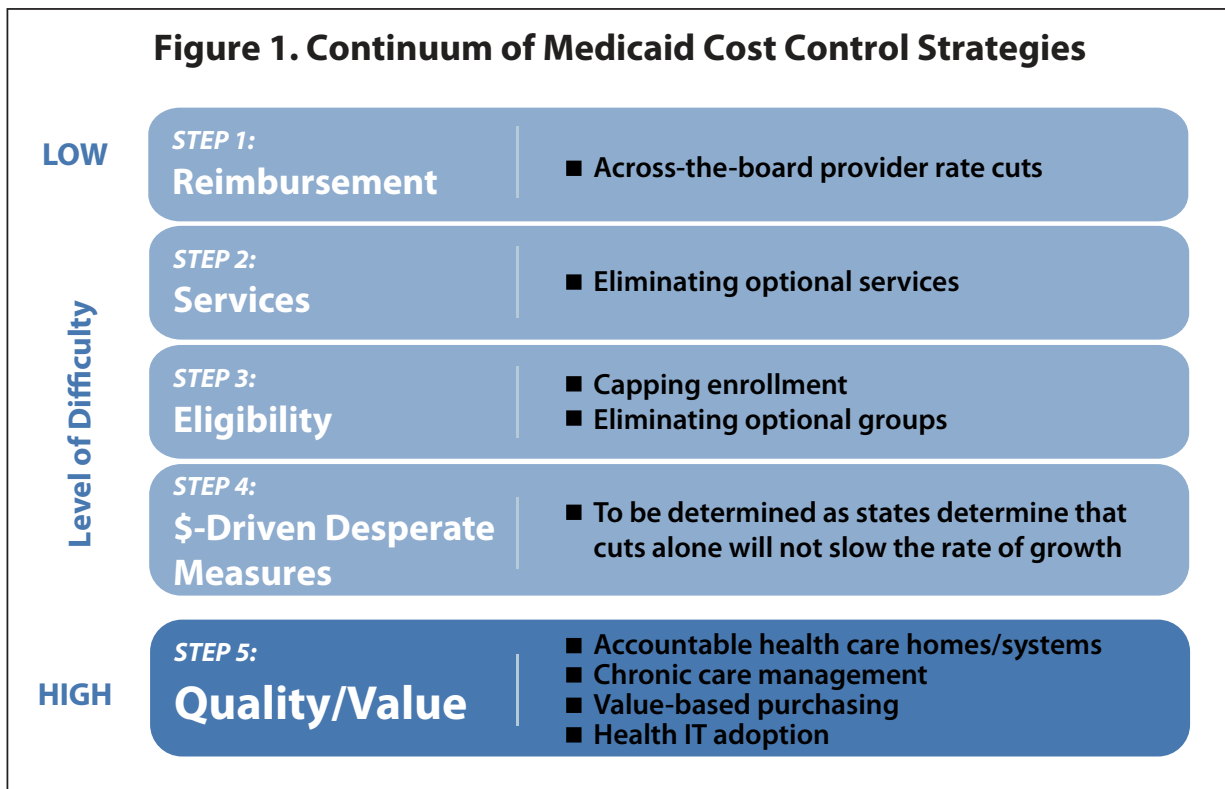
Historically, states have attempted to contain costs by using policy levers that offer the most quantifiable and immediate savings potential—that is, by lowering reimbursement rates to providers and eliminating optional services and/or eligibility groups. Although these solutions may bring short-term relief from immediate budget pressures, it has been shown time and again that they do not lead to long-term fiscal sustainability. State officials and policymakers across the country are now recognizing that a more promising strategy for “bending the curve” in health care costs is identifying better ways to organize, finance, and deliver high-quality care.

As illustrated in Figure 1, “value-based” strategies offer an opportunity to improve the quality of services while reducing growth of costs—thereby providing a compelling policy alternative to traditional service reductions.⁴ A valuable technique for supporting cost-effective policy decisions is return-on-investment, or ROI, analysis, which has been used in the private sector for decades to inform the allocation of limited resources. ROI forecasting can ensure responsible stewardship of taxpayer dollars in all economic climates, bad as well as good. Given the current fiscal

challenges facing states, when resource-allocation decisions are under particular scrutiny, the use of tools like ROI analysis to support effective decision-making is increasingly important. ROI analysis can facilitate value-based purchasing in a wide range of ways, from aiding resource-allocation decisions and adopting evidence-based, quality-improvement initiatives to identifying ways that payment strategies can be aligned with desired performance outcomes. This issue brief outlines a number of Medicaid policy decisions that are ripe for ROI analysis.

USING ROI TO ENHANCE VALUE

Policymakers seeking to develop value-driven strategies for containing the growth of costs over time can use ROI forecasting to help identify program and infrastructure investments that have the potential to generate downstream reductions in health care and other state expenditures (e.g., disability payments, unemployment insurance). There are a number of opportunities for states to use ROI analyses to support value-based purchasing. Policy considerations that could benefit from such analyses include efficient allocation of limited resources, adoption of evidence-based



quality-improvement initiatives, and payment reform to realign incentives so that they support value-based services. Each is considered separately below. (A list of specific examples of how some states have been using ROI forecasting to support effective policymaking can be found on [page 6](#).)

Efficient Allocation of Resources

At its most basic level, ROI forecasting allows users to compare the potential financial impacts of various resource-allocation options. In other words, where would states get the biggest bang for their buck? This type of analysis can be used to prioritize policy changes in the adoption, adjustment, or expansion of quality-improvement initiatives, as well as in broader benefit design decisions.

Prioritizing among various policy options. Medicaid officials make decisions daily about how best to manage existing initiatives and whether and how new initiatives should be added to the program. Policymakers may be debating which clinical conditions or eligible population groups to target through a new quality-improvement initiative, or which initiatives to pursue first. For example, a state may be considering whether to focus a new care-management program on beneficiaries with diabetes or beneficiaries with congestive heart failure and thus may be interested in which program would be more cost-effective over the next several years. Another state may need to choose between launching a new medical-home initiative and expanding a pay-for-performance program.

The potential ROI of each program can help inform which path to pursue and can provide an “apples-to-apples” comparison of the expected effects of different policy decisions. States that use ROI as part of their policymaking process can evaluate any number of options as long as the data and assumptions used to conduct the analyses are comparable.

Targeting initiatives for maximum quality and cost impact. ROI analysis can be used to target resources for those population subsets that are most likely to

benefit from improved care processes, and thus are most likely to generate cost savings. Given limited resources, a state may need to choose between “going broad” or “going deep.” For example, with the same level of program funding, the state may either target a broad population in a low-intensity intervention (e.g., all children with asthma in a telephonic care-management program) or a smaller subset of the population in a high-intensity intervention (e.g., high-risk children with asthma in a community-based program). By analyzing the potential ROI for multiple program scenarios, states can determine which interventions hold the greatest quality-improvement and cost-saving potential for which groups of beneficiaries and design their initiatives accordingly.

Assessing the downstream effects of benefit enhancements or reductions. It is a relatively straightforward matter to quantify the *immediate* cost increases or decreases expected to result from changes in covered Medicaid benefits. Using simple assumptions about caseloads and reimbursement rates, state budget officials commonly estimate the near-term costs associated with enhancing the benefit package to include new services. Likewise, state officials can readily quantify the dollars freed up by reducing or eliminating covered services, or by cutting provider rates. It is less usual, however, for them to include downstream service impacts (e.g., future effects on health care utilization) in their financial forecasts.

For example, states often look first for cost reductions made possible by the elimination of optional services for certain beneficiaries, such as dental coverage for adults. While cuts to optional services often satisfy a need for immediate cost reductions, the cuts may result in longer-term cost increases in other parts of the system. In the case of cutting dental benefits, what impact on other medical or acute-care-service use should be expected from the likely increase in dental decay?⁵ Alternatively, what happens to emergency-room (ER) use when physicians stop accepting Medicaid patients because of inadequate reimbursement rates?

A Tool for Forecasting ROI

There are number of tools available to help Medicaid officials incorporate ROI forecasting into their program-planning and other policymaking activities ([Table 1](#)). For example, the Center for Health Care Strategies (CHCS) developed the *ROI Forecasting Calculator for Quality Initiatives (ROI Calculator)*⁶ to help states assess the cost-savings potential of quality-improvement programs.

The *ROI Calculator*, made possible through funding from the Robert Wood Johnson Foundation, is a Web-based tool available for public use by state Medicaid agencies, health plans, and other stakeholders. Users enter detailed assumptions about their proposed initiatives, including target population characteristics, program costs, and the magnitude and timing of expected changes in health service utilization. Then, based on these assumptions, the *ROI Calculator* quantifies the increases or decreases in projected medical expenditures that may result from instituting the program in question, including a range of estimates based on sensitivity analysis.⁷

Given what we know about health care cost trends and previously unsuccessful efforts to contain Medicaid spending over time, decisions to enhance or reduce benefits should be made strategically, ideally with an eye toward more than a single budget cycle. States can use ROI analysis to compare which enhancements will provide the maximum impact on quality outcomes for the marginal dollar invested, and which cuts will have the fewest unintended effects on health care spending over the long term.

Creating a “portfolio” approach to program investments. Not every initiative worth pursuing will generate a positive ROI, particularly in the short run. Some program or infrastructure investments with potential to vastly improve patient care and health outcomes may require too long a time period for payback, or may never generate cost savings at all. Initiatives meant to promote more effective care for depression offer a good example of this dilemma, as evidence suggests that potential offsets to the costs of increased treatment take several years to emerge.⁸

To support the implementation of promising plans in the face of limited resources, Medicaid officials can consider using initiatives that generate a short-term return in order to finance those that do not, thereby creating a “portfolio” approach to program design and implementation. ROI analysis can support this approach, identifying the amount and time frame

of expected costs and savings for various initiatives under consideration as well as examining the possibilities for pairing initiatives that have shorter-term payback potential with ones that have longer-term potential. Linking two or more quality-improvement initiatives with ROI analyses that in total are budget-neutral may allow Medicaid to implement programs that would not otherwise have been possible.

For example, initiatives to improve care for high-risk asthma or high-risk pregnancy, for which mounting evidence suggests a positive ROI can be expected in one to two years, might be paired with a depression program, which is typically slower to show savings, and thus support its costs over the near term.⁹ Likewise, other quality-improvement initiatives with cost-savings potential could be used to offset expansions of coverage or to avoid proposed service reductions.

Adoption of Evidence-Based Policies

A critical attribute of ROI forecasting is the data-driven nature of the analysis. To develop assumptions for an ROI forecast, Medicaid officials must examine historical claims data or review the scientific literature to identify what changes in health care spending may be reasonable to expect. For example, a state launching an ER diversion initiative will need to look at the evidence around documented outcomes for similar initiatives in order to develop accurate projections for decreases in ER utilization—and to identify what potential increases in other services (e.g., office visits)

should be considered. Using such evidence to build and justify key assumptions in ROI forecasts will likely increase the accuracy and plausibility of the projections, which are important considerations for budget officials, legislators, and other stakeholders whose approval may be necessary to support new initiatives.

In addition to justifying key assumptions, the data-driven nature of developing an ROI forecast has two other benefits. First, a review of the literature supports the implementation of evidence-based programs overall, as officials may decide to modify program design or intervention strategies based on what the evidence suggests would be most effective. For example, whereas the ER diversion initiative mentioned above may be initially envisioned as a one-time counseling intervention, a review of the evidence may suggest more intensive, ongoing follow-up by nurses or case-managers is desirable for particularly high-risk subsets of frequent ER users.

Second, where the state has prior experience with initiatives similar to one being proposed, officials must carefully review their own data in order to develop ROI forecast assumptions. This review often leads to surprising findings, or interesting revelations about where and for which population subsets these programs have been more or less effective. For example, in conducting a forecast for the continuation of a statewide disease-management program, officials in Pennsylvania found that a small subset of its beneficiaries with five or more co-occurring chronic illnesses drove a surprisingly large proportion of its total medical expenditures. This finding led the state to consider directing a more intense level of resources at this population in future versions of the program. Similarly, when officials from Idaho reviewed claims data to support their ROI forecasts, they found that where beneficiaries had co-occurring diabetes and mental illness there were significant gaps in the quality of health care delivered, which suggested ways for them to target more efficient use of health care resources in the future.

Although the evidence base to support Medicaid policy decisions is far from complete, there is a growing body of literature that can be used to

inform the design and implementation of initiatives meant to improve access to and quality of care for Medicaid beneficiaries. For example, [Table 2](#) summarizes a number of published studies of asthma quality-of-care initiatives involving Medicaid populations that have demonstrated cost savings. In addition, as the pressure to rigorously evaluate and measure the impacts of new initiatives continues to grow, and as efforts to create a platform for sharing Medicaid data and lessons across states intensify, the evidence base should expand significantly in the years ahead.

Payment Reform to Align Financial Incentives

ROI forecasting can assist Medicaid stakeholders in their efforts to use payment policies as a lever for promoting high-quality, cost-effective care. Across the country, states are looking for ways to reform current payment systems to increase accountability among plans and providers and to align financial incentives with desired quality and cost outcomes. To support these reforms, ROI forecasting can:

Realign incentives to promote improvement in quality of care. By evaluating a program's financial impact on various stakeholders across the health care system, states can identify where current financing mechanisms may support—or act as barriers to—efforts to improve quality of care. For example, suppose a group of providers collaborates to improve chronic-disease care by implementing an electronic registry, which would require a substantial financial investment in technology infrastructure and staff time to support it. If the registry is used successfully, the collaborators' effort is likely to bring about better chronic-care management for their patients, thereby avoiding and/or delaying preventable complications and associated health care expenditures down the road. ROI analysis may show that any financial return associated with such improvements in care processes may take years to flow to the providers themselves, whereas Medicaid and other payers may reap benefits in the near term through more efficient health care utilization among their beneficiaries. ROI analysis could thus support cross-payer efforts to contribute to the required upfront

investments (e.g., subsidizing the electronic registry), or to establish mechanisms for sharing near-term savings with providers in order to accelerate their time frame for recouping costs. For example, in New York State, a new chronic-illness demonstration program includes a gain-sharing pool, whereby savings generated by investments in new and improved care-management interventions will be shared with participating delivery systems and/or providers, based on their performance on quality-of-care and cost indicators.

Analyze options for broad-scale payment reform.

Recognizing that current service-based payment systems do not necessarily promote coordinated and high-quality-care management, states and other payers are considering broad reforms to their payment systems (e.g., bundled payments) to support, for example, the concept of patient-centered medical homes.¹⁰ Ideally, the benefits of developing and supporting patient-centered medical homes should translate into fewer costly hospitalizations and more appropriate ER use. Such changes in patient utilization patterns should, in turn,

ROI Forecasting: Examples from the Field¹²

In 2007 and 2008, Medicaid officials from eight states participated in the *ROI Purchasing Institute*, supported by The Commonwealth Fund and the Robert Wood Johnson Foundation.¹³ Participants piloted the use of the Center for Health Care Strategies *ROI Calculator* and received technical assistance in how to incorporate ROI forecasting into the planning and monitoring of quality-of-care initiatives. The experiences of these states highlight a number of ways that ROI forecasting can be used to support quality-improvement efforts. As summarized in the examples below, ROI forecasting can:

- **Allocate resources and support budget requests for proposed quality initiatives.** Arizona used ROI forecasting to help determine the clinical focus for a proposed pay-for-performance initiative. Through its analysis, Arizona concluded that a planned focus on asthma would not have yielded a sufficient return on new investments because previous improvements had already been achieved in asthma care. With the program redefined to include diabetes, immunizations, and nursing-home care, the state was able to use estimated cost savings to develop a budget appropriation request for funding the incentive program.
- **Evaluate trade-offs associated with various program implementation options.** Colorado used ROI forecasting to examine options for expanding a pilot initiative that enrolled children in a medical home. The state evaluated the pilot's ROI and estimated the cost savings that could be generated if the program were to be expanded statewide. Based on the anticipated savings, Colorado was able to consider enhanced provider reimbursement as well as the inclusion of additional populations, such as the aged and disabled, as beneficiaries.
- **Establish realistic cost-savings expectations for programs in various stages of implementation.** Oklahoma used ROI forecasting to project the savings that could be achieved by treating people with diabetes in the state's newly launched Health Management Program. The projected savings helped gain the support of stakeholders during the program-development phase. Now that the program has rolled out, Oklahoma intends to use ROI analysis to evaluate whether or not its initial savings estimates were on target.
- **Inform conversations with contracted providers of care-management services.** Washington State used ROI forecasting to develop internal projections of financial outcomes associated with its Chronic Care Management Program. The process of comparing these internal projections with ones provided by a partner contracted to provide care-management services led to increased transparency in discussions between the parties and improved the ability of state officials to ask the right questions and interpret the contractor's program data.

generate cost savings that could be used to fund bundled payments to providers—including reimbursement to support expanded care-coordination responsibilities. By using ROI analysis to identify the expected downstream savings derived from medical-home implementation, a state can determine the size and scope of bundled payments it may be able to support and decide for which sets or subsets of beneficiaries the concept may be financially sustainable. For example, analysis may suggest focusing initial implementation on the relatively higher-cost, more complex beneficiaries where opportunities for both quality-of-care and cost benefits are more imminent.

Support the design of integrated-care programs for dual-eligibles. Roughly 46 percent of Medicaid dollars and 25 percent of Medicare dollars are spent on the approximately 8.8 million adults who are eligible for both government programs.¹¹ Given the significance of these resources, there is growing interest across states in designing programs that better coordinate Medicaid and Medicare benefits to both a) provide care to dual-eligibles in a more integrated, person-centered, and resource-efficient way than at present, and b) address the inherent incentives for shifting costs between the two programs. While there is a spectrum of integration possible, the most promising programs integrate not only the Medicare and Medicaid benefits but also the funding streams. To support the design of integrated financing for duals, ROI analysis can be used to identify

both financial misalignments and potential benefits expected to result from any integration, thus informing conversations between the Center for Medicare and Medicaid Services (CMS) and prospective health-plan partners about the programs. For example, a state investment in intensive-care management for duals could be expected to result in reduced inpatient or ER costs, the savings from which would accrue to Medicare. The state could develop an ROI forecast to build a case for an integrated-care demonstration that would allow Medicaid to benefit from a portion of the savings generated by its investment in care-management intervention.

CONCLUSION

This is a challenging yet exciting time for health care. Payers, purchasers, providers, and consumers are actively engaged in the effort to find more effective means of organizing, financing, and delivering care throughout the system. Whether or not far-reaching reform comes to pass, and irrespective of how long the current economic downturn persists, Medicaid has a unique opportunity to demonstrate how health care quality can be improved in a cost-effective and resource-efficient manner. By incorporating ROI analysis into program planning and policy development, states can increase their capacity for strategic decision-making and value-based purchasing. So armed, Medicaid will be better positioned than ever to lead broader health system reforms across the country.

Table 1. Tools for Conducting and Informing ROI Analyses

Tool	Use	For More Information
AHRQ Asthma ROI Calculator	Estimates the potential ROI for quality-improvement interventions for individuals with asthma, using evidence from the literature and data on actual asthma patients to determine disease prevalence, cost of care, and service utilization in this population.	www.academyhealth.org/ahrq/quality-tools/AsthmaROISummary.pdf
CDC Chronic-Disease Cost Calculator	Estimates the state Medicaid expenditures for beneficiaries with any of six chronic diseases (congestive heart failure, heart disease, stroke, hypertension, cancer, and diabetes). Generates the estimates using customized inputs (e.g., state-level prevalence rates and treatment costs). Can in the absence of program-level utilization and prevalence data on these populations provide a reasonable proxy for costs and prevalence for use in ROI analysis.	www.cdc.gov/nccdphp/resources/calculator.htm
CHCS ROI Forecasting Calculator for Quality Initiatives	Estimates the potential ROI from quality-improvement initiatives in Medicaid. Quantifies potential savings when states, health plans, and other payers enter assumptions about target population characteristics, program costs, and expected changes in health care utilization in the calculator. Incorporates an ROI Evidence Base that includes data from published studies of quality-improvement initiatives focused on asthma, congestive heart failure, diabetes, and high-risk pregnancy.	www.chcsroi.org
CHCS ROI Template	Calculates the actual ROI achieved by quality initiatives post-implementation. Includes detailed templates for capturing investment costs associated with developing and implementing quality initiatives.	http://www.chcs.org/publications3960/publications_show.htm?doc_id=702936
Leapfrog ROI Estimator	Estimates the potential ROI from implementation of the Leapfrog Hospital Rewards Program. Analyzes both the clinical and cost effects of implementing this pay-for-performance program.	http://roiestimator.com/
NCQA Quality Dividend Calculator	Estimates the potential ROI to employers from providing employees with access to higher-quality health care, the potential ROI to be based on improved productivity and reduced absenteeism.	www.ncqacalculator.com

Table 2. Examples of Randomized Studies of Asthma Care Interventions¹⁴

Study	Intervention Strategies	Evaluation Timeframe	Cost/Utilization Outcomes
M. Castro et al., <i>American Journal of Respiratory & Critical Care Medicine</i> , Nov. 1, 2003 168(9):1095–99	Use of asthma nurse specialist in hospital to provide guideline-based recommendations to physicians as well as self-management education, psychosocial support, and follow-up care to patients	12 mos.	67% decrease in asthma-related hospital costs
Z. Harish et al., <i>Annals of Allergy, Asthma, & Immunology</i> , Feb. 2001 86(2):185–89	Use of specialty clinic to provide intensive medical and environmental control of condition, education and close monitoring of patients, and 24-hour availability of care	24 mos.	69% reduction in Year 1 ER visits; 60 percent reduction in Year 2 ER visits
M. Kattan et al. <i>Pediatrics</i> , June 2006 117(6):e1095–e1103	Use of patient feedback letters to providers combined with guideline-based recommendations for changes in therapy	12 mos.	24% reduction in ER visits
S. Krishna et al., <i>Pediatrics</i> , March 2003 111(3):503–10	Use of internet-enabled interactive multimedia asthma education program by participants in exam room and waiting rooms during clinic visits	12 mos.	68% reduction in ER visits
S. J. Teach et al., <i>Archives of Pediatrics & Adolescent Medicine</i> , May 2006 160(5):535–41	Use of specialized, ER-based clinic following an ER visit for asthma, with clinic providing assessment and education in asthma self-management and environmental triggers as well as linkages and referrals to ongoing care	6 mos.	46% reduction in ER visits for asthma

NOTES

- ¹ Health Management Associates projections for federal fiscal year 2009, based on: Congressional Budget Office (CBO), *Budget and Economic Outlook*, Jan. 2008; CBO, *Medicaid Baseline*, 2009; Centers for Medicare and Medicaid Services, Office of the Actuary, National Health Statistics Group, 2008.
- ² National Association of State Budget Officers, *Fiscal Year 2007 State Expenditure Report*, Fall 2008.
- ³ S. Dorn, B. Garrett, J. Holahan et al., *Medicaid, SCHIP and Economic Downturn: Policy Challenges and Policy Responses*, Kaiser Commission on Medicaid and the Uninsured, April 2008.
- ⁴ The American Recovery and Reinvestment Act of 2009 (Public Law No. 111-5) prohibits states receiving temporary Medicaid FMAP increases from cutting eligibility standards, methodologies, or procedures. Eliminating this cost-control strategy should further encourage states to slow spending growth through increased quality and value.
- ⁵ For evidence of increased health care use related to increased dental decay, see M. F. Savage, J. Y. Lee, J. B. Kotch, and W. F. Vann, Jr., *Early Preventive Dental Visits: Effects on Subsequent Utilization and Costs*, *Pediatrics*, Oct. 2004 114(4):e418–e423.
- ⁶ The CHCS ROI Forecasting Calculator for Quality Initiatives is available for public use at: www.chcsroi.org.
- ⁷ For more information on the calculator see: *Forecasting ROI for Medicaid Quality Improvement Programs: A User's Guide to the ROI Forecasting Calculator*, Center for Health Care Strategies, April 2009.
- ⁸ A. Chen, M. Au, and A. Hamblin, *The ROI Evidence Base: Identifying Quality Improvement Strategies with Cost-Saving Potential*, Center for Health Care Strategies, Inc. Nov. 2007.
- ⁹ Ibid. See also J. M. Coffman, M. D. Cabana, H. A. Halpin et al., “Effects of Asthma Education on Children’s Use of Acute Care Services: A Meta-Analysis,” *Pediatrics*, March 2008 121(3):575–86.
- ¹⁰ A. H. Goroll, R. A. Berenson, S. C. Schoenbaum, et al., “Fundamental Reform of Payment for Adult Primary Care: Comprehensive Payment for Comprehensive Care,” *Journal of General Internal Medicine*, March 2007 22(3):410–15.
- ¹¹ J. Holahan, D. M. Miller, D. Rousseau, *Dual Eligibles: Medicaid Enrollment and Spending for Medicare Beneficiaries in 2005*, Kaiser Commission on Medicaid and the Uninsured, Feb. 2009.
- ¹² These examples are adapted from *Using ROI Forecasting to Maximize the Value of Medicaid Investments*, Center for Health Care Strategies, April 2008.
- ¹³ Additional details on the CHCS ROI Purchasing Institute are available at: http://www.chcs.org/info-url_nocat3961/info-url_nocat_show.htm?doc_id=435917.
- ¹⁴ Chen, Au, and Hamblin, *The ROI Evidence Base*, 2007.

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