



ROI Calculator for Partnerships to Address
the Social Determinants of Health

Health Care Access Now: Calculating the ROI of a Care Coordination Program to Address Social Determinants of Health

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This case study is part of a series describing how health care and social service organizations can use a return-on-investment (ROI) calculator to develop mutually beneficial contractual partnerships that address the social determinants of health and improve outcomes for high-need, high-cost patient populations.

The Opportunity

Unmet social needs such as food insecurity, inadequate housing, and lack of transportation can create barriers to the timely receipt of medical care and adversely affect patients' adherence to treatment and health outcomes.¹ As health care organizations (HCOs) take on population health management and value-based payment arrangements, they may have new incentives to address unmet social needs to prevent health crises and reduce unnecessary health care utilization by high-need, high-cost patients. Paying for social service interventions could help HCOs succeed in this role, but they need estimates of the financial return on investment (ROI) to ensure that these interventions offer a cost-effective approach to meeting patients' needs.

Community-based organizations (CBOs) are skilled at providing the kind of health-related social services that HCOs wish to offer their patients. CBOs typically rely on philanthropic and government funding, which may limit their ability to respond to increased demand for their services from HCOs. Jointly planned, mutually beneficial contracts between HCOs and CBOs can help ensure that CBOs will have adequate resources and capacity to meet the needs of HCOs' target populations. To pursue and negotiate such contracts, CBOs also need accurate estimates of the costs and benefits of their programs, as expressed in an ROI calculation.

To assist CBOs and HCOs in establishing the financial value of social services, the Commonwealth Fund sponsored the development of a free tool, the [ROI Calculator for Partnerships to Address the Social Determinants of Health](#). The management team of a CBO that volunteered to test the ROI Calculator, Health Care Access Now (HCAN; box), is using the tool to determine the value proposition of an adult care coordination program for potential partners such as health plans, health systems, or self-insured employers. Judith Warren, the founder and former CEO who now provides strategic consulting services to HCAN and other organizations, led the effort to implement the tool. The outputs from the calculator offer an approach for determining what price to quote for services as HCAN "pitches" the care coordination program to potential partners.

The following sections trace the steps taken by the HCAN team when using the tool, including inputs required by the ROI Calculator and the outputs it provided to guide decision-making.

Health Care Access Now (HCAN) was founded in 2009 to improve access to health care for medically underserved populations in Greater Cincinnati, Ohio, through culturally and linguistically appropriate service delivery. The agency employs 15 staff members and has a budget of approximately \$1 million from grants and contracts. To support its programs and build a local workforce, HCAN created a 10-week training program to certify community health workers (CHWs) in partnership with the Ohio Board of Nursing.

HCAN offers care coordination services for pregnant women and children using the [Pathways Hub](#) pay-for-performance model² under contracts with five health plans serving Ohio Medicaid beneficiaries. With funding from a local health foundation,³ HCAN extended the Pathways to Health program to chronically ill adult patients of a faculty internal medicine practice affiliated with [TriHealth's Good Samaritan Hospital](#). Two Medicaid health plans also contracted with HCAN to offer the Pathways to Health program to their chronically ill adult members. HCAN maintains an active network of connections with community services to meet the social service needs of underserved populations.

Service Offering

The service package that HCAN will offer is the adult care coordination program for patients with select chronic conditions based on the Pathways model. Chronic conditions include diabetes, hypertension, congestive heart failure, coronary artery disease, and chronic obstructive pulmonary disease. Patients referred to the program are assigned to a community health worker (CHW) who assesses their social and medical needs, and helps them meet disease self-management goals and eliminate barriers to timely care by following one or more of the relevant pathways. Payment to HCAN is contingent on CHWs assisting clients to complete defined milestones, such as an intake assessment, monthly education visits, and the achievement of social/healthy behavior goals or health outcomes.

For a typical partnership, HCAN assumed a Medicaid health plan would refer a minimum of 48 adult members for services per year. This estimate is based on HCAN's experience with partnerships where risk stratification tools are used to identify patients most likely to benefit from community-based care coordination.

Health Care Utilization and Charges Before and After Enrollment

The ROI Calculator requires users to input data on the expected reduction in baseline health care utilization associated with the provision of a given set of social services to a defined population.⁴ For the purposes of this analysis, HCAN had access to billed charges from TriHealth for approximately 180 adult clients six months before enrollment and six months after completion of the Pathways care coordination program at TriHealth. (The implications of using charges versus reimbursements are discussed below.) Analysis of this data revealed the following:

- 69 percent reduction in charges for hospital admissions
- 31 percent reduction in charges for emergency department (ED) visits
- 14 percent reduction in charges for outpatient visits
- 53 percent reduction in prescription drug charges.

The reduction in billed charges for each medical event resulted from a combination of lower utilization rates and lower costs per event. These results are summarized in the table below.⁵ The crucial result for the purposes of calculating an ROI is the total \$667 reduction in per member per month charges. For simplicity at this stage of the calculation, HCAN assumed these results could be attributed to the impact of its care coordination program in meeting clients' health-related social needs. (The implications of this assumption and the problem of "regression to the mean" are discussed in more detail in "Insights and Lessons," below.)

Health care service	Annual baseline utilization rate (per 1,000)	Annual baseline total charges (rate x unit costs)	Annual baseline charges per client	Percentage reduction	Annual savings	Savings per month
Hospital admissions	33	\$380,634	\$7,930	69%	\$5,472	\$455.97
ED visits	1,146	\$142,852	\$2,976	31%	\$923	\$76.88
Ambulatory visits	8,540	\$349,638	\$7,284	14%	\$1,020	\$84.98
Prescriptions	1,790	\$53,028	\$1,105	53%	\$586	\$48.79
All services			\$19,295	41%	\$7,999	\$666.62

Program Cost

HCAN's cost of delivering the program was estimated as a variable cost of \$245 per enrolled client per month. This number is entered in the "Service Cost" section of the tool.

Projected ROI

As described above, the projected changes in utilization and costs would produce a reduction in medical billed charges of approximately \$667 per member per month. When the per member per month program cost of \$245 is subtracted from this cost avoidance figure, the net benefit is \$422 per member per month. If HCAN did not require a markup over its expected costs of \$245 per member per month, the ROI to the health care organization would be 172 percent of the program cost, based on the reduction in billed charges.

Because health plans typically do not pay the full amount billed by health care providers for medical care, the actual reduction in medical costs would be substantially less than the amount projected based on billed charges. To estimate this difference, the case study authors recalculated the ROI using a hypothetical cost-to-charge ratio of 50 percent. (The actual ratio will vary depending on the fee schedule negotiated between health plans and providers.) This hypothetical scenario results in an expected reduction in medical costs of \$334. Under this assumption, the net benefit of offering the Pathways program to an HCO would be \$89 per patient per month (\$334 in medical savings less \$245 in social service costs). This benefit would represent an ROI of 36 percent to the HCO. Although substantially less than the ROI estimated based on billed charges, this ROI may still be attractive to a potential partner.

The ROI Calculator also allowed HCAN to assess the risk that actual costs may exceed projected levels. The risk stems from the uncertainty concerning how many beneficiaries require each service, the intensity of each service, and the unit cost of each service. To shield HCAN from financial risk, the finance team is using the calculator to model various case rates having different positive net margins over estimated costs. The sensitivity analysis showed that, even with a markup cushion adequate enough to protect HCAN from risk, the agency could still offer its partner a positive ROI and an attractive value proposition.

Next Steps Toward Contract Negotiations

HCAN plans to use the outputs from the ROI Calculator in discussions with potential funding partners, such as health systems and Medicaid health plans. The ROI Calculator models five types of payment arrangements that partners might consider: full-cost recovery, fee-for-service, case rate, capitation (per member per month payment), and gainsharing. Each has pros and cons that will vary depending on the circumstances and context of a negotiation.

HCAN is also working to develop a more accurate estimate of expected costs based on paid amounts.

Insights and Lessons

Although projecting an attractive ROI can help to make the business case for a partnership, it is just the start of a lengthy negotiating process. The following strategies may help CBOs overcome some of the challenges of forging potential partnerships.

Take account of competition and “make versus buy” decisions. A buyer will consider alternatives when determining how much to pay for a service, irrespective of its value as determined by an ROI Calculator. Pricing latitude declines with competition. Therefore, when negotiating with health care organizations, CBOs will be limited in pricing their services by competition from other CBOs as well as from an HCO’s ability to “make” the service internally rather than contract for it. Some health care providers may be motivated to develop their own capacity for offering social services so they can control service delivery and ensure reimbursement for billable services, such as care management, that can address both medical and nonmedical needs. CBOs should be prepared to explain why they have a unique competency to offer a social service and/or engage with the target population.

Understand that the totality of federal and state regulatory requirements will determine how Medicaid health plans view the opportunity to engage in partnerships with CBOs. Federal rules generally prohibit health plans that contract with Medicaid from including payment for nontraditional, health-related social services in their capitation rates with states, except under specific waiver authorities.⁶ Even though Medicaid health plans can pay for care management programs to coordinate such services, this policy may discourage them from paying for the actual social services.

However, in recently updated regulations, the federal government offered flexibility for Medicaid health plans to count value-added services as a medical expense in calculating their medical loss ratio — the percentage of revenue that a plan spends on medical care.⁷ In states that adopt it, this interpretation would allow Medicaid health plans to view payments for social service interventions as an investment to be recouped from the medical cost savings that they generate.

Consider the strength of the evidence. Evidence from a comparison of utilization before and after program enrollment is not as robust as that obtained from a prospective study with a control group. Postenrollment utilization reductions in hospitalizations can occur for reasons other than the intervention. One such possibility is “regression to the mean,” whereby health care utilization may tend to fall naturally from preenrollment, crisis levels.

Evidence from a time comparison can be made stronger by lengthening the preintervention and postintervention comparison periods to help mitigate the effects of short-term events. Comparing the results reported by other pre/post and controlled studies also may offer insights to adjust the estimate of impact.

Make allowances for health care price discounts. Billed charges are more readily available than actual plan payment information, which is the subject of confidential agreements. When using billed charge data in the ROI Calculator, these numbers need to be deflated by a reasonable amount. A cost-to-charge ratio may be estimated through discussion with consultants or a potential HCO partner, or by referring to external published benchmarks.⁸ The calculator can model the difference in the ROI resulting from different cost-to-charge ratios, thereby providing a more accurate assessment of the expected ROI for a health care organization.

Conclusion

The ROI Calculator provided HCAN with a sound methodology for evaluating the conditions under which the CBO and a health care organization can achieve mutually beneficial financial outcomes through a partnership to meet the needs of a specific patient population. The expected ROI is an important factor that the parties will consider in negotiations to determine a fair method of payment for services that help reduce health care spending and improve patients’ health outcomes.

Financial arrangements such as this can help ensure that the social service sector has the capacity to meet the increased demand for social services as health care organizations identify and refer patients in need of nonmedical services. The utility of the ROI Calculator and its impact will likely vary based on the organizational context and situation in which it is used.

Notes

1. National Academies of Sciences, Engineering, and Medicine, *Integrating Social Care into the Delivery of Health Care: Moving Upstream to Improve the Nation's Health* (National Academies Press, 2019).
2. Sarah Redding et al., “Pathways Community Care Coordination in Low Birth Weight Prevention,” *Journal of Maternal and Child Health* 19, no. 3 (Mar. 2015): 643–50; and Agency for Healthcare Research and Quality, *Connecting Those at Risk to Care: The Quick Start Guide to Developing Community Care Coordination Pathways* (AHRQ, Jan. 2016).
3. Funding was provided by bi3, which is Bethesda Inc.’s grantmaking initiative to transform health in Greater Cincinnati. Bethesda Inc. is a cosponsor of TriHealth; see [bi3’s website](#).
4. The Commonwealth Fund has published a review of relevant evidence on the impact of health-related social needs interventions from peer-reviewed and gray literature, which can be used to estimate or calibrate an intervention’s impact for the ROI Calculator; see Mekdes Tsega et al., *Review of Evidence for Health-Related Social Needs Interventions* (Commonwealth Fund, July 2019).
5. The table shows additional calculations that were made to account for changes in the cost of services from before to after the intervention. Because the ROI Calculator does not accommodate changes in medical service costs, they were transposed into changes in utilization for the purposes of calculating the impact of the program.
6. Massachusetts, New York, Oregon, Utah, and Vermont have used federal waiver authority to develop strategies for Medicaid health plans or accountable care organizations to pay for health-related supportive services within their Medicaid programs; see Anna Spencer, James Lloyd, and Tricia McGinnis, *Using Medicaid Resources to Pay for Health-Related Supportive Services: Early Lessons* (Center for Health Care Strategies, Dec. 2015).
7. The federal government also requires that Medicaid health plans maintain a minimum medical loss ratio (MLR), which limits how much plans can spend on administration and profits. States also may have their own MLR requirements; see David Machleedt, *Addressing the Social Determinants of Health Through Medicaid Managed Care* (Commonwealth Fund, Nov. 2017).
8. For example, the Agency for Healthcare Research and Quality’s Healthcare Cost and Utilization Project (HCUP) publishes hospital-level, cost-to-charge ratio files; see HCUP, “[Cost-to-Charge Ratio Files](#),” AHRQ, last updated Dec. 16, 2019. A method for estimating cost-to-charge ratios by payer using state-level hospital discharge data can be found in Katharine R. Levit, Bernard Friedman, and Herbert S. Wong, “[Estimating Inpatient Hospital Prices from State Administrative Data and Hospital Financial Reports](#),” *Health Services Research* 48, no. 5 (Oct. 2013): 1779–97. A method for calculating cost-to-charge ratios using Medicare data can be found in Faith Asper, “[Calculating ‘Cost’: Cost-to-Charge Ratios](#)” presentation, University of Minnesota Research Data Assistance Center, n.d.

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