

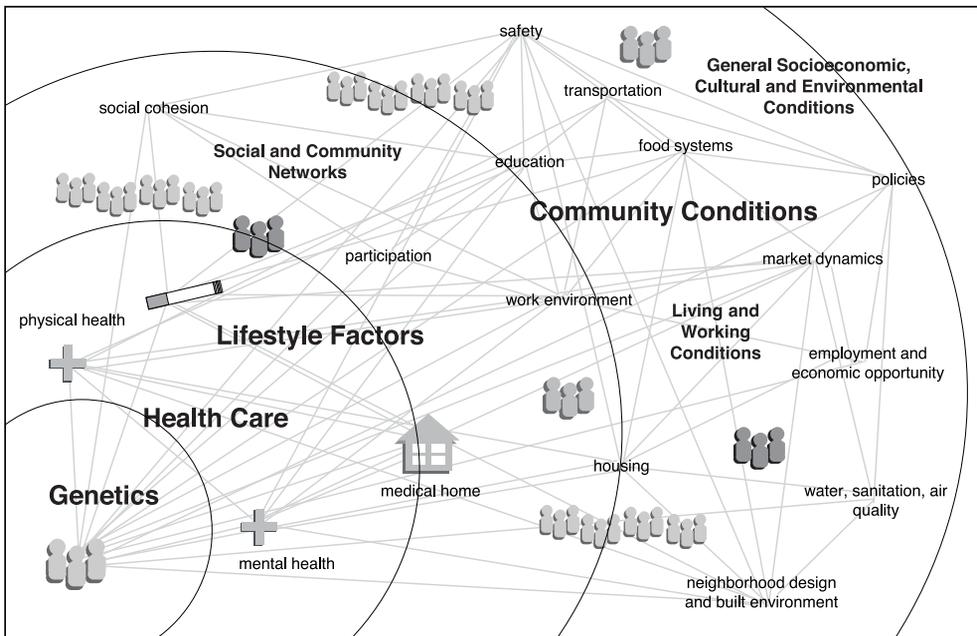
Can Pay for Success Reduce Asthma Emergencies and Reset a Broken Health Care System?

Rick Brush

Collective Health

I blame Len Syme and the social epidemiologists for disrupting my otherwise steady trajectory as a high-flying health insurance executive. It was Len, the University of California Berkeley professor emeritus, who spoiled for me the simple notion that “access to high-quality, affordable care” (our industry mantra) would solve our nation’s health crisis. Medical care, it turns out, accounts for just 10 percent of what makes us healthy or sick.¹ So what’s the other 90 percent?

Figure 1. Health Occurs in a Context



Source: Collective Health LLC, 2013

1 S. A. Schroeder “We Can Do Better – Improving the Health of the American People,” *New England Journal of Medicine*, 357 (2007): 1221-28, available at www.nejm.org/doi/full/10.1056/NEJMsa073350.

It's a pretty gnarly sweater once you start unraveling it. After nearly a decade in health insurance, I left the comfy confines of my corporate office to follow a thread Len so eloquently describes as "intricately and infinitely intertwined" with our social, economic, and environmental circumstances. What matters most to health is the context in which we live our lives.²

This calls for a profoundly different health delivery and financing system, I've come to learn, with some pretty hefty obstacles in the way. But it is possible to meet these challenges. In this article, I look at a path forward for one chronic condition, childhood asthma, and the potential for spreading this approach to the broader health system.

Following a Thread

Here's what I uncovered in the past few years of thread-following. A growing body of research makes clear that if we want to improve health in a meaningful and sustainable way, we need to look upstream at the underlying factors that drive so many more of us into the care system in the first place.³ For instance, we know that education matters to health: college graduates live five years longer, on average, than those who do not complete high school.⁴ We know that the influence of social relationships on the risk of death are comparable to those of well-established risk factors such as smoking and alcohol consumption, and they exceed the influence of factors such as physical inactivity and obesity.⁵ And we know that our environment, including the air we breathe inside our own homes, matters to health: an estimated 21 percent of U.S. asthma cases are attributable to dampness and mold exposure.⁶

One might conclude that if we simply follow this thread we would ignite a new market for preventive "medicine." Doctors would prescribe college preparatory courses. Big Pharma would give us social-networking pills. Health insurers would begin covering home improvements. The problem is that the thread has a few knots in it. Big knots.

Unraveling

The first knot is that our health care system is designed for downstream treatment of

- 2 World Health Organization, "CSDH Final Report: Closing the Gap in a Generation: Health Equity Through Action on the Social Determinants of Health." In Commission on Social Determinants of Health, edited by WHO (Geneva: World Health Organization, 2008), available at www.who.int/social_determinants/thecommission/finalreport/en/index.html.
- 3 T. R. Frieden, "A Framework for Public Health Action: The Health Impact Pyramid," *American Journal of Public Health*, 100(4)(2010): 590-95, available at www.ncbi.nlm.nih.gov/pmc/articles/PMC2836340/pdf/590.pdf.
- 4 Robert Wood Johnson Foundation, "Education and Health. National Longitudinal Mortality Study: 1988-1998." Issue Brief 6 (New York: RWJF, Commission to Build a Healthier America, 2009).
- 5 J. Holt-Lunstad, T.B. Smith, and J.B. Layton, "Social Relationships and Mortality Risk: A Meta-analytic Review," *PLoS Medicine*, 7(7) (2010): e1000316, available at www.plosmedicine.org/article/info%3Adoi%2F10.1371%2Fjournal.pmed.1000316;jsessionid=A98C70481A057B040F38C1BBD6D4AC31.
- 6 D. Mudarri and W. J. Fisk, "Public Health and Economic Impact of Dampness and Mold," *Indoor Air Journal*, 17 (2007): 226-235, available at www.iaqscience.lbl.gov/pdfs/mold-2.pdf.

illness rather than improving upstream determinants of health. In fact, of the \$2.7 trillion⁷ per year we spend on health care in the United States, just 3 percent goes toward preventing disease.⁸ Compared with other countries, American medicine is good at late-stage interventions, such as reducing cancer death rates and helping those who reach age 75 to live longer. However, American medicine is worse (often far worse) in many key health indicators, from infant mortality to life expectancy at birth to diabetes, obesity, heart disease, chronic lung disease, and disability.⁹

The second knot is that traditional health care financing—such as fee-for-service payment systems in which doctor and hospital revenue is based on volume of patients and procedures—is plagued with misaligned incentives that drive more use of health care rather than better health outcomes. This creates a powerful self-reinforcing loop: money continues to flow while costs continue to grow.

Third, the challenge is made more complex by the highly fragmented nature of health care financing. Government accounts for 45 percent of U.S. health care spending, through federal, state and local programs with differing payment systems, incentives, and reimbursement levels.¹⁰ Private payers such as health insurers, employers, and individuals account for 55 percent of spending.¹¹ Payers invest billions each year in health care analytics, disease management, and wellness. Yet most efforts to contain costs fail to address the underlying social and environmental causes of disease. With health care spending at 17.9 percent of U.S. gross domestic product and growing, it seems likely the system will unravel, even as we pick at the knots.¹²

A New Thread?

If we pressed “reset” on the U.S. health system, we’d probably make some fundamental design changes. We’d aim for better health outcomes rather than more health care. We’d follow the evidence and economics to determine what levers to pull for the greatest health and financial return. And we’d align the money flow between payers and providers with new terms of success.

7 Centers for Medicare and Medicaid Services, “National Health Expenditures” Table 1, (Washington, DC: CMS, Office of the Actuary, National Health Statistics Group, 2012), available at www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/Downloads/tables.pdf.

8 Ibid.

9 National Research Council, “U.S. Health in International Perspective: Shorter Lives, Poorer Health” (Washington, DC: National Academies Press, 2013).

10 Centers for Medicare and Medicaid Services, “National Health Expenditures by Type of Sponsor: Calendar Years 1987-2011” Table 5 (Washington, DC: CMS, Office of the Actuary, National Health Statistics Group, 2012), available at www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/Downloads/tables.pdf.

11 Ibid.

12 Centers for Medicare and Medicaid Services, “National Health Expenditure Projections 2010-2020” (Washington, DC: CMS, April 2012), available at www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/Downloads/proj2010.pdf.

Of course, Pay for Success (PFS) is not new in health care. For more than a decade the industry has experimented with PFS and “value-based purchasing,” where health care providers are rewarded for meeting measures of quality and efficiency. Results have been mixed¹³ and barriers include insufficient measurement systems, ineffective incentive structures, unintended consequences, and added administrative and infrastructure costs that may actually increase PFS spending in early years.¹⁴

More recently, the introduction of accountable care organizations (ACOs) and other strategies supported by the Patient Protection and Affordable Care Act are testing new forms of shared risk/shared savings arrangements. However, to become profitable as ACOs, most providers will need to substantially invest in infrastructure, and upfront financing can be a barrier, especially for small to medium sized health care providers.¹⁵

Still, spending a little more now might yield tremendous savings down the road. Trust for America’s Health found that a \$10 per person annual investment in community-based prevention over five years could produce 5 percent reductions in Type 2 diabetes, high blood pressure, heart and kidney disease, and stroke—with a return of \$5.60 for every dollar invested.¹⁶ Another research effort, using a dynamic simulation model of the U.S. health system, reported that enabling healthier behavior and improving environmental conditions, when added to expanded health insurance coverage and better preventive and chronic care, could save about 140 percent more lives and reduce costs by 62 percent in 25 years.¹⁷

In a newly reset health system, we would find a way to pull forward these future savings so that we could make smart investments in prevention today, and then re-invest again; in economic terms, we’d flip from a vicious to virtuous cycle of health spending. Unlike current health care financing, the new model would access sufficient upfront capital, tolerate longer payback periods, and support scale-up and spread of programs that work.

In early 2011, I was part of a small research team led by Len Syme and supported by The California Endowment that looked at funding mechanisms to address these challenges, including social impact bonds. (Full disclosure: it was David Erickson, this journal’s editor, who first suggested we consider social impact bonds.)

13 M.B. Rosenthal, R.G. Frank, Z. Li, and A.M. Epstein, “Early Experience with Pay-for-Performance: From Concept to Practice,” *JAMA*, 294(14) (2005):1788-93.

14 T. Bhattacharyya, A. A. Freiberg, P. Mehta, J.N. Katz, and T. Ferris, “Measuring the Report Card: The Validity of Pay-for-Performance Metrics in Orthopedic Surgery,” *Health Affairs*, 28(2009):2526-32. For research on ineffective incentive structures see G. Flodgren, M. P. Eccles, S. Shepperd, A. Scott, E. Parmelli, and F.R. Beyer, “An Overview of Reviews Evaluating the Effectiveness of Financial Incentives in Changing Healthcare Professional Behaviours and Patient Outcomes,” *Cochrane Database of Systematic Reviews*, 7 (2011), article no. CD009255. For research on unintended consequences see Chen Tsung-Tai and Lai Mei-Shu, “The Unintended Consequences of Pay-for-Performance,” *Health Affairs*, 31(5)(2012):1127. For research on added administrative and infrastructure costs see C. L. Damberg, “Hospital Pay for Performance” (Santa Monica, CA: RAND Corporation, 2009), available at www.rand.org/pubs/technical_reports/TR562z12.

15 S. F. Delbanco, K. Martin Anderson, C. Eikel Major, M. Kiser, and B. Wammack Toner, “Promising Payment Reform: Risk-Sharing with Accountable Care Organizations.” Publication no. 1530 (New York, NY: The Commonwealth Fund, July 2011).

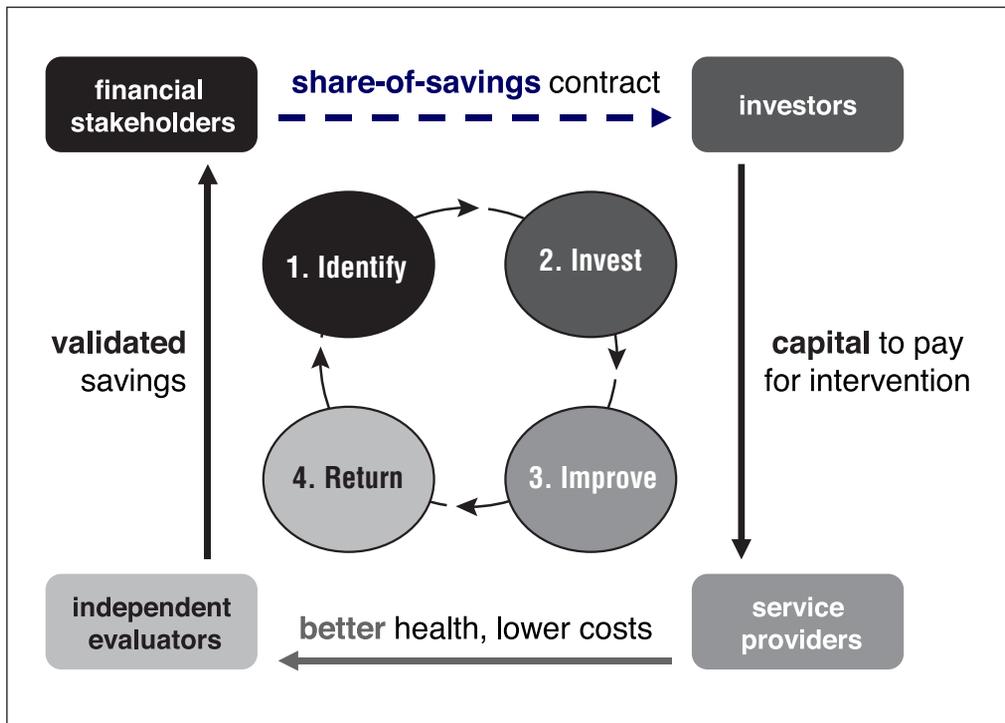
16 J. Levi et al., “Trust for America’s Health (TFAH), Prevention for a Healthier America: Investments in Disease Prevention Yield Significant Savings,” *Stronger Communities* (2009).

17 B. Milstein, J. Homer, P. Briss, D. Burton, and T. Pechacek, “Why Behavioral and Environmental Interventions Are Needed to Improve Health at Lower Cost,” *Health Affairs*, 30(5) (2011): 823-832.

Learning from the small number of social impact bond experiments under way, we began applying the concept to health. Here’s how the resulting model, what we call a “Health Impact Bond,” works:

- Identify opportunities to improve health and lower costs, and forecast the potential savings for financial stakeholders—public and private health plans, self-insured employers, health care providers with aligned incentives, and other government and commercial payers—who agree to share a portion of validated savings to pay back investors.
- Invest in prevention by engaging impact investors—foundations, individuals and institutions—who provide upfront capital in exchange for agreed financial and social returns.
- Improve health outcomes and lower costs through evidence-based interventions delivered by qualified service providers.
- Share the return, based on health care cost savings validated by independent evaluators, with investors in the form of principal plus interest, and potentially re-invest a portion of the returns for program scale-up and sustainability.

Figure 2. Health Impact Bond: How it Works



Source: Collective Health LLC, 2013

Figure 3. Health Impact Bond: What's Required

1. **Hot spot:** significant and costly health issue that can be improved
2. **Evidence-based intervention** and service providers with demonstrated results
3. **Net savings potential and method** for measuring/validating actual cost savings (insurance-claims-based)
4. **Payers** that agree to share savings:
 - Public/private health plans
 - Self-insured employers
 - Providers with aligned incentives (Accountable Care Organizations, Patient-Centered Medical Homes, capitated)
5. **ROI/IRR:** acceptable investor risk-return and payback period

Source: Collective Health LLC, 2013

We believe Health Impact Bonds may have broad application: seven in ten American deaths each year, and more than 75 percent of health care costs, result from chronic diseases that are preventable.¹⁸ But before we take on the entire health care system, we've set our sights on demonstrating that this model can work with one major chronic condition. Childhood asthma is a good place to start because: 1) The cost and health impacts are significant; 2) There is a proven and underused approach to controlling the disease that forces us to look upstream at underlying causes in addition to good medical care; and 3) Use of emergency and hospital services for asthma can be substantially reduced, and generate returns for financial stakeholders and investors, over a relatively short period (12 to 24 months).

Asthma: Biology and Environment Intertwined

Asthma is one of the most prevalent and costly chronic diseases, too often treated in the emergency department rather than through comprehensive management and prevention.¹⁹ Worldwide an estimated 235 million people suffer from asthma, and it is the number one

18 H.C. Kung, D.L. Hoyert, J. Q. Xu, and S. L. Murphy, "Deaths: Final Data for 2005," National Vital Statistics Reports, 56(10)(2008), available at www.cdc.gov/nchs/data/nvsr/nvsr56/nvsr56_10.pdf; Institute of Medicine, For the Public's Health: Investing in a Healthier Future. (Washington, DC: IOM, 2012), available at www.iom.edu/Reports/2012/For-the-Publics-Health-Investing-in-a-Healthier-Future.aspx.

19 A. J. Atherly, "The Economic Value of Home Asthma Interventions," *American Journal of Preventive Medicine*, 41(2S1)(2011):S33-S47.

chronic disease among children.²⁰

While genetics play a role in asthma, development and severity of the disease depend on a complex interplay of biological and environmental factors.²¹ Exposure to indoor allergens, such as dust mites, mold, cockroaches, and pet dander, is a significant risk factor for asthma.²²

Comprehensive asthma management that integrates clinical care, education, and remediation of home-based environmental triggers can significantly reduce asthma emergencies.²³ For children and adolescents with uncontrolled asthma, a home-based, multi-trigger, multi-component approach is the only one recommended by the Centers for Disease Control and Prevention's Community Preventive Services Task Force. The recommendation is based on "evidence of effectiveness" (23 studies) and "savings from averted costs of asthma care" (13 studies).²⁴ It is also consistent with the Coordinated Federal Action Plan to Reduce Racial and Ethnic Asthma Disparities²⁵ and the National Asthma Education and Prevention Program.²⁶

However, in practice, significant gaps remain in most efforts to control asthma and avoid unnecessary emergencies. A 2008 survey of people with asthma found that fewer than one-half were taught how to avoid triggers, and almost one-half (48 percent) of adults who were taught did not follow most of this advice.²⁷ Lack of sustainable funding is part of the

20 World Health Organization, "Asthma Fact Sheet," no. 307 (Geneva: WHO, 2011), available at www.who.int/mediacentre/factsheets/fs307/en/index.html.

21 F. D. Martinez, "Genes, Environments, Development and Asthma: A Reappraisal," *European Respiratory Journal*, 29 (1) (2007): 179–84.

22 A. Custovic and A. Simpson, "The Role of Inhalant Allergens in Allergic Airways Disease," *Journal of Investigational Allergology & Clinical Immunology: Official Organ of the International Association of Asthmology (INTERASMA) and Sociedad Latinoamericana de Alergia e Inmunologia*, 22(6)(2012):393–401.

23 D. Crocker et al., "Effectiveness of Home-Based, Multi-Trigger, Multicomponent Interventions with an Environmental Focus of Reducing Asthma Morbidity: A Community Guide Systematic Review," *American Journal of Preventive Medicine*, 41(2S1) (2011):S5-S32; E. Woods et al., "Community Asthma Initiative: Evaluation of a Quality Improvement Program for Comprehensive Asthma Care," *Pediatrics*, 129 (2012):465; P. Hoppin et al., "Investing in Best Practices For Asthma: A Business Case: August 2010 Update" (Dorchester, MA: Asthma Regional Council of New England, 2010); Asthma Health Outcomes Project, "Asthma Programs with an Environmental Component: A Review of the Field and Lessons Learned" (Ann Arbor, MI: Center for Managing Chronic Disease, University of Michigan, 2007).

24 Centers for Disease Control and Prevention, "Asthma Control: Home-Based Multi-Trigger, Multicomponent Environmental Interventions; Task Force Finding and Rationale Statement Interventions for Children and Adolescents with Asthma" (Atlanta, GA: CDC, Community Preventive Services Task Force, The Guide to Community Preventive Services: The Community Guide, June 2008), available at <http://thecommunityguide.org/asthma/rchildren.html>.

25 "Coordinated Federal Action Plan to Reduce Racial and Ethnic Asthma Disparities" (Washington, DC: President's Task Force on Environmental Health Risks and Safety Risks to Children, Asthma Disparities Working Group, May 2012), available at www.epa.gov/children/taskforce/federal_asthma_disparities_action_plan.pdf.

26 National Institutes of Health, "Expert Panel Report 3 (EPR3): Guidelines for the Diagnosis and Management of Asthma" (Bethesda, MD: National Heart, Lung, and Blood Institute, National Asthma Education and Prevention Program, Coordinating Committee, 2007), available at <http://www.nhlbi.nih.gov/guidelines/asthma/asthgdln.htm>.

27 Centers for Disease Control and Prevention, "Vital Signs: Asthma Prevalence, Disease Characteristics, and Self-Management Education - United States, 2001-2009," *Morbidity and Mortality Weekly Report*, 60(17) (2011): 547-52.

problem, but so are the knotted and misaligned aspects of our health care system and the social-environmental dynamics that drive health context and choices.

Meanwhile, the number of people with asthma in the United States continues to grow, from about 20 million in 2001 to 25 million in 2009.²⁸ Asthma-related medical expenses have increased from \$48.6 billion in 2002 to \$50.1 billion in 2007.²⁹

Threading It All Together

Fresno County, California, is an asthma hot spot: 17.3 percent of the population and 20.2 percent of children aged 5-17 have been diagnosed with the disease, compared to 8 percent of adults and 10 percent of children nationally.³⁰ Rates are significantly higher for Latino, African American, and low-income community members. Fresno County has the highest poverty rate in the state (27.1 percent).³¹

Every day in Fresno nearly 20 people end up in the emergency department and at least three are hospitalized for asthma.³² Asthma emergency department visits and hospitalizations cost Fresno health insurers and other payers nearly \$35 million per year.³³

At this writing, we are in the first phase of an asthma demonstration project in Fresno. The California Endowment has awarded grant funding to Collective Health and Social Finance, Inc., a nonprofit organization that mobilizes investment capital to drive social progress. The project aims to prove the dual social and financial benefits of investing in comprehensive asthma management, and to lay the foundation for an asthma Health Impact Bond to scale the effort and ensure sustainability.

Collective Health and Social Finance are working with local partners to implement a one-year comprehensive home-based intervention to reduce asthma emergencies and costs among 200 high-risk children in Fresno. This includes:

- Quarterly home visits by bilingual community health workers (CHWs) and monthly follow-up calls to monitor and re-enforce self-management;
- Asthma education focused on medications and triggers;

28 Ibid.

29 Ibid.

30 California Health Interview Survey 2009 (Los Angeles, CA: CHIS, UCLA Center for Health Policy Research, 2009); CDC, Morbidity and Mortality Weekly Report, 2011.

31 U.S. Census Bureau, American Community Survey 2010. As cited in S. Bohn, "Just the Facts: Poverty in California" (San Francisco, CA: Public Policy Institute of California, December 2011), available at www.ppic.org/content/pubs/jtf/jtf_povertyjtf.pdf.

32 State of California Office of Statewide Health Planning and Development, "2010 Hospital Annual Utilization Data" (Sacramento, CA: OSHPD, 2010).

33 Hospitalization calculation based on OSHPD 2010 utilization and unit cost data; emergency services calculation based on OSHPD 2010 utilization data and unit cost estimate from two sources: 1) Florida Center for Health Information and Policy Analysis, "Emergency Department Utilization Report 2009" (Tallahassee, FL: Florida Center for Health Information and Policy Analysis, Agency for Health Care Administration, 2009) [\$2,064 average charge per emergency department visit (2009 data)]; and 2) Indiana State Department of Health, *The Burden of Asthma in Indiana*, 2d ed. (Indianapolis, IN: Indiana State Department of Health, 2008) [\$1,028 average cost per emergency department visit (2005 data)].

- Home environmental assessment and trigger remediation;
- Clinical assessment and coordination, asthma action plan, and referral to specialists.

This intervention fills a critical gap outside the doctor’s office by improving indoor air quality and removing environmental triggers in the home that are most frequently linked to avoidable emergency department visits and hospitalizations. The CHWs are central to this effort because they are hired from within the very communities they serve. They can connect with participating families in ways that go beyond basic health literacy and treatment compliance. They help kids and their families address myriad causes of asthma emergencies and other health-related issues, they keep them out of the emergency room, and they substantially reduce health care costs.

The intervention design and implementation is being led by Fresno clinical and community partners with proven track records and existing capacity: Central California Asthma Collaborative, which addresses the burden of asthma in underserved populations of the San Joaquin Valley, and Clinica Sierra Vista, a network of comprehensive health clinics serving ethnically diverse populations with low- to moderate-incomes. With technical assistance from Regional Asthma Management and Prevention, enhancements have been made to improve the home remediation component based on a literature review and cost-benefit analysis.

Collective Health is providing an actuarial-based savings methodology using insurance claims data to measure reductions in emergency and hospital services, and to calculate the resulting health care cost savings to payers covering these individuals. We have engaged two local Medi-Cal plans and several self-insured employers, and we will confirm final partners in the initial months of the project. Program participants will be identified based on multi-year claims, clinical assessment, and geographic clusters. A third-party actuary will validate savings.

In our target population, we estimate that asthma-related emergency department and hospital costs currently average \$16,371 per person per year. By reducing those service areas by 30 percent and 50 percent, respectively, we believe we can bring down annual costs by \$7,773 per person, with an anticipated \$1.6 million in savings for the targeted 200 individuals in the first year following the intervention.³⁴

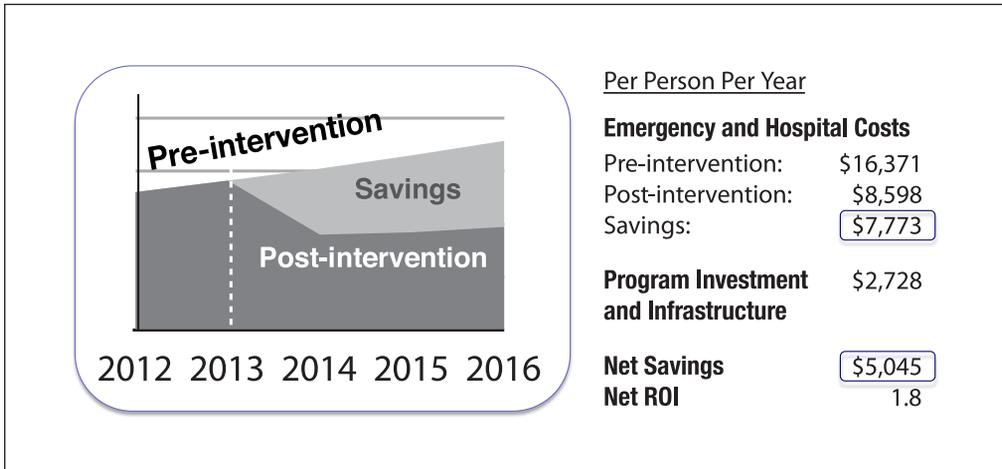
Those savings can be leveraged to expand this valuable program to many more children who can benefit. Social Finance and Collective Health will lead an advisory group of public and private payers, legislators, and other stakeholders to design and structure a Health

34 Savings calculation assumptions:

- Targeted high-risk patients with average utilization of 1.5 ED visits and 0.75 hospitalizations per year;
- Cost of ED visit: \$1,375 (estimate based on sources noted above);
- Cost of hospital stay: \$19,078 (OSHPD 2010);
- Total baseline cost: \$2,063 ED + \$14,309 hospital = \$16,371 per person; 200 patients = \$3,274,200;
- Reductions from intervention: 30 percent emergency department and 50 percent hospital (Crocker et al., “Effectiveness of Home-Based, Multi-Trigger, Multicomponent Interventions”; Woods et al., “Community Asthma Initiative”; Hoppin et al., “Investing in Best Practices For Asthma”);
- Total savings: \$7,773 per person; \$1,554,600 for 200 patients.

Impact Bond for scale-up beyond the demonstration project. We estimate that a five-year program with 3,500 participants could yield \$27 million in reduced costs.³⁵

Figure 4. Reducing Asthma Emergencies: Projected Savings



Source: Collective Health LLC, 2013

Conclusion

A new health system does not happen overnight. Efforts to reform the system have shown that pulling at knots from one end of the thread sometimes tightens them further. But we think Health Impact Bonds have the potential to begin to transform the system from within by uncovering real value for all stakeholders: payers who realize significant savings; providers who create new revenue opportunities based on what works; investors with an opportunity to achieve both social and financial returns; healthier people and thriving communities. The success of PFS will drive greater alignment, availability of upfront capital, and tolerance for longer-term investment.

As Fresno moves forward, we are pursuing asthma Health Impact Bonds in additional communities with similarly vulnerable populations, and applications in other areas of preventive health. For instance:

- Diabetes risk reduction through programs such as the National Diabetes Prevention Program;³⁶
- Other proven in-home care models such as PACE, the Medicare and Medicaid Program of All-inclusive Care for the Elderly,³⁷ and the Nurse-Family Partnership

35 \$7,773 per person x 3,500 patients = \$27,205,500.

36 "National Diabetes Prevention Program," Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Diabetes Translation, last updated October 5, 2012, available at www.cdc.gov/diabetes/prevention/about.htm.

37 "PACE," Centers for Medicare & Medicaid Services, accessed January 28, 2013, available at www.medicare.gov/your-medicare-costs/help-paying-costs/pace/pace.html.

approach to at-risk maternal and child health;³⁸

- Addressing the complex needs of individuals with serious mental illness and multiple chronic conditions through Assertive Community Treatment;³⁹ and
- The multidisciplinary team approach, such as that practiced by the Camden Coalition of Healthcare Providers, to coordinate social and clinical care of “superusers” of emergency and hospital services.⁴⁰

Although initial Health Impact Bonds will likely focus on the hot spots—the top 20 percent of the population that accounts for 81.2 percent of the nation’s health care spending⁴¹—the approach could someday be expanded to drive fundamental changes in social and environmental conditions required for long-term population health. One might imagine, for example, community-wide efforts to improve education, job opportunities, transportation, housing, and food access, those underlying conditions that the social epidemiologists tell us matter most to health. These efforts could be paid for by future reductions in health care costs, better quality of life, higher productivity, and other health dividends.

And here’s a key point: there’s a role in this for the social epidemiologist and the high-flying insurance executive. Health impact investing requires the best evidence in the lab translated by the best actuaries in the business. We may be threading the needle. But isn’t that the first step in sewing a new system?

Rick Brush is founder and CEO of Collective Health, which provides health analytics, evidence-based programs, and innovative financing solutions. Mr. Brush founded Collective Health in 2011 to address the underlying causes of poor health and sustainably reduce costs. He has led strategic innovation at large corporations and start-ups for more than 20 years, primarily in the health care and financial services sectors. Most recently, Mr. Brush was chief strategy and marketing officer for the large employer segment at Cigna, the fourth-largest U.S. health insurer, where he served in a variety of executive roles from 2002 to 2011. While at Cigna, Mr. Brush co-founded the company’s Communities of Health venture, launched new business units and products, and led multi-stakeholder initiatives around the country to improve population health. He has held executive positions at Ford Motor Credit Company, Bank One, KPMG, and a marketing consulting firm, and has worked extensively with communities and nonprofits to improve social and financial impact. Mr. Brush is a graduate of the University of Massachusetts at Amherst.

38 “Beginning with Trust, Ending with Extraordinary Outcomes,” Nurse-Family Partnership, accessed January 28, 2013, available at www.nursefamilypartnership.org/about.

39 “Assertive Community Treatment (ACT),” National Alliance on Mental Illness, accessed January 28, 2013, available at [www.nami.org/Content/NavigationMenu/Inform_Yourself/About_Mental_Illness/About_Treatments_and_Supports/Assertive_Community_Treatment_\(ACT\)1.htm](http://www.nami.org/Content/NavigationMenu/Inform_Yourself/About_Mental_Illness/About_Treatments_and_Supports/Assertive_Community_Treatment_(ACT)1.htm).

40 “Care Management Program,” Camden Coalition of Healthcare Providers, accessed January 28, 2013, available at www.camdenhealth.org/programs/care-management-program/.

41 The Henry J. Kaiser Family Foundation, “Health Care Costs: A Primer. Key Information on Health Care Costs and Their Impact,” publication #7670-03 (May 2012), available at www.kff.org/insurance/upload/7670-03.pdf. Calculations using data from U.S. Department of Health and Human Services, Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey (MEPS), Household Component, 2009.