



Community vitals

The importance of social determinants in population health

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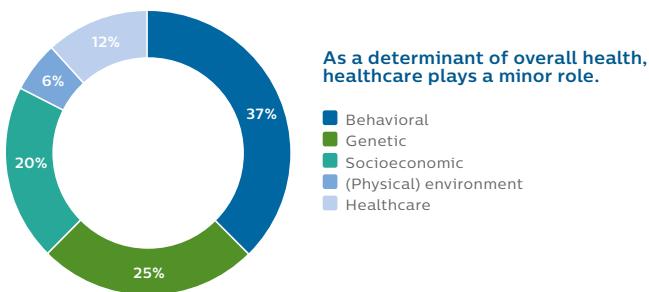
Introduction: Identifying populations

Population health management (PHM) is a growing and evolving approach toward greater value in healthcare delivery and sustainability. To fully realize the potential, healthcare organizations should – and in growing numbers are – approaching healthcare through different lenses.

Historical and ongoing analysis shows that the majority of treatment and services patients pay for plays a relatively small role in determining overall health – only about 10 to 12 percent – according to one study shown in Figure 1.

Community vitals as social determinants of health and patient behavior are increasingly recognized as playing significant roles, but much of today's focus is still on spending associated with "sick care," the diagnosis and treatment of conditions or disease, versus that of prevention, patient engagement and intervention based on risk assessment and care management.

Figure 1:



David Nash, MD, MBA, dean of the Jefferson College of Population Health, takes an even more pointed and contemporary view of the physical environment as a leading social determinant of health.

"The most important five-digit number I need to predict your health status and wellbeing is your ZIP code, bar none. It's not your cholesterol level or your blood pressure number or your age. The No. 1 health predictor is your ZIP code." (1)

According to the Robert Wood Johnson Foundation Commission to Build a Healthier America, large disparities in health can be found among pockets of populations that live short distances from each other.

For example, a 2014 study found that babies born in Montgomery County, Md. and neighboring counties in Virginia (Arlington and Fairfax) have a life expectancy six to seven years longer than those born in Washington, D.C., just one ZIP code away.

"Where you are on the map predicts your life span," adds Nash. "If we use technology to analyze the small percentage of patients who live in particular ZIP codes and use the data to determine ways to effectively improve care coordination and delivery, we will make progress in improving the health of these individuals while reducing waste." (Ibid)

Identifying at-risk populations based on social determinants of health and then tailoring healthcare delivery to them is one cornerstone of population health management, aimed at reducing costs via care coordination and care management and preventive care, long before patients present at the emergency room or enter the healthcare system for sick care.

In speaking to recognized research that approximately 20 percent of Medicare patients with complex chronic care needs account for some 80 percent of costs, Nash notes, "If we can find and better manage these 20 percent of patients, we have a fighting chance of reducing healthcare costs." (Ibid)

To get there, Nash points to patient registries as one important tool.

"Without a patient registry, you can only manage what you measure. You have to know who the population is. The use of data analytics allows me to slice the patient information I already have in a number of ways. Once I have a registry, I can run an analysis of a particular set of patients, such as patients with diabetes, and examine how effectively I'm caring for this population of patients. I can then run analytic functions that compare my performance against regional and national benchmarks. Next, I can identify gaps in performance and use the data to help determine ways to improve. At the ground level, the registry function is the linchpin of making population health management a practical reality." (Ibid)

Part of that success, Nash notes, is getting social determinants of health into the patient data.

Populations and Data

Groups of individuals defined by geography, condition or other attributes can be considered a population if data are available to track them over time. Research has demonstrated that patients with chronic diseases (e.g. diabetes, obesity, cancer and cardiovascular disease) account for most of the dollars spent in the healthcare system. Additionally, we know that patients' health literacy, education level, geography and socioeconomic status can have an adverse impact on their access to proper preventive healthcare. Our care delivery system currently does not provide adequate care coordination to properly address the needs of these patients, and they ultimately cost the healthcare system more because they enter the system when their illness is more severe – usually via the emergency room, the most expensive point of care. These groups of patients are a logical place to begin a population health approach. (2)

– David Nash, MD, MBA, dean, Jefferson College of Population Health

Community vitals: Socializing determinants of health

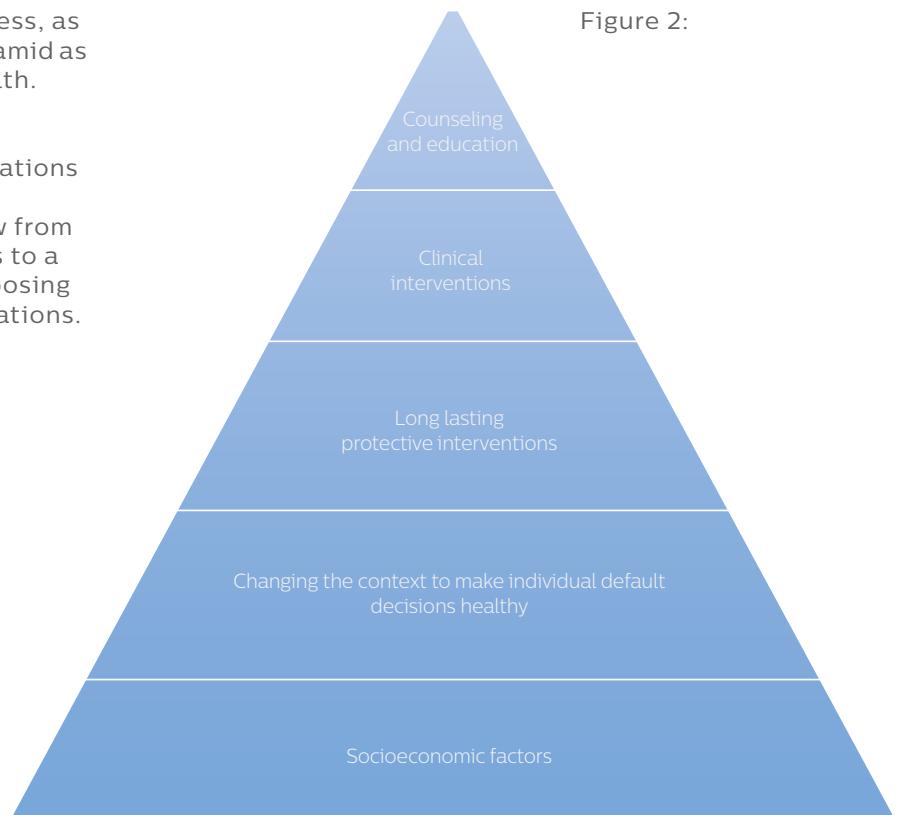
As cost concerns combine with clinical strategies to combat outcomes attributed to preventable diseases, researchers have increasingly focused on identifying ways to optimize healthcare resources. They are finding that the underlying causes of chronic disease, admissions through the ER and mortality can be linked to the economic and social circumstances of the individual, such as her or his income, education and social connectedness.

Morbidity and mortality are being increasingly linked to social determinants of health. Identifying and addressing the root causes is recognized as an important methodology to create the highest impact at the lowest cost.

These critical factors can be difficult to address, as depicted in Figure 2 as the Health Impact Pyramid as recognized by the National Institutes of Health.

Recent advancements in health information technology have enabled healthcare organizations to advance the understanding of social determinants by directing their resource flow from a primary focus on the treatment of diseases to a more holistic focus on modifying the predisposing factors that propagate these health complications.

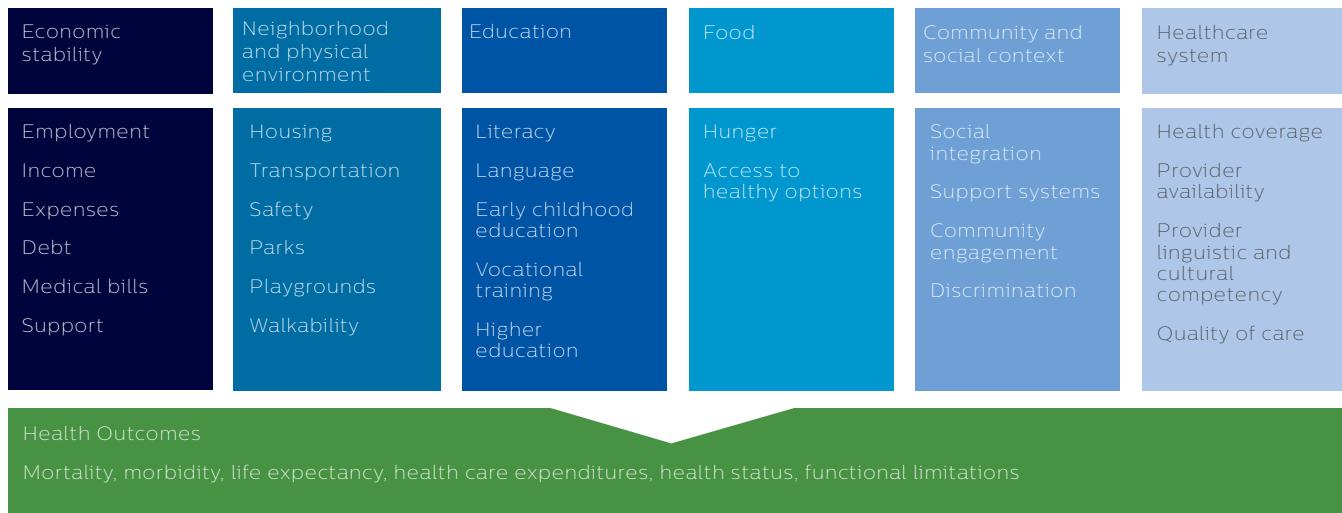
Figure 2:



Identifying community vitals

Social determinants of health are considered the complex, integrated and overlapping social structures and economic systems that are responsible for health inequities, according to the Centers for Disease Control and Prevention (CDC). The six principal socioeconomic factors CDC identifies include economic stability, neighborhood and physical environment, education, food, community and social context, and healthcare systems. As depicted in Figure 3, constructed by the Kaiser Family Foundation, each factor encompasses a variety of contributing factors, which play significant roles in determining the health of an individual.

Figure 3:



Economic stability: Higher economic stability precedes higher quality options for the other social determinants of health and generally lower amounts of chronic stress.

Neighborhood and physical environment: Contaminants in the air, water, food and soil can cause a variety of adverse health effects. In addition, the design of communities and transportation systems can significantly influence the physical and psychological health of an individual.

Education: Closely tied with an individual's economic status, effective education for children and lifelong learning for adults are proven key contributors to optimal health.

Food: The access to and proper education around healthy food plays a large role in determining the health of an individual, as many preventable diseases are linked to diet options.

Community and social context: Social support networks are important in helping solve problems, deal with adversity, and maintaining a sense of control over life circumstances. There are many studies that show the direct link between strong social relationships and the overall satisfaction and wellbeing of an individual.

Healthcare system: The access to quality health services facilitates more options for preventive approaches to care before health conditions deteriorate.

Sourcing the data and care management

By combining these socioeconomic factors with medical and pharmacy claims, labs and health risk assessments in predictive modeling, healthcare organizations can acquire more expansive views of consumers at risk for avoidable healthcare costs. There are billions of records from nearly 10,000 public information sources, from which socioeconomic data can be extracted and incorporated into a health information technology system.

Some of the overall types of data available from multiple sources include:

- Consumer records
- Unique name and address records
- Property records
- Active U.S. business entities
- Business contact records
- Unique cell phone numbers
- Bankruptcy records
- Motor vehicle records
- Criminal records
- Income level
- Income reductions
- Applications for high interest loans
- Education level
- Voter registration

Access to and proper capture of this array of information enables the advancement of risk stratification, motivational engagement prediction, stress severity projection and geo-spatial mapping systems.

Risk stratification information is used to allocate resources at a population-wide level, identify high-risk patients, alert providers and care managers about those patients, and design interventions to prevent other individuals from becoming high risk. This also plays particular importance in readmission prevention by identifying patients most likely to be readmitted and conducting interventions.

In addition, an individual's motivation - or willingness to engage in maintaining or improving their health - is just as important as the data used to determine what puts that person at risk. Understanding which individuals in the population are motivated allows health plans to wisely allocate expensive resources, like nurse care managers. A high-risk patient who is highly motivated may get as much benefit from a low-touch wellness program as she or he would from a high-touch program.

The capture and tracking of socioeconomic trends among individuals enables better projection of severe stress levels. For example, increased rates of crime in a neighborhood, a house downsize, bankruptcy, or even a woman's last name change (signaling marriage/pregnancy or divorce) are all likely indicators of increased stress severity. Stress can spur a myriad of health consequences, including high blood pressure, circulatory complications, accelerated aging, cardiovascular disease and immune defense damage, among others factors.

The richness of this information could spur geo-spatial mapping systems, enabling the ability to identify community trends, such as lack of access to public parks, sidewalks or close-proximity grocery stores. Even identifying trends such as high poverty rates, density of fast food restaurants or high crime locations, would create a more comprehensive view of the determining factors of a patient's overall health state.

The incorporation of social determinants of health can contribute significantly to this by improving risk prediction accuracy and revealing inconspicuous trends. Seen as an advanced methodology, this would help enable healthcare organizations to address the origins of health complications by identifying the economic stability, physical environment, education level, food access, social context and healthcare system via a wealth of available information sources.

Infographic: Social determinants

Addressing social determinants of health (SDH) is an effective strategy to impact population health; however, it requires focused collaboration. Here are six promising examples of current programs and stakeholders.



Government



Corporation



Nonprofit



Foundation



Healthcare



University

[View the full infographic](#)

A role for social impact bonds?

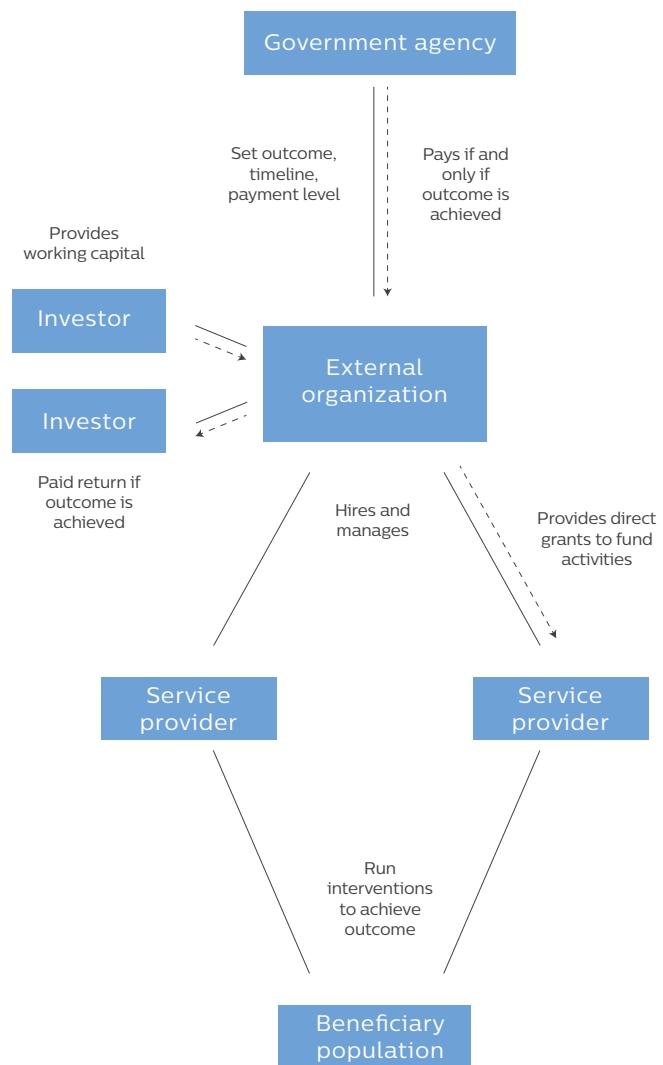
Healthcare interventions that address social determinants of health often exist outside the scope of the traditional healthcare payment system.

There is a relatively new methodology that can be used to increase spending on social determinants while transparently enforcing accountability and outcomes. Social impact bonds (SIBs), also known as pay-for-success models, are multi-stakeholder performance-based contracts.

The five key stakeholders and their roles are as follows:

- 1) **Service provider:** Agrees to conduct a program designated to yield a future outcome that is valuable to the payer. (Usually a nonprofit organization.)
- 2) **Investor:** Provides up-front working capital for the service provider to channel toward the designated program. In exchange, the investor will receive a “success payment” if the committed outcome is produced on schedule.
- 3) **Payer:** Commits to pay the service provider a “success payment” when the specified outcome is produced. (Usually a government agency.)
- 4) **Intermediary organization:** Facilitates the SIB contract, establishes payment and financing terms and supervises the service provider’s program.
- 5) **Independent evaluator:** Determines if the committed outcome was achieved upon conclusion of the contracted period.

Figure 4:



Source: Center for American Progress

Once the outcome is confirmed, the payer’s “success payment” is administered to the intermediary to disburse to the investor. However, if the outcome is not produced, the payer does not administer the “success payment,” the investor loses their investment and the service provider loses credibility. See Figure 4 for a visual representation of the process.

Potential for success

Originally established in Peterborough, United Kingdom in 2010 to address issues of recidivism, more than 60 renditions of this payment model have since been launched in over 15 countries around the world, as tracked by the **Social Finance Organization**.

In the last six years, 13 social impact bonds have been launched in the **United States**, tracked at payforsuccess.org, raising more than \$120 million and targeting 18,000 lives. Programs address social determinants related to criminal justice, housing/homelessness, health, education and early years, and child/family welfare.

Although these financial mechanisms have only existed for a brief time, some key results have been noted:

- Deliver meaningful outcomes for vulnerable populations
- Establish partnerships, which pools resources, experiences and insights
- Improve performance and adaptability
- Investment instills more rigor and scrutiny to social programs
- Work to establish best practices through data collection and measurement
- Drive funding toward preventive programs and proactive interventions
- Creates space for innovation by displacing risk away from government

In addition, outcomes payments to service providers can be substantial. Examples of SIB program impacts and outcomes are shown in Figure 5.

Figure 5:

Chicago, Illinois	Denver, Colorado	South Carolina	Massachusetts
Impacted Population: 2,600 families with young children Max outcome payment to service provider: \$34,000,000	Impacted Population: 250 highly vulnerable homeless individuals Max outcome payment to service provider: \$11,400,000	Impacted Population: 3,200 low-income mothers and their children Max outcome payment to service provider: \$7,500,000	Impacted Population: 929 juvenile ex-offenders Max outcome payment to service provider: \$27,000,000

Source: Social Finance Organization

Federal funding is growing

In December of 2015, Congress passed and President Obama signed the FAST Act, which included funding for U.S. Department of Housing and Urban Development demonstration projects of pay-for-success models. The funding expands the use of outcome-focused grants that give states, local governments and tribes more scope and flexibility to innovate and adapt programs to local needs, in exchange for greater accountability for outcomes. It authorizes up to 10 new SIB Partnership Pilots for Disconnected Youth. The prospective programs aim to improve education, employment, and other key outcomes and build evidence about more effective ways to help vulnerable youth.

Rikers Island as testing ground

The first social impact bond in the United States was established in 2011 on Rikers Island in New York City. More than 9,200 inmates between 16-18 years old received group therapy aimed at improving their moral reasoning by addressing their beliefs and thought processes, a method known as moral reconnection therapy.

Entirely financed with a \$9.6 million loan from Goldman Sachs, New York City committed to remunerate the investment if recidivism rate decreased by at least 10 percent over four years. Despite valiant intentions, preliminary reports revealed that the program was not producing the targeted results, causing Goldman Sachs to prematurely terminate the program.

There are several key factors that may have contributed to this:

- As the first initiative of its kind in the U.S., our society still needs to better understand the most effective approach to SIBs
- The process needs stricter standardization processes in order to scale
- Our society is not accustomed to cross-sector, multi-stakeholder partnerships, which yield challenges in communication, expectations and operations
- The name of the methodology “social impact bonds” may be confusing, as SIBs are not technically bonds, but rather are more equity-like tools that do not offer principal protection, as bonds generally do
- It is challenging to design evidence-based programs into large-scale interventions and additionally create a corresponding outcomes evaluation system

Despite the uneven start of social impact bonds in the United States, 12 additional SIBs have been implemented within the last few years, some charted above. During this infancy stage, each partnership experience contributes to the body of knowledge surrounding social financing models. Considering the nontraditional and complex nature of the SIB model, trial and error of these programs is not only expected, but also essential to deeper comprehension of best practices.

A social determinants summit

The Root Cause Coalition in 2016 hosted in Chicago the nation’s inaugural summit on social determinants of health.

The coalition fosters cross-sector partnerships to share best practices, engage with communities, advance **research** and advance public policy related to social determinants of health.

Since 2015, it has partnered with anchor institutions ranging from large medical centers, insurance companies, the federal government, educational institutions, public health departments, corporations and foundations.

Summit speakers included:

- Vivek H. Murthy, MD, MBA - United States Surgeon General
- Rick Pollack - American Hospital Association, president and CEO
- Pattie Dale Tye - Humana, segment vice president
- David Ansell - Rush Medical Center, senior vice president
- Sarah Downer, JD - Center for Health Law & Policy Innovation of Harvard Law School, clinical instructor on law
- Marc Morial - National Urban League, president and CEO
- Laura Kettel Khan - Centers for Disease Control and Prevention, senior scientist
- Marice Ashe, JD, MPH - ChangeLab Solutions, founder and CEO
- Gerald R Winslow, PhD - Loma Linda University Health, research chair

Casting a wide net

A primary objective of the coalition is to foster the communication and interaction between anchor institutions and community resources. **Anchor institutions** are institutions rooted in their local communities by mission, invested capital or relationships to customers, employees and vendors. These enterprises include educational institutions, faith-based organizations, state and federal government, public health departments, foundations and healthcare organizations.

An indispensable component to current healthcare structures, health information technology is an essential constituent to be brought to the table. Technological innovations have already played a significant role in advancement of our current healthcare approach, transitioning to value-based care performance models.

Another element in this space is social enterprise. According to the Social Enterprise Alliance, social enterprises combine the social mission of a non-profit or government program with the market-driven approach of a business. This factor and the need for health information technology to also aid in the advancement of social determinants data and action processes, were key topics at the summit.

Case study

Socioeconomic needs of patients for population health

Addressing the societal needs of patients increasingly is understood as a critical component of any PHM program. For example, food insecurity has demonstrated effects on admission and readmissions statistics. Studies have shown that diabetics are 27% more likely to be hospitalized in the last week of the month compared to the first week due to exhaustion of food budgets at month's end. (3)

Additionally, children who experience food insecurity or poor housing conditions are 30% more likely to be hospitalized by age three. (4) Realizing this, Banner Health and its care management staff rely on strong community based organization (CBO) networks and other social services to provide the best care to their patients dealing with social and behavioral health needs. However, like many U.S. integrated delivery networks and accountable care organizations, Banner had issues identifying appropriate resources, and maintaining them current, and connecting patients to the right service at the right time. In addition, their health coach team wanted to get a better understanding of the true social needs in their community.

To address these needs, Banner partnered with Philips and Healthify (private label as eHealthify), to support their care managers and health coaches in connecting patients to appropriate social services in the Phoenix Metropolitan area.

eHealthify uses a survey tool to identify the social services that are eligible and available to a given person based on their particular needs (e.g. war veteran, income level, etc.). This includes Medicaid, Medicare and dual eligible people.

This software application enables providers to dramatically scale their case managers by providing the most currently and geographically relevant services to them. Furthermore, this software application enables providers to visualize the results of these interactions and to obtain information about the quality of these interactions using a back-end "Yelp-like" tool.

Since the Banner Health coach team was initially focused on an elderly population, eHealthify utilized its services database to represent the most appropriate services for this population. The eHealthify team engaged health coaches every two months with follow up training and to receive feedback.

Health coaches were also able to get support from the eHealthify team when connecting patients to services by logging in and using the live chat system. Banner Health administrators were trained on the eHealthify platform as well to view analytics on health coach usage and search trends to establish goals. After five months into the program, the eHealthify database had 3,412 resources to access in Arizona.

The most common type of needs identified:

Figure 6:

Type of Need	Top Search	% of Search
Community	Caregiver	17.7
Food	Food boxed	15.2
Transportation	Medical transit	10.4
Health	Med equipment	7.3
Housing	House repair	6.2
Goods	Loan closet	4.8
Financial Support	Financial help	3.1

The success of the program led Banner to increase the number of case managers who have access to the services database.

1. Using Technology to Map Out a Population Health Strategy, Healthcare Executive, Buell, John M., Sept./Oct., 2015
2. The Population Health Mandate: A Broader Approach to Care Delivery, Nash, David, MD, MBA, Governance Institute/Boardroom Press, Feb., 2012
3. Exhaustion of Food Budgets at Month's End and Hospital Admissions or Hypoglycemia, Seligman, et al., Health Affairs, Jan. 2014 (Vol. 33, No. 1)
4. Children's Health Watch, five-city sample of low-income families with children. Dec., 2012. www.childrenshealthwatch.org

Figure 1: Schroeder, M.D., Steven A. We Can Do Better – Improving the Health of the American People. NEJM. 2007 Sept 20; 357(12):1221-1228

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