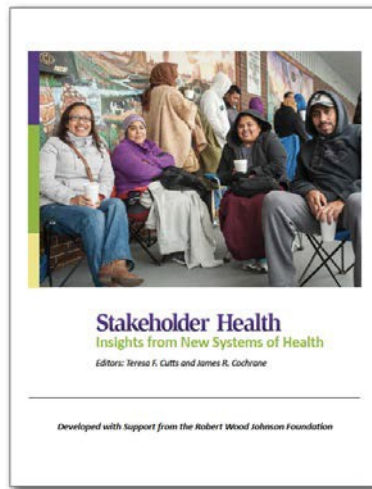# Chapter 2
A Systems Thinking Approach to the Social Determinants of Health

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A Systems Thinking Approach to the Social Determinants of Health

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In our last monograph, Stakeholder Health (SH) described the "social determinants of health" in terms of providing "integrated care for socially complex people in socially complex neighborhoods" (Health Systems Learning Group, 2013). This acknowledged that the factors that have the greatest impact on health are not medical interventions or individual lifestyle choices, but instead arise from the environments in which we live, work and play. It also introduced the Social Ecological Model to focus attention on the environments (or the "places") that provide the socioeconomic, cultural and environmental conditions in which community health either thrives or fails.

Here we further explore the social determinants of health through the lens of systems thinking. Systems thinking is defined as a practice that takes a comprehensive approach to complex events or phenomena seemingly caused by a myriad of isolated, independent, and usually unpredictable factors or forces (Senge, 2006). It shifts the "mind from seeing parts to seeing wholes, from seeing people as helpless reactors to seeing them as active participants in shaping their reality, from reacting to the present to creating the future" (Senge, 2006, p. 69). So the essence of systems thinking lies in a shift of thinking to see interrelationships rather than linear cause-effect chains, and longer-term processes of change rather than simply snapshots in time.

Systems thinking reflects four fundamental characteristics (Peterson, 2010):

• *Dynamism*: Multiple specific phenomena evolve in relation to each other. Rather than seeing only isolated events (e.g., asthma, graduation, and employment rates), systems thinkers see the patterns of relationship (e.g., how unemployment is connected to higher school absences due to uncontrolled childhood asthma). When these patterns of relationship are projected over time, the historic data can be used to make predictions for the future.

• *Complexity*: Besides numerous stakeholders being involved in a living system, its full complexity lies in its ever-evolving and partially non-predictable adaptation to new circumstances and its patterns of resilience that are self-preserving, self-organizing and goal-seeking in expressing its integrity or wholeness (Meadows, 2008). The challenge to the systems thinker, while embracing the unpredictable, is to find mutuality despite the diverse, divergent or siloed interests of those involved, as these key characteristics of a system emerge.

• *Interdependency*: Seemingly isolated phenomena actually are intimately connected and influence each other over time.

• *Hard to communicate*: Words are often inadequate for explaining dynamic problems driven by the interdependency of multiple players with diverse interests.

Systems thinkers look for patterns of interaction among complex phenomena in order to better understand, analyze and articulate the current effectiveness of a system, and to diagnose how the system can be improved over time (see also Chapter 10 in this document for further discussion on complexity and "complex living systems").

Systems Thinking and Population Health

Every effective hospital administrator knows that a well-run hospital has multiple service lines, existing within even larger complex systems, that must interact efficiently to achieve the best outcomes for both patients and employees. In fact, a single glitch in the system—a laboratory test that is late or provides inaccurate results—can have ripple effects across the whole care-delivery apparatus. The most successful administrators ensure that attention is given to even the relatively small problems (such as under-staffed laboratory services), in service of the interdependent functions and smooth functioning throughout the entire hospital.

Likewise, a person's health is rooted in those broader complex systems, too. It is now widely accepted that the environment has the greatest impact on health outcomes across populations. We will refer to the following case study related to childhood asthma throughout this chapter. Asthma is an

CASE STUDY: CHILDHOOD ASTHMA
(ChangeLab Solutions, 2014)

Think of a child who is repeatedly hospitalized with uncontrolled asthma. Despite the best that medicine can offer, if the child lives in substandard housing with mold climbing walls and bed posts or with roaches or other vermin spreading asthma triggers, medical interventions alone will not prevent the continuous recurrence of disease. In fact, building code standards, tenants' legal rights, and the availability of healthy and affordable housing have a direct impact the child's health. To effectively address the asthma, these non-medical issues must become a central focus of attention. We could depict this relationship with a simple diagram:

POOR HOUSING → ASTHMA

Yet, we also know the impact of asthma on school attendance, which is directly related to educational achievement. In 2008, asthma accounted for approximately 14.4 million lost school days nationwide (American Lung Association, 2012). A study of over 9,000 students in a predominantly African American urban school district in St. Louis, Missouri found that students with any degree of asthma experienced, on average, 30 percent more absent days than those without asthma. Students with moderate to severe asthma experienced, on average, 4.3 times the number of absences of non-asthmatic children (Moonie, Sterling, Figgs, & Castro, 2006). In a study conducted in an inner-city school in Los Angeles, students with asthma missed, on average, two more days of school than children without asthma (Bonilla, Kehl, Kwong, Morphew, Kachru & Jones, 2005). Students who attended schools with the highest concentrations of low-income students were more likely to miss school because of asthma than those at schools with higher income students (Meng, Babey, & Wolstein, 2012).
We can now extend the diagram like this:

POOR HOUSING → ASTHMA → SCHOOL ABSENTEEISM

Further, we also know that chronic absenteeism leads to lower educational attainment (Thies, 1999), and this, in turn, has significant impacts on future employability, social capital, and psychological resiliency (Levine, 2003). We can expand our simple diagram to reflect multiple feedback loops and pathways, showing how poverty creates a systemic reality of increasingly poor health with a negative feedback loop (housing):

Of course, going even further, within the family, when a child is absent from school due to illness, a parent or guardian must be available to care for the child. Do the parents' jobs offer sick leave benefits? If not, must one of the parents take unpaid time away from work? Will his or her job be at risk if too many unpaid days are taken? Again, without basic prevention, the ripple effects of having a single child suffer from asthma have profound impacts on all aspects of family stability and economic achievement.
But even that is not all. There is a strong link between child poverty and other chronic health conditions beyond asthma:

- Children from families in poverty are more likely to be obese than their non-poor peers of the same age, of the same gender, and within the same geographic region (Centers for Disease Control and Prevention, 2015b; Singh, Siapush, & Kogan, 2010).

- Children from families in poverty are more likely to be identified as having developmental delays than their non-poor peers of the same age, of the same gender, and within the same geographic region (Brooks-Gunn & Duncan, 1997; Child Trends DataBank, 2013).

- Children from families in poverty are more likely to be identified as having learning disabilities than their non-poor peers of the same age, of the same gender, and within the same geographic region (Brooks-Gunn & Duncan, 1997).

increasingly common disease, found in all income groups but significantly more common in children living in poverty. It provides a rich landscape to illustrate the Triple Aim of improved experience of care, reducing per capita cost of care, and improving the health of populations (Bisognano & Kenney, 2014), and to point to SH's addition of a fourth ("quadruple") aim of equity.

What are the Social Determinants of Health?

The World Health Organization states that the "social determinants of health" reflect the conditions in which people are born, grow, live, work and age (World Health Organization, 2015). Healthy People 2020 highlights the importance of addressing the social determinants of health as one of the overarching national population health goals of the current decade (Secretary's Advisory Committee on National Health Promotion and Disease Prevention, 2010). The CDC gives deeper meaning to this definition when it calls upon health leaders to advance health equity by addressing the social determinants of health (Marmot, 2007; Williams, Costa, Odunlami, & Mohammed, 2008).

As the asthma case study above illustrates, the most basic conditions of everyday life—like the structural quality of the family home, or whether the parents have jobs with leave benefits to care for their sick children—have overwhelming influence on health outcomes, not just on asthma but on all other preventable chronic health conditions as well. We know that having access to quality food, recreation, housing, transportation, public safety, education and jobs are associated with how long we will live (Robert Wood Johnson Foundation, 2015). These aspects of family and neighborhood living conditions—beyond a person's genetic inheritance and even beyond their poverty levels—have lasting consequences for health (Jutte, Miller, & Erickson, 2015). When these basic aspects of civic life fail, a person is exposed to "toxic stress" which influences gene expression and brain development with direct and indirect negative consequences for health (Jutte et al., 2015). In fact, fully one-fourth of the differences in health in mid- to late-life can be attributed to neighborhood differences during young adulthood (Jutte et al., 2015). (See Life Expectancy Table below.)

Because the social determinants of health have such a profound impact on health outcomes, we now say that a person's zip code is far more important than their genetic code in determining health outcomes (Jutte et al., 2015; Lavizzo-Mourey, 2012). We can measure this clearly through demographic data: the most impoverished neighborhoods in our nation, comprised predominantly of persons of color, have a life expectancy 15 to 25 years less than higher income and predominantly white neighborhoods.

Life Expectancy at Birth by Zip Code[*]

City	Higher Income and Predominantly White Neighborhoods	Lower Income and Predominantly Persons of Color Neighborhoods	Years of Difference
Cleveland, OH (Norris & Howard, 2015)	88	64	24
Kansas City, KS	83	69	14
Lincoln, NE (Andersen, 2015)	90's	60's	25-30
Minneapolis/St. Paul, MN	83+	75	8+
New Orleans, LA	80	55	25
San Joaquin Valley, CA	87	75	12
Washington, DC	84	77	7

The data from this table is taken from the Robert Wood Johnson Foundation. (2015a). City Maps. Retrieved December 5, 2015, from www.rwjf.org/en/library/articles-and-news/2015/09/city-maps.htm

RACISM AND THE SOCIAL DETERMINANTS OF HEALTH

Research suggests that three key factors may each contribute to the residual effect of race after socioeconomic status (SES) is controlled (Williams & Mohammed, 2009).

- First, indicators of SES are not equivalent across race. Compared with whites, blacks and Hispanics have lower earnings at comparable levels of education, less wealth at every level of income, and less purchasing power because of higher costs of goods and services in their communities (Williams & Collins, 1995).

- Second, health is affected not only by one's current SES but by exposure to social and economic adversity over the life course. Racial ethnic minority populations are more likely than whites to have experienced low SES in childhood and elevated levels of early life psychosocial and economic diversity that can affect health in adulthood (Colen, 2011). In national data, early life SES helps explain the black-white gap in mortality for men (Warner & Hayward, 2006). Another recent study linked early life adversity to multiple markers of inflammation for adult African Americans but not for whites (Slopen et al., 2010), suggesting a link to allostatic load. Allostatic load, or the cumulative biological burden exacted on the body through daily adaption to stress, particularly unremitting physical and emotional stress, is considered to be a risk factor for several diseases, including cardiovascular disease, diabetes, obesity, depression and cognitive impairment, as well as both inflammatory and autoimmune disorders (Djuric et al, 2008).

- Third, a growing body of evidence documents that racism is a critical missing piece of the puzzle in understanding the patterning of racial disparities in health. Institutional racism and personal experiences of discrimination are added pathogenic factors that can affect the health of minority group members in multiple ways (Williams & Mohammed, 2009). Discrimination can lead to reduced access to desirable goods and services, internalized racism (acceptance of society's negative characterization) can adversely affect health, by eroding the individual's sense of value (Jones, 2000), racism can trigger increased exposure to traditional stressors (e.g., unemployment), and experiences of discrimination are psychosocial stressors. For example, perceived discrimination/racism has been shown to play a role in unhealthy behaviors such cigarette smoking, alcohol/substance use, improper nutrition, and refusal to seek medical services (Lee, Ayers, & Kronenfeld, 2009; Peek et al, 2011).

Arguably, the most consequential effects of racism on health are due to residential segregation by race, a mechanism of institutional racism (Williams & Collins, 1995). Segregation can restrict socioeconomic attainment and lead to group differences in SES and health. It also creates pathogenic neighborhood conditions, with minorities living in markedly more health-damaging environments than whites and facing higher levels of acute and chronic stressors. Although the majority of poor persons in the United States are white, poor white families are not concentrated in contexts of economic and social disadvantage with an absence of an infrastructure that promotes opportunity in the ways that poor blacks, Latinos, and Native Americans are. The neighborhoods where minority children live have lower incomes, education, and home ownership rates and higher rates of poverty and unemployment compared with those where white children reside. In 100 of America's largest metropolitan areas, 75 percent of all African American children and 69 percent of all Latino children are growing up in more negative residential environments than are the worst-off white children (Acevedo-Garcia, Osypuk, McArdle, & Williams, 2008).

These extraordinary differentials in life expectancy are due primarily to an overburden of preventable chronic diseases in low income communities of color that can be addressed best by taking a systems approach to health outcomes. Through systems thinking, we know that we have to look for the fundamental causes of the problems we are trying to solve. This means that we must find the interrelationships between the structural issues that affect health issues such as the quality of housing and education in a community; access to job training and economic opportunity; exposure to interpersonal or community-level violence; and the realities of historic, institutional and internalized racism. (See the sidebar, Racism and the Social Determinants of Health.)

County Health Rankings *(County Health Rankings & Roadmaps, 2015a)*

Research conducted by the Population Health Institute at the University of Wisconsin demonstrates that clinical medical care accounts for just 20% of health outcomes while health behaviors, socioeconomic factors and the physical environment account for the remaining 80% of health outcomes (County Health Rankings & Roadmaps, 2015a).

The seemingly distinct measurements on the chart are deceptive as there are tremendous interactions between health factors. Compare two families:

One is a middle class family that lives in a home free of hazards, in a neighborhood that has parks safe for children to play in. They are likely to spend weekends shuttling between youth sporting events, and whether or not they always eat healthfully, they will at least be able to afford plenty of healthy foods. When family members get sick, they likely have access to quality medical care. This family has ready access to all that is needed to live a healthy life.

The other family lives near or below the poverty line. This family is far more likely to live in a neighborhood with an over-proliferation of stores that sell liquor but few fruits or vegetables. This alone affects the family diet (a Health Behavior factor) and safety (Social and Economic factors) as an increased density of liquor stores is correlated with increased community and interpersonal violence (Ashe, Jernigan, Kline, & Galaz, 2003). This family is likely to have limited access to medical care (a Clinical Care factor) and may even have to choose between seeing a doctor or buying medication and paying rent or buying food (Social and Economic factors). The children in this family most likely do not belong to sports teams and may have to play inside their home to keep safe (Social and Economic, and Physical Environment factors).

The health behavior of the family living in or near poverty is likely to be far different than the middle class family with access to all that is needed for a healthful life. In short, poor health disproportionately burdens people who live in places that limit opportunities to live long and well (County Health Rankings & Roadmaps, 2015b).

Yet, when we look at how we spend our health care dollars, we see that just 3-4% of our national health budget is dedicated to disease prevention; the rest is dedicated to medical care delivery (Alley, Asomugha, Conway, & Sanghavi, 2015; Centers for Disease Control and Prevention, 1992; Forsberg & Fichtenberg, 2012; McGinnis, Williams-Russo, & Knickman, 2002). This unbalanced distribution of the national health budget is illustrated by the fact that the nation's largest single investment in prevention, the Prevention and Public Health Fund,
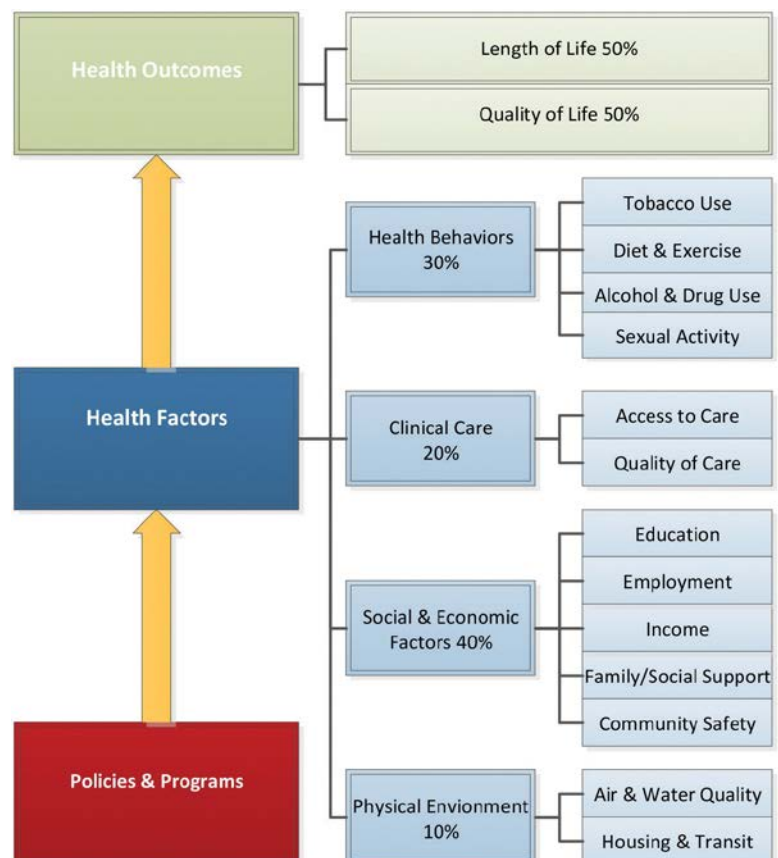
provides $14.5 billion over the next 10 years (Trust for America's Health, n.d.), while the total health care spending for 2014 alone was $3 trillion (Centers for Medicare and Medicaid Services, 2015a). In short, as things stand today, we are challenged to address the 80% of the causative factors for preventable disease with a fraction of the national budget on health. This is an impossible ratio that is bound to lead to failure unless something is done that is dramatically different than the status quo.

The Triple Aim (Bisognano & Kenney, 2012) continues to be the gold standard for the transformation of our health system, linking improved experience of care, reducing per capita cost of care, and improving the health of populations. In our first monograph, SH advocated an even more expansive view: that health equity, strongly linked to social determinants, should be added as a "Quadruple Aim" to insure justice in healthcare and other venues (Health Systems Learning Group, 2013, p. 12). However, despite these calls to action, few health systems are incorporating the relevant tools and processes to address the social determinants of health in their systems of care. Without addressing and integrating the social determinants, the Triple Aim, and certainly not our more expansive Quadruple Aim, will not be realized.

What Can We Do to Address the Social Determinants of Health?

While access to health care for individuals is necessary to close gaps in life expectancy, it is hardly sufficient. Rather, we must work at the systems level by taking a comprehensive approach to complex events or phenomena affecting a person's or a community's life even though these events seem to be caused by a myriad of isolated, independent, and often unpredictable factors or forces (Senge, 2006). Population health means doing business differently: it will require at least an integration of both public health and traditional health care settings. We will need to begin to integrate both clinical and community prevention. The new level of thinking for the emerging health system will require aligning partnerships that are built for health, not just the treatment of symptoms associated with disease. This will require addressing the social determinants with strategic partners not traditionally aligned with the health system. We can no longer think of hospitals, labs, physician offices and clinics as the health system, but include housing, education, and public health. For example, our colleagues at ProMedica have done years of work around improving health outcomes via food security initiatives (see sidebar).

The 5-tiered Health Impact Pyramid developed by CDC director Thomas Frieden (2010) illustrates the various types of interventions that contribute to improving population health. It takes a decidedly systems theory view of what will work, and provides a framework for how to address any number of public health challenges—from preventing chronic diseases, to decreasing HIV/AIDS transmission or teen pregnancy rates, to increasing immunization rates. It demonstrates that the greatest achievements in population health will be secured by implementing interventions at the base levels of the pyramid.

BOTTOM TIER – *Socioeconomic Factors*
The lowest tier represents changes in socioeconomic factors (e.g., poverty reduction, quality educational systems, healthy and affordable housing, etc.). These changes have the greatest potential impact on health outcomes because they affect fundamental conditions in life and simultaneously reach broad segments of society with population-scale policies. Because we know that socioeconomic factors impact up to 40% of the differential in life expectancy, these changes—complex though they may be—provide an overwhelmingly positive impact on health outcomes (Frieden, 2010).

Relevance for asthma prevention
As discussed above, asthma is significantly affected by:

- Poverty: greater likelihood of living in substandard housing, may not have health insurance or be able to afford medication.

Factors that Affect Health
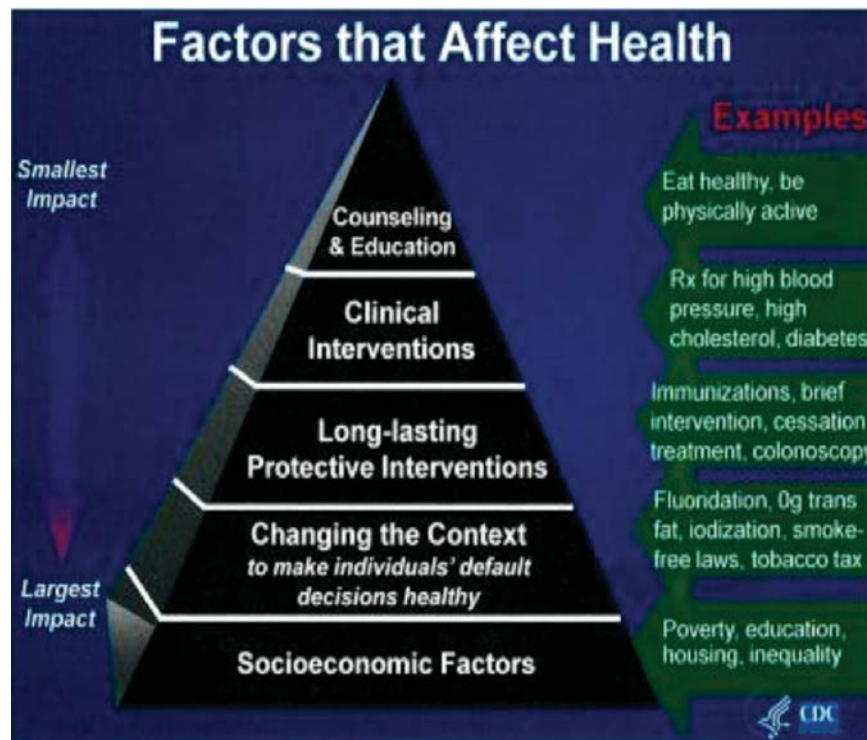
• Homelessness: Shelters are often filled with asthma triggers, and the stress of displacement alone exacerbates asthma.

• Education: Poor education is a risk for health illiteracy not only for the asthmatic child, but also parents.

2ND TIER – *Changing the Context to Make Individual's Default Decisions Healthier*
This tier includes interventions that change the environmental context to make healthy options the standard regardless of education, income, or social services. Examples include access to fluoridated water, elimination of lead and asbestos exposures, improvements in road and vehicle design, iodized salt, removal of trans-fats from foods, policies that encourage use of active transportation (walking, bicycling, public transit, stair use), clean indoor air laws, taxing or differential prices on tobacco, alcohol, and unhealthy foods and beverages (Frieden, 2010). In each instance, the individual does not need to think about choosing a healthy option—it is the norm. Regardless of education, income, or other societal factors, all persons benefit from such interventions.

Relevance for asthma prevention
• If an asthmatic child lives in a home with known asthma triggers such as mold, mildew, roaches, or second hand smoke, there is little hope of preventing illness even if she has perfect adherence to treatment regimes. If that child moves to a home that meets habitability standards free from asthma triggers including secondhand smoke, the likelihood of her health improving increases dramatically.

3RD TIER – *Long-Lasting Protective Interventions*
This tier includes one-time or infrequent protective interventions that do not require ongoing clinical care. Examples of such interventions include immunizations, colonoscopies and smoking cessation programs. Because these interventions operate by reaching people as individuals rather than through a broader base policy strategy, they typically have less impact on population health outcomes than the bottom two tiers of the pyramid (Frieden, 2010).

Relevance for asthma prevention
- Most healthy housing projects fit here as they use a family-by-family or apartment-by-apartment approach to addressing a health concern. For example, it is common that a child with lead poisoning also has asthma, as both health problems are caused by poorly maintained houses. Maintaining housing quality by remediating lead poisoning or asthma triggers for each family with a lead poisoned or asthmatic child provides long-lasting protections, but without the universal approach of creating default conditions or opportunities as in the lowest tiers.

4TH TIER – *Clinical Interventions*

This tier includes direct medical care in a hospital or clinical setting, including home health visits. Evidence-based clinical care reduces disability and increases life expectancy for recipients and we know that it has a 20% impact on overall health outcomes. Nonetheless, in some communities, clinical interventions are often unavailable to low-income residents, especially in states that have not adopted Medicaid expansion under the Affordable Care Act. Further, clinical services can be limited in their effectiveness by a patient's socioeconomic status such as his/her inability to afford medicine; non-adherence to a medication regime due to a lack of education and health literacy; clinic organization, such as single provider vs. rotating providers and physician's expectation of patients' capacity to use the newest technique for control of conditions (Lutfe & Freese, 2005; Phelan & Link, 2005); or the fact that the patient does not have access to healthy and affordable foods, safe places to play, or healthy housing, which are necessary to prevent disease (Frieden, 2010).

Relevance for asthma prevention
- Even patients with all the amenities of middle class life can have asthma. All patients need screening, health education, and medication. Sometimes even the otherwise healthy and wealthy asthmatic patient needs hospitalization.

TOP TIER – *Counseling and Educational Interventions*

This tier includes health education provided during clinical encounters (e.g., nutrition education or smoking cessation classes) or during participation in community-based program (e.g., health fairs, cooking classes at WIC sites, exercise classes, etc.). From a population health perspective, these are often the least effective types of intervention largely because they reach just one person or a small group of persons at a time (Whitlock, Orleans, Pender, & Allan, 2002). Further, they often fail to address the socioeconomic contexts in which healthy choices are or are not default options. They may also fail to communicate effectively across cultural, worldview and discourse gaps that affect how participants behave and act, their so-called "healthworlds" (Germond & Cochrane, 2010), discussed in more detail in Chapter 10. These critiques aside, when applied consistently and repeatedly, counseling and educational interventions can have meaningful impact on the individuals served. For example, behavioral counseling to have safe sex, along with access to clinical interventions such as clean needles and condoms, has reduced HIV risk among the broader population (Frieden, 2010).

Relevance for asthma prevention
- Patients with asthma can significantly reduce their health problems by knowing asthma triggers and learning how to manage symptoms early with the proper use of inhalers and other medicines.

Excerpts from Norris & Howard (2015) "Can Hospitals Heal America's Communities?", p. 1, 2, 8.

Healthcare's role in creating healthy communities through increasing access to quality care, research, and grant-making is being complemented by a higher impact approach: hospitals and integrated health systems are increasingly stepping outside of their walls to address the social, economic, and environmental conditions that contribute to poor health outcomes, shortened lives, and higher costs in the first place.

They are doing so for several reasons: by addressing these social determinants of health through their business and non-clinical practices (for example, through purchasing, hiring, and investments), hospitals and health systems can produce increased measurably beneficial impacts on population and community health. By adopting this "anchor mission," they can also prevent unnecessary demand on the healthcare system. This in turn can contribute to lower costs and make care more affordable for all, especially those truly in need. Simply put, this approach can improve a health system's quality and cost effectiveness while simultaneously significantly benefiting society.

With hospitals and health systems representing more than $780 billion in total annual expenditures, $340 billion in purchasing of goods and services, and more than $500 billion in investment portfolios, this approach expands the set of resources and tools institutions have at their disposal to carry out their mission. It shifts the discussion of community benefit from the margins of an institution's operations to overall accountability, where all resources can be leveraged to benefit the communities in which institutions are located.

Physicians, healthcare administrators, and hospital trustees face an important and historic leadership opportunity that our country and our communities desperately need. Hospitals and health systems throughout the country are beginning to build on their charitable efforts, beyond traditional corporate social responsibility, to adopt elements of an anchor mission in their business models and operations.

Can hospitals and health systems heal America's communities?

For integrated health systems such as Kaiser Permanente, that means intentionally aligning and activating all of the resources of the institution— including sourcing and procurement, workforce pipeline development, training, investment capital, education programs, research, community health initiatives, environmental stewardship, and clinical prevention—to produce total health: a state of complete physical, mental and social well-being for all people.

Social Determinants of Health as Systems Theory for Population Health Improvement

As we reflect on both the County Health Rankings and Frieden's Health Impact Pyramid, it is clear that hugely complex systems must be addressed if we are to have a positive impact on population health. The benefit of using an open systems approach to guide our work is that it demonstrates how positive or virtuous feedback loops can be created so that even small changes in one discreet element of a complex system can have multiple ripple effects on the other elements. In practice, systems thinkers strive to know just the right actions to take or facilitate in order to grow—or "snowball"—positive change throughout an entire system no matter how complex. If we can learn to see the whole of a situation, we also can learn to identify levers of change that are available to create the outcomes we want to achieve. Our partners at Kaiser Permanente have exemplified this approach (see side-bar on the Hospital as Systems Change Leaders).

Addressing the Fundamental Causes of Poor Health and Inequity

We said at the beginning of this chapter that systems thinking shifts the "mind from seeing parts to seeing wholes" (Senge, 2006, p.69). The newly emerging concept of "Health in All Policies" helps us understand how to address the social determinants of health so that our efforts are likely to be the most effective in creating positive ripple effects throughout entire systems. In brief, Health in All Policies is a systems approach to improving the health of a community by incorporating health, equity and sustainability considerations into decision-making across sectors and policy areas (Rudolph et al., 2013). The work of Health Care without Harm and the Democracy Collaborative in relation to changing hospital policies on waste management, procurement, hiring and capital projects offer great examples of how these positive effects can be leveraged across health systems (see http://democracycollaborative.org and https://noharm.org).

The asthma case study above demonstrates the need for a Health in All Policies approach. A growing understanding of the social determinants of health has led to a call for public policy that shapes our social, physical, and economic environments in ways that are more conducive to health (Wilkinson & Marmot, 2003). The Health in All Policies approach takes us far outside of traditional hospital systems, and even outside of public health agencies. The policies that determine whether a person has access to healthy food (ChangeLab Solutions, 2012), clean water (Denzin, 2008), clean air (United States Environmental Protection Agency, 2015), safe places for play and physical activity (National Recreation and Park Association, n.d.), affordable, quality housing (ChangeLab Solutions, 2015), jobs (Partnership for Working Families, n.d.), and schools (Centers for Disease Control and Prevention, 2015c; Cowan, Hubsmith, & Ping, 2011), are typically developed and implemented by agencies other than health departments, including planning, transportation, social services, education, economic development, fire, police, sanitation, and public works (ChangeLab Solutions & Bay Area Regional Health Inequities Initiative, 2010). Community Development Finance Institutions can play an important intermediary role, too (Jutte et al., 2015). To achieve a vision for healthier communities, we need such an approach, one in which every part of government, as well as non-governmental sectors like business, faith, and community based organizations play an active role. That is the idea behind Health in All Policies.

To achieve Health in All Policies, hospitals and all the other leading sectors in civic life must adopt a new approach to decision-making. The new approach requires the various stakeholders, including a community and its assets, to understand how policies and actions affect health. They need to recognize that they are part of an interrelated system and that every part of the system has a direct impact on the community's health outcomes. The stakeholders need to learn to share information and organizational goals and to collaborate to coordinate their efforts.

Effective Health in All Policies initiatives are developed by and for a particular community, and there is no "one size fits all" approach. An initiative's overarching focus must resonate with everyone involved, including public agencies, community leaders and residents. These efforts can be framed around health, wellness, equity, sustainability, or some other core value as defined by a community. While there is variation in local Health in All Policies initiatives, they usually share the same fundamental principles, with an inherent goal of building and nurturing trust among all stakeholders:

• Create an ongoing collaborative forum to help stakeholders and sectors to work together to improve public health;

• Advance specific projects, programs, laws, and policies that enhance public health while furthering stakeholders' core missions; and

• Embed health-promoting practices in the organizational practices of all stakeholders.

We also said at the beginning of this chapter that systems thinking shifts the "mind from seeing people as helpless reactors to seeing them as active participants in shaping their reality, from reacting to the present to creating the future" (Senge, 2006, p. 69). We know through systems thinking that if we take short cuts—such as failing to identify or address fundamental causes of problems, or failing to engage with community and neighborhood leaders—our actions could jeopardize the ultimate success of the social changes being attempted (Senge, 2006).

Failure to Address Fundamental Causes: Oftentimes, short-term "solutions" are used to correct a problem with seemingly positive immediate results. But if action is taken without regard to how a short-term solution affects the entire system, only isolated results will be attained and more fundamental long-term corrective measures will be missed. Systems thinking urges stakeholders to focus on fundamental solutions rather than simply addressing short-term symptoms.

Failure to Release the Existing Energy and Assets of the Community: So often the most powerful stakeholders such as hospitals and government agencies—emboldened by the best of intentions and employing deep expertise from their areas of specialty—try to solve complex problems without engaging with and winning the trust of members of the community most affected by systemic problems. We all know that working with community groups can be unpredictable, volatile and contentious. Historic inequities are felt in real time, anger can surface and trust may be low. Sometimes we don't know which community leaders to trust, and consensus on how best to move forward can seem elusive. Yet, if the very hard work of deep community engagement is glossed over or ignored, those most affected by health inequities battle to deal with problems themselves. Instead of fully engaging and utilizing their own existing community assets and intelligence, community members may remain passive "recipients" of well-intentioned programs or efforts led by so-called "professionals," and the system will never achieve real change.

Recommendations: So, What is a Hospital Leader to DO?

You wouldn't be alone if you have read this chapter and feel burdened with undue expectations and insufficient resources. Most hospital administrators willingly accept the responsibility of aligning all the functions of integrated hospital systems, but have more difficulty dealing with domains beyond the hospital system itself for which they are not directly responsible. For instance, most leaders are not likely to commit to alleviating poverty or solving problems related to historic or systemic racism (which are beyond the control of the health sector alone). Yet, it is abundantly clear that unless and until the socioeconomic and structural issues at the base of the Health Impact Pyramid are addressed, the human and economic costs related to preventable diseases will also not be addressed. Achieving the Triple Aim of improved experience of care, reducing per capita cost of care, and improving the health of populations, not to mention paying attention to SH's "Quadruple Aim" that includes equity, requires engaging in the hard work of changing the systems driving preventable diseases and avoidable costs.

The good news: You are not alone when you seek to find ways to go beyond the limits of traditional institutional boundaries and responsibilities. Many resources are available to help get the job done and innovations are underway that help. The most effective interventions to drive population health improvement—those at the bottom of the Health Impact Pyramid—cannot be achieved by the health sector alone. They require new kinds of partnership with people and organizations in communities (see Chapter 6 on "Transformative Partnerships," HSLG, 2013) in collaboration with multiple government agencies and non-governmental sectors outside of the health sectors' immediate areas of influence or expertise. Evidence for this integration of issues across traditional siloes is found throughout academic literature and increasingly through successes in the field.

PROMEDICA'S PARTNERSHIPS ADDRESS FOOD SECURITY ISSUES

At ProMedica, a mission-based, nonprofit, locally owned health care system serving northwest Ohio and southeast Michigan, hunger has been chief among many social determinants of health being addressed in recent years. Driven by a mission to improve the health and well-being of the communities we serve, we began to look at hunger after becoming increasingly aware of its link to obesity and other health concerns across the age spectrum.

Partnerships have been key to our success beginning with a food reclamation program developed in 2013. ProMedica hired two part-time employees to work in the kitchen of the newly opened Hollywood Casino Toledo. These employees reclaim the prepared but unserved, food in the Casino kitchen and package it for distribution to local shelters and communal feeding sites by Toledo Seagate Foodbank. Since inception, the program has expanded to other community locations including several of ProMedica's own hospitals and has provided more than 250,000 pounds of food.

In addition to important community partnerships such as the one with the casino and the food bank, ProMedica understands the importance of directly addressing food insecurity in our patient population. To that end, ProMedica has adopted the Hunger Vital Sign, two-question screen validated by Children's Health Watch. Upon hospital admission, patients are asked the two questions, and those patients with a positive screen are seen by a member of the care team who further assesses the situation. If a need is confirmed, the patient is provided a day's worth of food upon discharge from the hospital, as well as information and assistance about community resources available to them, and how to access those resources.

To take this screening one step further, in April 2015 ProMedica began screening patients in primary care offices and opened its first Food Pharmacy. Patients who screen positive for food insecurity are provided a referral to the food pharmacy where they receive several days of healthy food for themselves and their family. Food choices are based upon the patient's nutrition related diagnosis, if one is present. For example, diabetic patients choose from low sugar options, hypertensive patients choose from low sodium options and patients choose additional protein choices. The referral enables the patient to visit the food pharmacy once per month for up to six months before needing a new referral if they are still in need. Patients at the food pharmacy are also given the opportunity to meet with a registered dietitian to learn more about healthy eating and managing their diagnosis.

Recognizing the importance of eliminating barriers to accessing nutritious, affordable food, in December 2015 ProMedica opened a grocery market in a food desert in Toledo. With seed money from a generous donor, ProMedica designed a 5,000 square-foot market in a four-story building that was previously abandoned. The Market is unique because it employs neighborhood residents in a job training program where each employee will learn all aspects of the market during their 12-month training period. They will also participate in financial literacy programs and other wrap around services to assist them in becoming and remaining self-sufficient. At the end of their 12-month training period they will be better prepared for job opportunities elsewhere in the ProMedica system or with community business partners. By spring 2016, we will complete the second floor build out that will include a teaching kitchen and other classroom space where a variety of programs can be offered to fill gaps that exist in the community.

- **Hospitals Can Support Public Policies that Enhance Community Health**
  Public policy is your best friend. Think about it. Public policy largely determines what happens base level of the Health Impact Pyramid: housing affordability; the quality of local school systems; whether there is access to healthy foods, safe places to walk and play, or smoke-free environments. Every state in the nation can develop public policies based on a Health in All Policies model that ensure the default conditions in which people live are healthy. Most local governments can augment the baseline state rules to tailor public policies so they are even more reflective of local health needs and priorities, too. Hospitals are in a key position to ensure that the public policies in the communities they serve work *for* rather than *against* population health. While this is not necessarily an easy task, it remains a crucial role that is within leaders' competency, running a key social institution.

The good news is that the ChangeLab Solutions website offers a large library of free resources designed exactly to support the policy changes needed to address the social determinants of health. Supported by major philanthropies and many government agencies, ChangeLab Solutions offers model laws and policies plus a wide range of supporting materials to ensure everyday health for all—whether that's providing access to healthy food and beverages, creating safe opportunities for physical activity, or ensuring the freedom to enjoy smokefree air and clean water. The model policy solutions are a great starting place to find what is needed to create a just, vital and thriving community (see www. changelabsolutions.org).

Likewise, the "What Works for Health" section of the County Health Rankings website also highlights explicit multi-sector policy, programs and systems changes, all reviewed and curated for level of evidence supporting the recommendations (see www.countyhealthrankings.org/roadmaps/what-works-for-health).

- **Hospitals can Creatively Leverage Partnerships**
  Partnerships are everywhere and leadership opportunities abound. As anchor institutions driving large portions of local economic activity, hospitals enjoy significant economic and political clout, and have a diverse array of strong allies that can be mobilized to ensure that healthy public policies are the norm. As emphasized in our discussion about Health in All Policies and the excerpts from "Can Hospitals Heal America's Communities?," non-traditional and innovative partnerships across government agencies and multiple sectors of civic life are the new norm to achieve population health. Hospitals are able to exert wonderfully creative leadership in the multiple sectors of civic life—business, economic development, education, faith and more—that can ensure the health message is heard and acted upon by decision-makers (Norris & Howard, 2015).

- **Hospitals Can Engage Local Residents**
  One of the most potent partner groups that hospitals can engage are local residents, who are deeply invested in the health and well-being of their neighborhoods, agencies and citizens. As described in Chapter 6 on community asset mapping, hospital leadership who take the time to truly know and understand the local residents served by a hospital and respond to what information or needs are shared, can enrich community health needs assessment, provide useful data for strategic planning, as well as help health systems do a better job serving patients and families. Such partnerships can yield both improved community health outcomes in the long-run and improved margins in caring for vulnerable populations in the short-term.

- **Hospitals Can Implement Best Practice Models**
  Scientific research is rich and best practices are abundant. An enormous array of readily available resources are at your fingertips—especially related to the 4th tier of the pyramid in changing the context so that default conditions lead to health rather than disease:

  o **National Prevention Strategy** (U.S. Surgeon General, n.d.): This guides our nation to the most effective and achievable means for improving health and well-being. The Strategy prioritizes prevention by integrating recommendations and actions across multiple settings to improve health and save lives. It provides a strong foundation for all prevention efforts and provides evidenced-based recommendations that are most likely to reduce the burden of the leading causes of preventable death and major illness:

- Tobacco Free Living
- Preventing Drug Abuse and Excessive Alcohol Use
- Healthy Eating
- Active Living
- Injury and Violence Free Living
- Reproductive and Sexual Health
- Mental and Emotional Well-Being

o **CDC Community Guide to Preventive Services** (The Community Guide, 2015) and **Community Health Improvement Navigato**r (Centers for Disease Control and Prevention, 2015a): The Guide to Community Preventive Services is a free resource to help you choose programs and policies to improve health and prevent disease in your community. Systematic reviews are used to answer these questions:
  - Which program and policy interventions have been proven effective?
  - Are there effective interventions that are right for my community?
  - What might effective interventions cost; what is the likely return on investment?

  The CDC Community Health Improvement Navigator (CHI Navigator) is a website (described in greater detail in Chapter 6) for people who lead or participate in CHI work within hospitals and health systems, public health agencies, and other community organizations. It is a one-stop-shop that offers community stakeholders expert-vetted tools and resources for:
  - Depicting visually the who, what, where, and how of improving community health
  - Making the case for collaborative approaches to community health improvement
  - Establishing and maintaining effective collaborations
  - Finding interventions that have the greatest impact on health and well-being for all.

- **Hospitals can Play a Role in Payment Systems Reforms**
  Payment system reforms are underway. It goes without saying that the financial incentives driving health care delivery today are overwhelmingly dynamic. Hospitals are experimenting on their own to better manage the care of Dual Eligibles to reach the Triple Aim; rethinking the use of their IRS community benefit obligations to address the social determinants of health (Trinity Health, 2015); creating new care delivery models that incorporate trusted community residents as core personnel in a community-based care model; and addressing the social determinants of health through their procurement, workforce development, and other core operations and expenditures (Norris & Howard, 2015). Hospitals can step up to be part of such pilots, particularly, the work being supported by the federal government, too:

  o **HHS State Innovation Models (SIMs) Initiative** (Centers for Medicare and Medicaid Services, 2015b): provides financial and technical support to states for the development and testing of state-led, multi-payer health care payment and service delivery models that will improve health system performance, increase quality of care, and decrease costs for Medicare, Medicaid and Children's Health Insurance Program (CHIP) beneficiaries—and for all residents of participating states.

Conclusion

Systems theory offers useful insight into the dynamic and complex changes underway in America's hospitals. We are challenged to find the patterns within the complex phenomenon so that we can address the fundamental conditions—the social determinants of health—that lead to preventable disease, unnecessary costs, and the drain on the economic vibrancy of our nation. This chapter aimed to provide a deeper understanding of these social determinants of health and to offer a series of strategies that will allow hospitals to begin to incorporate the power of a systems approach as they address the many challenges they face.

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