



Ecological Health Literacy

An important shift is underway in how the public perceives health and wellness. This shift signals a move away from the disease-centered biomedical model toward a more holistic, ecological language of health. As perceived health benefits and risks become the criteria for an ever-expanding range of personal decision making, the public is coming to recognize what social epidemiologists have argued for some time—that health is the product of more than simple cause-and-effect disease relationships, and results from complex interactions between a whole spectrum of environmental factors. This evolving ecological perspective is supported by scientific evidence that is beginning to demonstrate that where and how we live our lives can have as great an impact on health as genetics, behavior, or exposure to specific risks. A language of ecological (or “eco-”) health literacy is emerging to frame health concerns within a broader landscape, from the food we eat, to how we work, our social interactions, and where we live.¹

This is one in a series of Health Horizons Signals: Quick-hit forecasts of big-picture topics designed to stimulate long-term strategic thinking. Consider these early alerts to shifts in the marketplace, important innovations, unexpected challenges, and new opportunities. Each Signal includes both an overview of pertinent data and an expert interview, and is intended to point to emerging trends likely to be important over the next decade and beyond.

GLOBAL HEALTH

HEALTH HORIZONS PROGRAM

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DRIVERS OF A NEW HEALTH LITERACY

This move away from a cause-and-effect view of health is being driven by several factors.

The first is a clear assessment of the strengths and weaknesses of our existing health model. We can be justifiably proud of successes like the elimination of smallpox and control of other epidemic diseases. We should celebrate increases in life expectancy and development of sophisticated diagnostic and treatment technologies that reduce suffering and improve outcomes. Yet many diseases we thought conquered—such as tuberculosis, malaria, and dengue—kill more now than ever. And newer, deadlier diseases are emerging, including AIDS, Ebola, Legionnaire’s disease, hepatitis C, SARS, and H5N1 avian flu. Nor has our biomedical model significantly reduced health disparities that result, for example, in African Americans having a 70% greater incidence of diabetes, twice the infant mortality, and a 15% lower cancer survival rate than white Americans.² The successes of the biological health model have occurred in solving specific technical problems (such as smallpox or heart-bypass surgery), while its failures affect whole systems (such as malnutrition, drug abuse, or health disparities). In response to these failures, scientists, policy makers, as well as the general public are turning toward a more holistic and comprehensive model for health. This ecological model looks beyond single factors to the dynamic interplay of social, environmental, economic, and behavioral as well as biological determinants of health.

The second driver has been the unveiling of the detailed mechanisms behind health and disease through sequencing the human genome. Paradoxically, with more precise understanding of the workings of our DNA come insights into epigenetic mechanisms by which wider environmental factors determine expression or suppression of genes that cause susceptibility to diseases such as cancer. While illuminating how health is promoted or impeded at the genetic level, genomic discoveries are expanding our understanding of interactions that determine health within an ecology that includes physical and social as well as biological environments.

A third driver behind eco-health literacy is the growing body of research in the field of social epidemiology. Large-scale studies looking at populations from British Civil Servants³ to municipal transit drivers⁴ and health disparities between counties in Kansas⁵ demonstrate that health is defined by nonbiological as much as biological factors. Social epidemiology that correlates social hierarchy with the risk of heart disease, or unrealistic driving schedules with back injuries, alcohol abuse, and obesity among bus drivers moves us from a model based on establishing isolable cause–effect relationships toward one based on whole-system or ecological determination.

The final driver is the growing burden on individuals to manage their own health risks and expenses. As long as clinicians remained the gatekeepers for information and decision making, health was defined through the scientific language of disease, treatment, and individual risk. As insurance costs skyrocket and consumers are forced to pay more out of pocket for health services, they are actively seeking alternatives to conventional allopathic care. Recognizing the market’s desire for means to exert control over their health and wellness, vendors are incorporating positive health messages into products ranging from consumer electronics to cleaning supplies. From the consumer perspective, the language of health has broken free of the doctor’s office and is becoming firmly entrenched in landscape of commerce. People’s intuition that ill health is due to a whole ecology of situations from the work they do, to the house they live in, to the food they eat is being reinforced by the messages they receive from companies that sell them the goods, food, and services they buy.

—David Kaisel



Dr. Len Syme has been a Professor of Epidemiology at the University of California, Berkeley’s School of Public Health since 1968. His work has focused on psychosocial risk factors such as job stress, social support, and poverty. He has led ground-breaking studies about immigrant health in Japan, Hawaii, and California; health risks of San Francisco bus drivers; British civil servants; and low-income communities in Alameda County, California. He is a member of the Institute of Medicine, and is currently Principal Investigator of the Wellness Guide Project of California.

Q | Do you see a shift to a broader ecological view of health in society, and how do you see it evolving going forward?

I see a major crisis in the next 15 years or so. We all know that the baby boomers will be entering the over-65 population in the next 15 years or so. And, at that time, the number of people over the age of 65 in this country and in every industrialized country in the world will double. We already know that our health care system is strained. When the number of people over 65 doubles, the impact will be almost unimaginable.

I think it’s probably going to be the most profound change—profound crisis—in American history from any source more than wars, more than the Depression.

Our only hope is to develop better health-promotion and disease-prevention programs, earlier in life so that when people enter the older population, they are healthier for a longer period of time. Otherwise, we cannot hope to keep up with this by doing better clinical care, more insurance programs, better drugs—it’s just beside the point.



Q | How do you see this happening?

What this is going to require is a fundamentally different way of thinking about health and disease. For example, we have to stop thinking about AIDS, about heart disease, and about cancer as public-health problems. These are sort of astonishing things to say, but those words are really words that a clinician needs to diagnose a person and provide appropriate treatment. They have nothing to do with preventing disease.

The words we need to prevent disease are words that the infectious disease epidemiologists used: waterborne disease, foodborne disease, airborne disease, vector-borne disease. Those categories are not useful in the clinical setting, but they tell you where disease is coming from and where to direct interventions. And we have no words like that for dealing with the fundamental disease challenges of our time.

If you sent a research grant application on poverty diseases to the National Institutes of Health, they'd send it back because they have no disease-specific institute to send it to. We have walked into a clinical model that it makes it impossible to get research funding for appropriate research and grants to train a whole generation of people to think differently. We are really in trouble unless we can break through in this. We really need this new paradigm.

Q | I'm interested in your work linking empowerment and sense of control and health outcomes. How do you see the physiological link between these drivers and health?

You talk about empowerment and does it really make a difference, and you look at mortality statistics. But, to me, the next breakthrough has been that we can now show the biological consequences of *not* being empowered. We're now developing a series of outcomes, like telemers and maybe allostatic load. It's still very fuzzy stuff. We're trying to figure out how this stuff gets into the body to make a difference, not for this disease or that disease, but to compromise vulnerability to a range of diseases.

Q | What do you think the impact of genomics, proteomics, the other "-omics" will have on making these links?

I don't think it's relevant. Let me tell you why. We now have a new person on our faculty, Darlene Francis. She studies rats who are living with good moms, and those baby rats grow up to be good moms themselves. Then there are rats that are bad moms, and their babies become bad moms. And when you look at their genetics, they're different. Now you take a baby rat who is being raised by a bad mom and give it to the good mom. That rat grows up to be a good mom, and the genetics are different. Now, that can blow you away.

Q | You're changing their genes during their lifespan?

She says no. She says what we're really doing is the gene expression. You have the gene propensity, but it's the impact of the environment on them that changes everything. So now I'm not interested in genes anymore. I'm interested in the way genes get expressed. That's the action. So now we can't talk about genomics.

You have to talk about the gene-environment interaction. And the fact is the environment is the thing you can manipulate and intervene on. So that's why I don't want to talk about genomics. Environment is where the action is.

REDISCOVERING HEALTH'S BROADER VOCABULARY

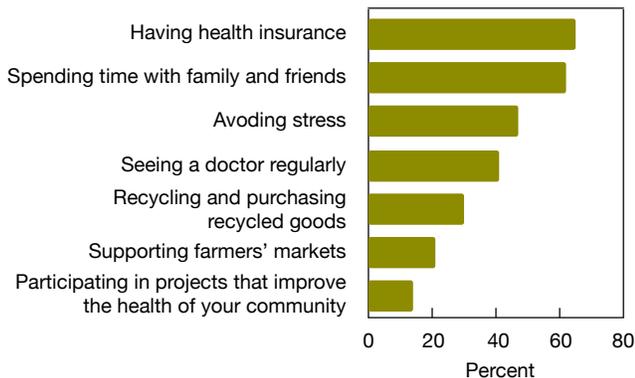
In some ways, eco-health literacy represents a return to traditional ways of seeing health as reflecting an individual's equilibrium within the surrounding social, biological, and physical environment. Hippocrates himself was the first to relate diseases like malaria to environmental and social ecosystems such as season, diet, and living conditions.⁶

Recent discoveries in the emerging field of epigenetics are updating ancient theories linking health to environmental changes. Researchers are demonstrating that the epigenome—the array of chemical markers and switches that tell the DNA where, when, and how to express itself—is sensitive to nonbiological as well as biological environmental cues, and can pass those signals from one generation to the next.⁷ Studies are “beginning to draw cause-and-effect arrows between social and economic macro-variables down to the level of the child’s brain” and suggest “that our diet, behavior, and environmental surroundings today can have a far greater impact than imagined on the health of our distant descendants.”⁸

IFTF’s 2006 American Lifestyles Survey confirms that the U.S. public is already making the intuitive leap between consumption and health. We expect the survey results to show that people associate good health with activities like having health insurance, spending time with their families, and seeing a doctor regularly. But more intriguing is how some respondents associate personal health and well-being with choices like recycling and supporting local farmers.

1 | Lots More to Maintaining Health and Well-Being Than Seeing the Doctor

(Percent of respondents that said _____ is very important to their health and well-being)



Source: Institute for the Future, 2006 Lifestyles Survey.

ECO-HEALTH IN THE MARKETPLACE

Eco-health perspectives are cropping up in new business ventures bridging market categories for both goods and services. We already see sustainability and health mingling in the household from cleaning products to furniture and flooring.

Revolution is an investment fund started by AOL founder Steve Case to reflect a philosophy of “life in balance” expressed through a portfolio of “healthy and sustainable living investments,” from the Lime “lifestyle media brand” to resorts and car-share companies to the consumer-focused Revolution Health Group.⁹

In the United Kingdom, the UK Design Council’s RED group is addressing chronic-disease management by enlisting social networks to co-create peer-to-peer programs for monitoring, treatment, and behavioral support along with local clinicians and town councils.¹⁰ RED’s design approach frames health management within a broad ecology that includes patients and their peers, clinical providers, municipal services, and social resources in the community.

And in an encouraging example of an ecological approach to health, Kaiser Permanente launched the public–private partnership Project Splash in the summer of 2006 to provide extended operating hours and free swim lessons at 41 public pools in Los Angeles. Kaiser’s goal was to increase physical activity in low-income areas, teach water safety, and reduce

2 | The Green Building Council



Source: U.S. Green Building Council, <http://www.usgbc.org/>.



chronic disease.¹¹ Kaiser's nationwide Thrive campaign is moving health out of the clinical environment, from hosting farmer's markets at Kaiser campuses to airing radio ads about stress reduction during morning and evening commute hours.

From Hippocrates' linking malaria with the environment to Kaiser Permanente's support for holistic approaches to health, ecological health literacy is a tool for shifting the responsibility for health outcomes from specialists to individuals and communities, by taking health out of the laboratory and clinic and framing it within the activities and decisions of daily life.

THE ROLE OF SOCIAL EPIDEMIOLOGY

As Dr. Len Syme, a founding figure in the field of social epidemiology, points out, 50 years of intense research have identified around 30 risk factors for heart disease, things like smoking, obesity, and lack of exercise. Yet together these risk factors explain less than half the heart disease that we encounter. What about the other half? As Syme himself puts it "... it may be that we've got the wrong model."¹²

For Syme and his colleagues that "other half" may be explained by social epidemiology. Syme's student (Sir) Michael Marmot's classic Whitehall studies, show how heart-disease risk is correlated as much to a range of social factors such as a person's control over their job conditions, the balance between effort and reward in the workplace, and the quantity and qualities of social contacts in one's life as it is to biomedical factors.¹³ Richard Levins puts it succinctly: "Our way of life makes us sick, and then we invest more in repairing the damage."

Levins sees us on "the cutting edge of a breakaway from the classical microbiological or single-factor epidemiology that has proven so vulnerable to surprises."¹⁴ His systems view rejects what he sees as "false dichotomies" between social/biological, physical/psychological, genetic/environmental, and lifestyle/environment, looking at the interrelations between factors rather than their relative weights. As the unit of evaluation, Levins looks at populations rather than individuals, emphasizing average differences and patterns of variability in health

3 | Kaiser's Operation Splash Campaign

Kaiser Permanente
Operation
SPLASH

Program Summary
Operation Splash is a public/private partnership between Kaiser Permanente and the City of Los Angeles Department of Recreation and Parks Aquatics Division. The goals of the City of Los Angeles blend well with the mission of Kaiser Permanente's Community Benefit Program, and the outcomes sought in the Community Health Initiative's Healthy Eating Active Living (HEAL) strategies.

HEAL seeks to measurably improve the health of communities by addressing neighborhood factors that help people to eat better and become more active.

The HEAL effort focuses on:

- environmental and social conditions having long-term effects on community health
- partnerships with public health agencies, schools and community-based organizations
- definitions of health that reach beyond traditional notions of disease and illness
- approaches that concentrate on defined geographic areas

Operation Splash was developed in accordance with Kaiser Permanente's HEAL focus on reducing obesity in the community by increasing opportunities for safe physical activity. A financial commitment of \$1.2 million has been made to the City of Los Angeles.

Source: Operation Splash, www.laparks.org/dos/aquatic/pdf/OpSplashFactSht.pdf.

4 | The Whitehall II Study of British Civil Servants

UCL DEPARTMENT OF EPIDEMIOLOGY AND PUBLIC HEALTH
Whitehall II Study

BACKGROUND
The Whitehall II study is a continuation of the Whitehall I study, which was conducted in 1967-74. The Whitehall I study showed that men in the lowest occupational grades were much more likely to die from coronary heart disease than men in the highest grades. The Whitehall II study was set up to determine what could be the social gradient in health and disease and to investigate what factors could be responsible for this.

OBJECTIVES
The Whitehall II study was designed to investigate the role of social factors in the development of cardiovascular disease. The study was designed to investigate the role of social factors in the development of cardiovascular disease. The study was designed to investigate the role of social factors in the development of cardiovascular disease.

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Source: University College London, <http://www.ucl.ac.uk/whitehallII/>.

outcomes. A key dichotomy is the proposition that health is either the product of individual responsibility, or is socially determined. Taken separately, each statement is false. But taken together, they are jointly true. Unfortunately, our current health policies tend to see each independently.

Eco-health literacy is in many ways the public's response to the failings Syme, Levins, and others have identified in the biomedical approach to health. The implications are not just a search for consumer-directed alternatives to our health delivery system, but a fundamental rethinking of how risk is perceived and managed in our society. As it becomes clear that health is as much due to external environmental factors as personal genetics behaviors and choices, insurance based on individual rather than social risk will be unsustainable.

The implications for the insurance and health care industries are obvious. But eco-health literacy is already having enormous impacts in consumer markets for goods and services, from food to household materials to electronics. Health is becoming a core value in all aspects of our daily activities, from the products we use, to the places we go, and a consciousness of sustainability in how we lead our lives.

CONSUMERS AND ECO-HEALTH LITERACY

As the institutional health delivery system shows itself increasingly unable to meet the health care needs of the world's citizens, consumers are developing ways of understanding health that are more personally empowering, more intuitive, and are better integrated with their everyday decisions and behaviors than the concept of health as described by the traditional biomedical model.

Consumers may be reluctant pioneers, forced by a fragmenting and dysfunctional health system to fend for themselves, but there are signs that they are adopting a more holistic, more nuanced, and ultimately perhaps a more accurate understanding of health as a product of complex interactions between the external environment, individual behavior, and inherited traits.

As health becomes a, or perhaps the, common value denominator for a spectrum of consumer decisions ranging from beauty to nutrition to consumer electronics to where one chooses to live, people are creating conscious as well as unconscious associations between health and the choices they are able to make in their lives. Some of these choices are intentional. But many choices are constrained by external factors—economic, social, cultural, and political. By looking at health as the product of overlapping networks of interactions, eco-health literacy provides both the means to unpack the connections and a way for individuals as well as providers to engage on multiple levels to manage and ultimately create more healthful choices and environments.



Center for Ecoliteracy <http://www.ecoliteracy.org/index.html>

Lime: Healthy Living with a Twist, <http://www.lime.com>

Revolution Health, <http://www.revolutionhealth.com>

Whitehall II Study, University College London, <http://www.ucl.ac.uk/whitehallII/>

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ENDNOTES

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Will ecological thinking
define a new health
literacy?



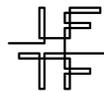
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