Institute for Alternative Futures

THE DRA PROJECT

Accelerating Disparity Reducing Advances

Most Important Disparity Reducing Advances in US Healthcare & Public Health

September 2006 Report 06-08

Most Important Disparity Reducing Advances in US Healthcare and Public Health

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This paper is part of the DRA Project. The DRA Project is sponsored with funds from the National Cancer Institute, the Agency for Health Care Research and Quality, the Centers for Disease Control and Prevention, the American Cancer Society, the University of Texas Medical Branch, and Florida Hospital. The Federal Funds from the National Cancer Institute, National Institutes of Health, were under Contract No. NO1-CO-12400 and those from the Agency for Health Research and Quality, were under Contract No. GS-10F-0322R.

Most Important Disparity Reducing Advances in US Healthcare and Public Health

EXECUTIVE SUMMARY

What are the "most important" disparity reducing advances in health care and public health in the US? Advances include community and environmental efforts, technology, individual and family focused efforts, prevention and treatment efforts by health care providers. Reviewing the literature in this field, particularly reports that consciously make recommendations on what is most important, this report provides three views in answer to the question of "most important".

1. The single most important strategy would be to prevent and reverse obesity in poor and marginalized populations.

2. The second view of the answer fills in the approaches relevant to accomplish this including approaches in the general social and economic environment (reducing poverty, ensuring meaningful employment with living wages, and education); reversing the obesogenic environment (promoting sustainable agriculture, safe, active living environments, and culturally appropriate social norms and diets); individual and family level approaches to food, physical activity and weight control; and health care approaches to pre-diabetes screening and early diagnosis, quality management of diabetes and obesity, including the chronic care model and appropriate financial incentives). (See Table 4 on page 22)

3. The third view of the most important disparity reducing advances considers it in relation to three high disparity diseases – heart disease, diabetes and cancer. All of the approaches from the second view above are important for each of the three diseases, along with the addition of tobacco and alcohol control, monitoring key personal measures (blood pressure, cholesterol, glucose), maintaining treatment regimens, simplifying compliance for all three diseases (for heart disease and diabetes this could include the use of poly pills). For heart disease access to CPR & Defibrillation and to Emergency Rooms is critical, and for cancer access to patient navigation is important. (See Table 5 on page 23).

These "most important" factors represent an informed reading of the key literature described in this report. It reflects judgment but not yet evidence. The DRA Project sets this out for discussion and refinement, and as a preliminary guide for areas in which to find disparity reducing advances which would be important to accelerate.

INTRODUCTION

This report considers the question of the "most important" disparity reducing advances in the US in health care and in public health. It does this in the context of existing literature and disparity reducing campaigns and efforts. It also considers the criteria that the DRA Project has developed.

A parallel memo, in light of the discussion here, the DRA Project Criteria, and the other issues unique to the project will address the question of the portfolio of efforts the DRA Project should pursue. Given criteria for the DRA Project in its search, can these be applied?

We would like to acknowledge the input of several experts interviewed for this paper. Some are DRA Project Partners – particularly Joyce Essien, David Nerenz, Larry Cohen, Ed Sondik, Wayne Giles and Liandris Liburd. Others we would like to acknowledge include Michael McGinnis, David Eddy, Dennis Andrulis, David Meltzer, Robert Hiatt, Steven Schoenbaum, and Tyler Norris.

The DRA Project is seeking to identify and accelerate disparity reducing advances. In considering the "most important" there are significant caveats:

- The state of knowledge is not adequate at this time to have evidence based answers
- But much thought, work, and commitment have been made to reducing health disparities, including major reports identifying what must be done
- Likewise modeling has begun that is moving toward being able to better understand the impact of activities on disparities and their reduction (especially the work of David Nerenz, Joyce Essien, and David Eddy and their colleagues)
- The DRA Project is focused on advances in health care and public health. There is a broad range of social determinants – particularly poverty, education, and employment which are among the most fundamental factors, but these are beyond the scope of the DRA project. Yet as we will see below, the boundaries of public health advances can be very broad, and health care can and should play a role at times in dealing with social factors.

Concepts and Definitions

There are definitional issues for this consideration of the "most important" disparity reducing advances for the DRA Project that shape our focus:

- **Health disparities** – Health disparities are those differences in health status among population groups which are avoidable and which are unfair or seen as unfair.

  For specific diseases this definition becomes more detailed, for cancer for example:

  > Disparities are determined and measured by three health statistics – incidence (the number of new cancers), mortality (the number of cancer deaths), and survival rates (length of survival following diagnosis of cancer). Health disparities occur when one group of people has a higher incidence or mortality rate than another, or when survival rates are less for one group than another. (NCI CRCHD)

The DRA Project recognizes that there will always be differences among individuals and among population groups – what is significant are those differences which are both avoidable and unfair or unjust. The DRA Project is a "futures project", considering the next 10 years. What conditions are avoidable and even more what is unfair or unjust or seen to be unfair and unjust are definitely moving targets.

- **Diffusion of advances and disparities** – advances in technology, health care and public health have varying diffusion curves – the time it takes from first use to widespread use. For technologies and some health care applications the affluent get them first, the poor last. In some cases this is a good thing. The quality of a new procedure or technology improves while its costs drop. In many high tech applications the rich do R&D for the poor who get more effectively functioning, lower cost advances some years after their first introduction. There are exceptions but this is the general trend. This is not necessarily unfair. It becomes unfair if lower income, marginalized or other population segments have greater prolonged morbidity, or die prematurely more than those who get the advance earlier. So there is and will continue to be diffusion processes for advances; seldom will virtually everyone get the advance at the same time. The challenge for the DRA Project is to identify and accelerate appropriate access and effective use of the right disparity reducing advances.

- **Population health gain and/or disparity reduction** – the DRA Project is focused on health gain and disparity reduction. Some advances are likely to generate both population gain and disparity reduction. Some, such as fluoride in water might disproportionately aid the poor. Better health care, access to health care, and other factors led to dramatically lower infant mortality dramatically reduced this factor for both whites and blacks. David Mechanic notes that the drop among both Whites and African Americans was significant from 1950 though 1998[1]

  Black infant mortality in 1950 was 43.9 deaths per thousand live births, 64 percent higher than the white rate of 26.8. By 1998, black infant mortality fell to 13.8 deaths per thousand compared with a white rate of 6.0, a disparity of 130 percent. In every five-year period since 1965, more black babies than white babies were saved per thousand live births. A comparison of deaths in 1950 and 1998 indicate a reduction of 20.8 deaths per thousand live births for whites and a 30.1 reduction for blacks, an absolute change that favored blacks 50 percent more than whites. Ironically, this occurred while the magnitude of disparities in infant mortality increased, with the exception (discussed later) of the period 1965–1975, when blacks gained relative to whites.

Time Horizons over the Next Decade – Accelerating Appropriately – the DRA Project is considering the next ten years, particularly what is likely to be deployed by 2016[2]. Action in the near term (next 1 to 3 years – 2006 to 2008 for the DRA Project) to promote disparity reducing advances could include encouraging the application in health care and public health of existing proven advances; or encouraging concept testing, pilot testing, or demonstration of advances that appear promising but are not yet proven. Advances which might become available in 4 to 10 years pose a dual challenge for targeting them as advances. We'll use the "three horizons of innovation" to consider these possibilities: 1 to 3 years, 4 to 6 years, and 7 to 10 years.

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[1] Mechanic, D. (2002) *Disadvantage,* Inequality and Social Policy. *Health Affairs.* 21:2:48-59, p. 50.

Consider the possibility of a blood test for identifying early stage cancer or precancer, particularly for cancers for which early diagnosis does not exist, were to be available in 8 to 12 years. The cancer blood test committee for the DRA Project has forecast this type of promise, along with the near impossibility of identifying the precise timing or winning approach, company or test. (See the September 2006 DRA Report on Cancer Blood Tests for early diagnosis) The contribution of the DRA Project in the near term is to monitor developments (watching particularly for faster than expected developments); network with payors, regulators, developers, and health care providers to ensure that the test can be used effectively by those servicing the poor and marginalized; work to ensure that the guidelines for reimbursement are clear, and that cultural and racial issues that might prevent its effective use are anticipated and dealt with.

DRA PROJECT CRITERIA FOR DISPARITY REDUCING ADVANCES

The DRA Project has set a high bar in terms of identifying the most important disparity reducing advances. Advances should meet the criteria below; with the most important being those which can make the largest difference in reducing health disparities.

1. Can make a very large, measurable difference in reducing health disparities
    a. Across multiple diseases/conditions or within a single disease
        i. Stimulates prevention
            1. by identifying pre-disease conditions or risks
            2. by enabling effective prevention
        ii. Enables earlier detection of the disease
        iii. Enables better, higher cost/benefit ratio treatment
        iv. Lowers morbidity and mortality
2. Cost-effective enough to be applied and reapplied, or be sustainable, as necessary
    a. For communities
    b. For the health care provider
    c. For the consumer/patient
    d. For the insurer/third party payers
    e. For society as a whole
3. Appropriate for multiple poor and marginalized populations
    a. Culturally, linguistically, age and gender appropriate
    b. Large scale applicability across populations
4. Encourages participation of individuals and key stakeholders
5. Can be communicated to decision-makers and the public
6. Can be realistically applied within the next 10 years

The DRA Project, in terms of making our selections added that the advances should meet the above criteria but also be ones that:

7. Can be effectively promoted or accelerated through the DRA Project Network.

Thus there will be some advances that score well on criteria 1 through 6, but may be beyond the focus or capacity of the DRA Project to make an effective contribution. This is discussed further in the DRA Project Portfolio memo.

DRA Project Scope

At the April 2006 DRA Partners Meeting, we identified specific promising advances to explore this summer. Our conversations since the April meeting have led us to add two advances to the list: tobacco control and the poly-pill -- the combination of aspirin, statin and an ace inhibitor used in preventing or slowing the progression of heart conditions and diabetes (with the addition of generic metformin). In addition DRA Partners are beginning to propose specific projects within one or more of the areas.

We are also clearer on advances that are necessary to reduce health disparities but are beyond the health care and public health focus of the DRA Project. Fundamentally important advances that are essential in reducing health disparities, but are broader than the DRA Project focus, include:

- The elimination of poverty
- Full employment, with livable wages
- Effective education through high school
- Universal access to effective health care

This report can and will include these, in the lists below, though, as the DRA Project Portfolio memo discusses, they won't be the direct focus of DRA activities.

Current and future advances

The DRA Project is considering advances that exist now, as well as advances that are likely over the next decade. There is often little or no evidence of the impact on health outcomes and disparities of existing advances. Evidence is neither available nor expected for advances that are not yet applied. Yet judgments are often developed of the potential impact of emerging advances. The DRA Project will consider both existing and emerging advances, using whatever relevant information is available. An ongoing contribution of the DRA Project will be to enable emerging advances to meet the DRA Project Criteria.

REVIEWING THE ACADEMIC AND NORMATIVE LITERATURE

This section considers key efforts to define health disparities in the US, the factors that contribute to them, and priorities for reducing them.

Disparities in Diseases, Risk Factors

There is much ongoing work in understanding and reducing health disparities, expressed variously in terms of disparities in diseases and in risk factors.

For example, HRSA has focused on the six health disparity areas. Initially identified by the Federal Government in 1998 as its health disparity priorities, these represent a major portion of the health problems in low income communities and people of color:

- Infant Mortality
- Cancer Screening and Management
- Cardiovascular Disease

- Diabetes
- HIV/AIDS
- Immunizations

Table 1 adds end stage renal disease and AIDS and gives the details of disparities across populations for these conditions. (Table 1 includes cancer but not cancer screening and management and immunizations).

Table 1: Health Disparities of Certain Conditions in Selected Populations from National Institutes of Health Strategic Plan 2002-2006

HEALTH DISPARITIES OF CERTAIN CONDITIONS IN SELECTED POPULATIONS					
HEALTH CONDITION AND SPECIFIC EXAMPLE	INDEX IN SELECTED POPULATIONS				
	WHITE	AFRICAN AMERICAN	HISPANIC or LATINO	ASIAN or PACIFIC ISLANDER	AMERICAN INDIAN or ALASKA NATIVE
Infant mortality rate per 1000 live births[1]	5.9	13.9	5.8	5.1	9.1
Cancer mortality rate per 100,000[2]	199.3	255.1	123.7	124.2	129.3
Lung Cancer - age adjusted death rate[3]	38.3	46.0	13.6	17.2	25.1
Female Breast Cancer age adjusted death rate	18.7	26.1	12.1	9.8	10.3
Coronary Heart Disease mortality rate per 100,000[2]	206	252	145	123	126
Stroke mortality rate per 100,000	58	80	39	51	38
Diabetes diagnosed rate per 100,000	36	74	61	DSU	DSU
End-Stage Renal Disease rate per million[2]	218	873	DNA	344	589
AIDS – diagnosed rate per 100,000[4]					
Female	2	48	13	1	5
Male	14	109	43	9	19

DSU = Data are statistically unreliable

DNA = Data have not been analyzed

[1] *Chartbook on Trends in the Health of Americans.* Excerpted from Health, United States 2002. Department of Health and Human Services. National Center for Health Statistics. DHHS Publication No. 1232-1. August 2002.

[2] *Healthy People 2010. Understanding and Improving Health (Second Edition).* Department of Health and Human Services. November 2000.

[3] Keppel, Kenneth, Jeffrey Pearcy and Diane Wagener. *Trends in Racial and Ethnic-Specific Rates for the Health Status Indicators: United States, 1990-98.* Statistical Notes. Number 23. January 2002, pgs. 1-16.

[4] HIV/AIDS Surveillance Report. *U.S. HIV and AIDS Cases Reported Through December 2001 Year-End Edition.* Slides 13 &14. (Available at URL: http://www.cdc.gov/hiv/graphics/surveill.htm)

[5] *National Vital Statistics Reports. 2002 Deaths: Leading Causes for 2000. Vol. 50:16:1-41.*

In addition to the areas identified above, other diseases or conditions with substantial health disparities, according to the June 2004 report *A State Policy Agenda to Eliminate Racial and Ethnic Health Disparities* sponsored by the Commonwealth Fund include:

- Alzheimer's Disease
- Asthma

- Chronic Lower Respiratory Disease
- Influenza/Pneumonia
- Obesity
- Tuberculosis

These lists begin to mix diseases, some health care factors (immunization and cancer screening and management) and a major risk factor, obesity. In terms of a more systematic consideration of risk factors, the Office of Minority Health at CDC identified its ten leading health indicators as targets of opportunity for generating health gains and reducing health disparities. These can be considered key risk factors to focus on for health disparity reduction:

- Physical Activity
- Overweight And Obesity
- Tobacco Use
- Substance Abuse
- Responsible Sexual Behavior
- Mental Health
- Injury And Violence
- Environmental Quality
- Immunization
- Access to Health Care

Modeling Efforts and Health Disparities

There are significant efforts to develop useable models for simulating or forecasting health developments that can be used to consider disparity reduction. These focus on health care and/or specific diseases.

In *Statistical, Clinical and Population Health Significance of Racial/Ethnic Disparities in Health Care*[3], by David Nerenz of the Henry Ford Health System and colleagues, the presentation of the results of a computer model simulating several potentially disparity reducing medical interventions. Funded by the Commonwealth Fund and the Health Resources and Services Administration (HRSA), and focusing on the increase in quality adjusted life years (QALYs), their model allows comparison of various approaches to improving health care. They modeled the difference in Quality Adjusted Life Years (QALYs) between African American, Hispanic and Caucasian populations. This model allows disparate outcomes to be linked to the overlapping effects of clinical treatment disparities and potentially allows policymakers to select the best clinical interventions to maximize health disparity reduction. The findings were clear:

> "Improving diabetes care, particularly in the areas of hypertension and lipid control, produced the largest expected gains. Improving the use of beta blockers or appropriate medications for asthma produced benefits that were markedly smaller, even under a set of optimistic assumptions about the effects of beta blockers on cardiac deaths. Improving glycemic control in diabetes

[3] Nerenz, D., et al., (2005) *Statistical, Clinical and Population Health Significance of Racial/Ethnic Disparities in Health Care.*

> produced expected benefits that were an order of magnitude smaller than those for the other diabetes quality dimensions, and improvements in mammography yielded the smallest potential benefits, even under a set of optimistic assumptions about the cancer incidence rate and number of cases to be detected at earlier stages through mammography."[4]

The Nerenz model is one of the first to identify disparity reductions. Other promising models are being developed that are likely to turn to a focus on disparity reduction after they are tested for overall health impacts.

DRA Partner Joyce Essien and the Sustainability Institute are doing major modeling efforts on chronic diseases for CDC. This model is based on a sophisticated systems dynamics framework of assumptions and generates empirical estimates of likely prevalence that closely correlate to historical data. Initially focused on diabetes, the model has deliberately been made adaptable for use with other chronic diseases, including obesity. However, as a means to simplicity, the framework explicitly does not disaggregate the population into demographic categories of race or ethnicity for more detailed population studies.

David Eddy and his colleagues have built a model called Archimedes creates virtual individual humans and virtual cohorts that allow him to test interventions across several conditions. Eddy validates his model by testing it against the results of clinical trials that have been conducted.[5] He has done extensive work for the American Diabetes Association and the American Cancer Society. These results should be available in the Fall of 2006. In an interview for the DRA, Project Eddy agreed to review and comment on the DRA Project targeting.

Effective Health Care and Disparities

Health care is a factor in disparities – both because some Americans don't have access and because those who do, often people of color, don't receive equally effective health care.

In the US in 2005 46.6 million or 15.9% of the population lacked health insurance at some point of the year.[6] Disparities among populations groups were significant –

Total US Populations	15.9%
Non-Hispanic whites –	11.3%
Blacks	19.6%
Asians	17.9%
Hispanics	32.7%
American Indians/Native Alaskans	29.9%
Native Hawaiians & Pacific Islanders	21.8%

But even for those with access to care there are disparities. The IOM report Unequal Treatment stated that:[7]

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[4] Ibid.
[5] David Eddy, http://www.archimedesmodel.com/archimedes.htm
[6] US Census 2005 data http://www.census.gov/Press-Release/www/releases/archives/income_wealth/007419.html
[7] Unequal Treatment http://newton.nap.edu/execsumm_pdf/10260.pdf

"Evidence of racial and ethnic disparities in healthcare is, with few exceptions, remarkably consistent across a range of illnesses and healthcare services. These disparities are associated with socioeconomic differences and tend to diminish significantly, and in a few cases, disappear altogether when socioeconomic factors are controlled. The majority of studies, however, find that racial and ethnic disparities remain even after adjustment for socioeconomic differences and other healthcare access related factors."

The report identifies a range of factors among health care providers, systems, and patients that help to explain these differences and sets out an agenda that includes greater sensitivity and cultural awareness on the part of clinicians and generally increasing the quality of care, particularly evidence based practice.

Health Determinants and Social Determinants of Health

What are the determinants of health and how do they related to health disparities? This section will review some of what is known about the larger determinants of health.

At a broad level McGinnis, Knickman and others have argued that the factors beyond health care are associated with far greater influence in mortality when looked at over the population's life course (see Table 2 on next page).

If these are relative contributors to variation in mortality and morbidity, is there a parallel relationship to health disparities. McGinnis acknowledges that this is an unknown. But there are many that argue that poor and marginalized populations have less freedom to act, to change their behaviors. Implicitly the 15% estimate for the social environment in the 2002 column below would be higher for the poor, particularly to the extent that this includes factors such as employment, education, safe neighborhoods, and access to affordable healthy foods. This argument is made directly by those focused on the social determinants of health.

Table 2: Determinants of Health

Determinants of Health

Relative importance of factors shaping health
(Premature Mortality)

	1993	2002
Behavior	50%	40%
Environment	20%	
Social		15%
Physical		5%
Genes	20%	30%
Healthcare	10%	10%

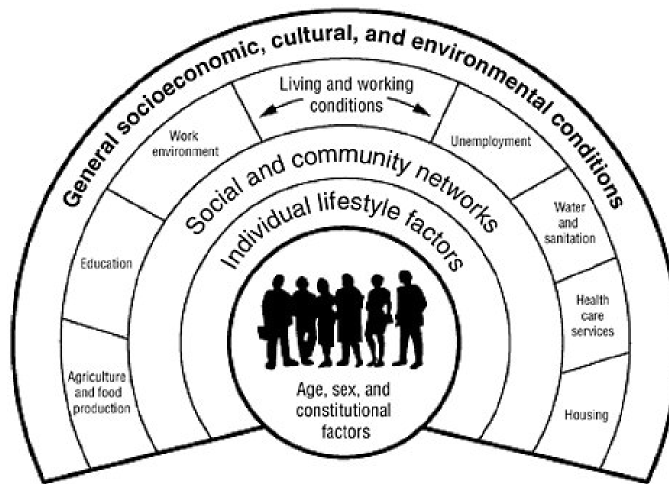
Source: 1993 – McGinnis and Foege, JAMA, 1993, 270, 2207-2212;
2002 - McGinnis, Russo, Knickman, 2002, Health Affairs, 21,3,83

Social Determinants and Health

The Institute of Medicine has used the chart below to describe a broad range of social determinants of health.

Figure 1: Health Determinants

Health Determinants



Reference: Institute of Medicine. (2003). The Future of the Public's Health in the 21st Century. Washington, D.C.: National Academies Press.
Original source: Dahlgren G, Whitehead M. 1991. Policies and Strategies to Promote Social Equity in Health. Stockholm, Sweden: Institute for Futures Studies.

WHO's Commission on Social Determinants of Health examines a similarly broad range of social factors, including water, sanitation, and food production. The Commission is building global networks to adjust these social determinants. http://www.who.int/social_determinants/en/

Likewise, the report *Health for All*, by The California Campaign to Eliminate Racial and Ethnic Disparities in Health using a sector approach, identifies eight broad sources of health disparities:

1. Housing
2. Education
3. Labor
4. Economics
5. Technology
6. Criminal Justice
7. Transportation
8. Environmental

The Prevention Institute, which played a major role in the writing the Health for All report, has prepared a report on community health approaches for the DRA Project. In their report Prevention Institute identifies 13 community based factors underlying health disparities:[8]

Equitable Opportunity Factors
- Racial justice
- Jobs and local ownership
- Education

People Factors
- Social networks and trust
- Participation & willingness to act for the common good
- Acceptable behaviors and attitudes

Place Factors
- What's sold & how its promoted
- Look, feel & safety
- Parks & open space
- Getting around
- Housing
- Air, water & soil
- Arts & culture

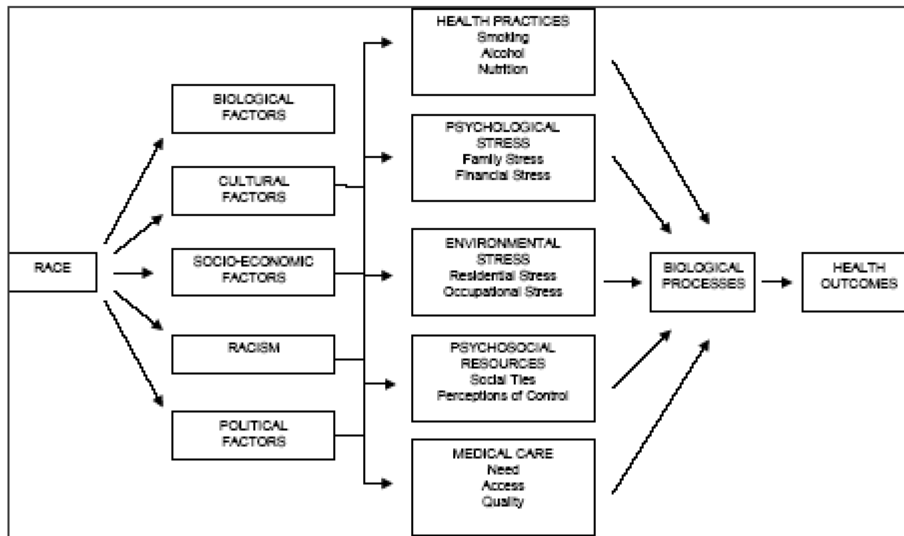
The report argues for developing comprehensive, interdisciplinary approaches, considering topics that integrate several of the 13 above. It identifies areas to begin with:
- The built environment
- Sustainable agriculture
- Economic development
- Social norms change
- Community-based participatory efforts

In both the IOM Unequal Treatment Report, and the Prevention Institute Report, race or racism places a role in explaining health disparities. Likewise NIH's "Strategic Research Plan to Reduce and Ultimately Eliminate Health Disparities" examines disparities from a racial perspective. NIH includes a chart developed by King and Williams which focuses on the relationship between race and health. The chart, Figure 2 below, includes a broad range of important factors to create a framework for understanding the relationship between race and health.

[8] The Prevention Institute, "The Imperative of Reducing Health Disparities through Prevention: Challenges, Implications, and Opportunities" August 2006, for the Institute for Alternative Futures, DRA Project

Figure 2: A Framework for Understanding the Relationship Between Race and Health

A Framework for Understanding the Relationship Between Race and Health[1]



[1] *King G. and William D.R., 1995. Race and Health: A multidimensional approach to African American Health. In: Amick BC, Levine S, Tarlov AR, Walsh DC, eds. Society and Health: New York: Oxford University Press (Taken from Workshop Summary: Pharmacokinetics and Drug Interactions in the Elderly, National Academy Press*

What to do about health disparities

While a number of evaluations of health disparity reducing measures have been conducted, there are no conclusive answers to the question of what approaches are likely to have the most sizeable impact. There are no clear and undisputed winners.

Still, a number of studies have attempted to recommend precedents, strategies, ideas or approaches that seem to show a great deal of promise. Below is a collection of several of the most prominent of these recommendations. This diverse group of "winning solutions" has been arrived at from a number of very different perspectives and, as might be expected, they often conceive of the issue in different ways.

Recommended Policy Options

A through review of existing health disparity reduction programs financed by the Commonwealth Fund, *A State Policy Agenda to Eliminate Racial and Ethnic Health Disparities*[9], is an appropriate starting point. This analysis divides its menu of possible approaches into programs targeting infrastructure, management and capacity and those targeting specific health conditions.

At the programmatic level, the report recommends the enhancement of cultural and linguistic competency programs in healthcare settings, expansion in the statewide number and capacity of

[9] McDonough, *et al*. (2004) A State Policy Agenda to Eliminate Racial and Ethnic Health Disparities. *The Commonwealth Fund.* June 2004. Retrieved August 8, 2006 from: http://www.cmwf.org/programs/minority/mcdonough_statepolicyagenda_746.pdf

community health centers and funding for minority health offices. Insurance-based approaches include greater assistance to minority elderly in applying for the full Medicare and Medicaid benefits for which they are eligible and expanded state Medicaid insurance programs. Data collection is encouraged both within healthcare settings and within businesses as a prerequisite for state contract work. Workforce development programs designed to foster a more diverse workforce are also recommended.

The specific health conditions profiled are based on documented health disparity levels and parallel the findings of a number of other reviews. Health approaches singled out are those that address asthma, oral health, diabetes, cardiovascular disease, HIV/AIDS, immunization, mental health, immunization, injury prevention, infant mortality, cancer, obesity, physical activity and tobacco use. While several programs are identified within each of the approach areas outlined in the *Policy Agenda* review, researchers cite a lack of consistent data collection and lament their inability to develop an evidence-based system for prioritizing these approaches.

It is hardly surprising that this comprehensive review has been influential within policy circles and has served as the template for a subsequent study administered by the University of Delaware[10]. While conducted two years after the initial Commonwealth Fund report, this analysis too found that a paucity of data continued to stand in the way of effective prioritization.

A similar survey of health disparities can be found in *Health for All,* the outline of a California health disparity reduction strategy mentioned above[11]. Philosophically, this report expands its scope beyond the healthcare system per se, positing a broader array of community factors, e.g. high school graduation rates, likely to contribute to health disparities. From this, the report defines two specific statewide goals and a number of stakeholder recommendations. The two goals for California's 1) Preventing the development of illness and injury by fostering healthy behaviors, healthy community environments, and institutional support of good health outcomes and 2) Reducing the severity of illness and injury by providing high-quality medical care to all.

Winning recommendations in this context are organized by sector: health care, community, government and business.

Within the health care sector, the report recommends:

- diverse recruitment,
- cultural and linguistic competence,
- the integration of prevention, screening and health education,
- the provision of mental health services and a stronger system of referrals, as well as
- advocacy and role-model behaviors from health professionals.

Greater involvement for community-based organizations is advocated as is the role of schools, where health education, nutritious food and physical activity programs are deemed promising.

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[10] Jacobson, E., McClosky, S., Kennedy, E., Sloan, M. (2004) *Summary of Promising Programs to Eliminate Racial and Ethnic Health Disparities*. The Institute for Public Administration at the University of Delaware.
[11] The California Campaign to Eliminate Racial and Ethnic Disparities in Health. (2003) *Health for All: California's Strategic Approach to Eliminating Racial and Ethnic Health Disparities.*

Business participation, too, is encouraged with working conditions, the provision of health insurance, community investment and job creation singled out.

Government-level interventions highlighted include investment in community infrastructure and services, the support of robust data collection and regulatory policies designed to improve the livability of environments with high health disparity levels.

In a similar vein, the *Alameda County Health Disparities Report*[12] delineates its recommendations along several known determinants of health including elements such as social status, racism, housing quality and community cohesion. After a review of promising programs very similar to the above studies, the report goes on to make specific recommendations and to suggest potential strategies to accomplish each of these.

Relevant recommendations include

1) Creation and implementation of healthy public policy, particularly in areas that are not explicitly health-focused. The specific strategies put forward to achieve this are conducting health impact assessments similar to those used in Europe and Canada and supporting existing programs that promote health.

2) Improving neighborhood living conditions by improving access to nutritious food, improving neighborhood safety and improving access to safe affordable housing.

3) Implementation of population-level prevention by shifting the paradigm from individual-level treatment to population level prevention, and

4) Strengthening existing community capacity for reducing health disparities.

Understanding Health Disparities from a Child Health Perspective

A different sort of causal model is used by the National Institute of Child Health and Human Development (NICHD) in their treatment of this issue in *Health Disparities: Bridging the Gap*[13]. In this case, researchers put forth a lifecycle model of disease in which the ultimate causes of health conditions might be traced far back in time. As might be expected, the winning interventions identified using this approach heavily favors programs aimed at children and adolescents.

NICHD puts forward its recommendations as both a policy and a research agenda, arguing that fully understanding the mechanisms that cause health disparities is key to addressing them. Areas singled out are

- infant and maternal morbidity and mortality,
- reproductive health and family planning,
- HIV/AIDS programs targeting women and teens,
- addressing fetal programming as a root cause of disparities in disease and growth,

[12] Alameda County Public Health Department. (2002) *A Framework for Change: Reducing Health Disparities in Alameda County*.
[13] National Institute of Child Health and Human Development (2000) *Health Disparities: Bridging the Gap.* U.S. Department of Health and Human Services.

- early antecedents (including poverty and other family and community factors) of child well-being and adverse behaviors,
- cognitive and behavioral development including school readiness,
- restoring function and preventing disability,
- training and career development, and
- outreach to communities and their institutions.

The lifecycle approach utilized by the NICHD parallels the conclusion of the *Acheson Report*[14] a whitepaper outlining a strategic approach to reducing health disparities in the UK. Here, the investigating commission recommended a strategy of targeting health programs at families with children who are living in poverty.

Similarly, a review by the National Academy of State Health Policy confining itself to state approaches to childhood obesity[15] found promise in the prospect of reducing health disparities by developing messages and interventions specifically directed toward audiences with high rates of health disparities, recognizing the potential of using state food assistance programs to address obesity, and taking advantage of the opportunity to reach high risk populations based on school demographics.

Physical Activity Focused Recommendations

While the above reports have made recommendations on the basis of a comprehensive policy-level examination of health disparities, a number of more tightly focused studies make suggestions that are nonetheless likely to be valuable contributions to the search for "winners". The Robert Wood Johnson provided major multi-year funding to the Active Living by Design program[16]. It is increasingly clear that the lack of physical activity and corresponding energy balance is a major factor in obesity and contributes to several diseases. RWJF also funded the *Active Living Diversity Project*[17], to consider the particular needs and challenges of developing effective programs to increase physical activity in African American, Latino, and Native American Communities. On the basis of this investigation the report urges that future programs motivate, rather than simply educating participants, that they acknowledge excuses and provide solutions, that they provide environments in which recommendations can be adopted, they involve the community and that they establish consistent evaluation tools.

Multisectoral and Multistrategy Approaches

A 2002 PolicyLink report, *Reducing Health Disparities through Focus on Communities*[18], distills a set of principles for reducing health disparities at a community level, including the utilization of multisector and multistrategy approaches, tailoring community-driven interventions to the specific community context, better understanding the role of race and ethnicity in building healthy communities, and strengthening and building upon existing community assets for the long term.

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[14] *Acheson Report: Independent Enquiry into Inequalities in Health* (1998)
[15] Rosenthal, J., Chang, D. (2004) *State Approaches to Childhood Obesity: A Snapshot of Promising Practices and Lessons Learned.*
[16] See http://www.activelivingbydesign.org/
[17] The Robert Wood Johnson Foundation. (2004) *Active Living Diversity Project: A Look at Physical Activity and Healthy Eating in African American, Latino and Native American Communities.*
[18] PolicyLink (2002) *Reducing Health Disparities through Focus on Communities*.

On the basis of these principles, the PolicyLink report goes on to recommend the following approaches to policy development. Successful action, it argues, should 1)use a community based approach when addressing place specific health programs 2)invest in coalition building and advocacy 3)bring greater perspective to knowledge development and research 4)improve data collection 5)utilize community-driven assessments 6)use local residents to enhance community outreach 7)promote the use of Health Impact Assessments 8) create better linkages between regional health policies and 9)reduce the concentration of poverty by promoting greater racial and economic diversity.

In their *Socioeconomic Disparities in Health: Pathways and Policies*[19], Nancy Adler and Katherine Newman look for upstream "actual determinants" of health disparities. Their investigation highlights the importance of socioeconomic status in the creation of health disparities and prompts them to recommend interventions targeting education, labor market policies, environmental exposures, social isolation, tobacco use and access to healthcare.

Table 3 on the next page compares four of the broad sources reviewed here.

[19] Adler, N. Newman, K. (2002) Socioeconomic Disparities in Health: Pathways and Policies. *Health Affairs.* 21:2:60-76

Table 3: **Comparing reviews of disparity reduction**

	California Campaign: Health for All	**Office of Minority Health Healthy People 2010**	**State Policy Agenda to Eliminate Disparities**	**Prevention Institute: The Imperative of Reducing Health Disparities Through Prevention**
Diseases				
Alzheimer's Disease			☑	
Asthma	☑		☑	☑
Cancer	☑	☑	☑	☑
Chronic Lower Respiratory Disease			☑	
Diabetes	☑	☑	☑	☑
Cardiovascular Diseases	☑	☑	☑	☑
HIV/AIDS	☑	☑	☑	☑
Infant Mortality	☑	☑	☑	☑
Influenza/Pneumonia		☑	☑	
Obesity			☑	
Stroke			☑	☑
Tuberculosis			☑	
Risk Factors				
Physical Activity	☑	☑		☑
Overweight And Obesity		☑		
Tobacco Use	☑	☑		☑
Substance Abuse	☑	☑		☑
Responsible Sexual Behavior	☑	☑		☑
Mental Health	☑	☑		☑
Injury And Violence		☑		☑
Environmental Quality		☑		☑
Immunization		☑		
Access to Health Care		☑		☑
Social & Economic Factors				
Housing	☑			☑
Education	☑			☑
Labor	☑			☑
Economics	☑	☑		☑
Technology	☑			
Criminal Justice	☑			☑
Transportation	☑			
Environmental	☑			☑
Strategies				
Data Collection			☑	
Program Evaluation			☑	
Cultural and Language Standards		☑	☑	
Minority Healthcare Workforce			☑	
Screening and Access			☑	
Stakeholder Involvement			☑	

IDENTIFYING THE "MOST IMPORTANT" DISPARITY REDUCING ADVANCES

Given this review of our understanding of disparities, what would lead to the greatest reduction in current and future health disparities in the US? What would be the "most important" disparity reducing advances? There is no simple, single answer. We are getting closer to a time when we can say, in general for the US, based on measures and models, what would yield the greatest reduction in disparities. It is likely that the modeling by Eddy and his colleagues, Essien and her colleagues, and Nerenz, will evolve to be useful for this – but they are not ready yet. But, as noted above, high disparity diseases have been identified, as have a wide range of recommended actions to reduce disparities. As part of our effort to identify the "most important", here we will posit three different views of the answer. The first view of the answer picks a single strategy. Second is a listing of the approaches that would support achieving that strategy. Third we consider a similar list of disparity reducing approaches for three major high disparity diseases: heart disease, diabetes, and cancer.

First View: The Overall Winner - Preventing or reversing obesity in low income and marginalized populations

Given the current and emerging disparities and the contribution that obesity makes to loss of health and to health disparities across key diseases, preventing or reversing obesity in low income and underserved populations is the most important strategy to pursue to reduce health disparities in the U.S.

Second View - Approaches to preventing and reversing obesity

What might "preventing or reducing obesity in low income and marginalized populations" mean in terms of more detailed approaches? Table 4 below lists more detailed approaches to reducing obesity. The left column looks at different levels for action: The Social and Economic Environment, Individual and Family, and Health Care. The center column identifies the key focus for action in the various levels for preventing or reversing obesity in low income and minority populations. The right column identifies specific strategies or approaches.

Third View - Winning Approaches in Reducing Disparities in Heart Disease, Diabetes and Cancer

Let's refocus and ask: what are leading approaches to reducing disparities in three major high-disparity diseases – heart disease, diabetes and cancer? These diseases are leading causes of death and morbidity and have a high degree of health disparities. Larger social determinants (poverty, education and employment), access to health care, individual and family factors, and options through the health care system all play an important role in disparities for these three diseases. Table 5 highlights winning disparity reducing advances for these three diseases.

Table 4: Potential Approaches to Preventing or Reversing Obesity in Low Income and Marginalized Populations

Preventing or Reversing Obesity in Low Income and Minority Populations		
Levels of Action	**Focus for Action**	**Specific Approaches/Tactics**
General Social and Economic Environment	Poverty	Income Support; Payment for Healthy Food
	Employment	Meaningful Jobs w/ Living Wages
		Workplace Support for Healthy Eating
	Education	Fostering Literacy; Including Health Literacy
Reversing the Obesogenic Environment	Sustainable Agriculture	Healthier Food Avalability, Marketing
	Safe, Active Living Environments	Active Living Programs
	Culturally Appropriate, Healthy Alternatives	Social Norm Changes and Healthier Diets
Individual/Family	Food and Physical Activity Options	
	Weight Control	
Healthcare	Pre-Diabetes Screening & Early Diagnosis	Optimize Current Screening
		Foster Easier Pre-Diabetes Testing -Highlight/Promote pre-diabetes focused programs, e.g. HRSA
	Quality Primary and Specialty Care	Including preventing and managing obesity
	Chronic Care Model	Financial Incentives
		Promote Lessons From the HRSA Collaboratives
		Have Physicians and Other Providers Reinforce Physical Activity/Nutrition

Table 5: Winning Disparity Reducing Advances for Heart Disease, Diabetes and Cancer

Winning Disparity Reducing Advances: Heart Disease, Diabetes and Cancer			
	Heart Disease	**Diabetes**	**Cancer**
Social and Economic Environment	Reduce or Eliminate Poverty	Reduce or Eliminate Poverty	Reduce or Eliminate Poverty
	Education	Education	Education
	Employment	Employment	Employment
	Healthcare Access	Healthcare Access	Healthcare Access
	Obesogenic Environment Reversal	Obesogenic Environment Reversal	Obesogenic Environment Reversal
	Sustainable Agriculture	Sustainable Agriculture	Appropriate Food Choices
	Safe, Active Living Environments	Safe, Active Living Environments	Support for Physical Activities
	Culturally Appropriate Healthy Diet Alternatives	Culturally Appropriate Healthy Diet Alternatives	Culturally Appropriate Healthy Diet Alternatives
	Tobacco Control	Tobacco Control	Tobacco Control
Individual and Family	Family Cohesion		
	Stress		
	Emotional Support		
	Food/Diet	Food/Diet	Food/Diet
	Physical Activity	Physical Activity	Physical Activity
	Weight Control	Weight Control	Weight Control
	Tobacco Control	Tobacco Control	Tobacco Control
	Alcohol Control		Alcohol Control
	Monitoring Blood Pressure & Cholesterol	Monitoring Glucose Level	
	Maintaining Treatment Regimen	Maintaining Treatment Regimen	Maintaining Treatment Regimen
Healthcare	Access to Care; reimbursement for meds and supplies at reasonable cost	Access to Care; reimbursement for meds and supplies at reasonable cost	Access to Care; reimbursement for meds and supplies at reasonable cost
	Early Diagnosis	Early Diagnosis	Early Diagnosis
	Quality Primary and Specialty Care	Quality Primary and Specialty Care	Quality Cancer Care
	Chronic Care Model	Chronic Care Model	Chronic Care Model
	Simplifying Compliance	Simplifying Compliance	Simplifying Compliance
	-Polypill	-Polypill	
	Emergency Room Access		Patient Navigation
	CPR & Defibrillation		

IMPLICATIONS & RECOMMENDATIONS FOR THE DRA PROJECT

These are "most important" disparity reducing advances identified by leading reports. Considering the various factors involved, we have posited preventing and reversing obesity in low income and marginalized populations as a most important strategy. And we have identified approaches related to reducing disparities in heart disease, diabetes and cancer. We don't know these answers with certainty. There is not an adequate evidence base on reducing health disparities. Yet a commitment to reduce disparities requires effort, guided by what we know and what we judge to be important, in the absences of confirmed evidence.

For the DRA Project this review of the most important disparity reducing advances leads to these recommendations:

- In choosing efforts the DRA Project should consider the areas identified here, along with its other criteria, to identify efforts that can make a difference. (see the DRA Project "Portfolio Memo")

- Encourage the applications of emerging models to the issues of disparity reduction; use the results.

- Through the DRA Project, focus on the tension between individual behavior change and broader views of social determinants or systems perspectives in developing a range of efforts.

    - Consider a meeting of modelers and those taking a social determinants or systems view to consider if the models can make a contribution to understanding the significance of the broader views.

    - Consider the appropriate roles of health care providers and systems in dealing with the social determinants of health

- The DRA Project should develop and maintain a list of forecasts or factors of change over the next decade that would alter or reinforce the list of most important factors.

Appendix A: DRA Project List July 21, 2006

The DRA Project began with six broad areas of advances for reducing health disparities. DRA Partners explored and adjusted these at the April 6 meeting. These have been amended as the research has continued. This expanded list is presented below:

A. Community health and prevention approaches will support healthy families

A1. Reinforcing of higher physical activity levels, safe, walkable communities
A2. Providing incentives for healthy behaviors
A3. Coupling health and healthy living with entertainment
A4. Encouraging healthy cultural alternatives for nutrition
A5. Creating healthy eating programs in schools, vending machines and fast food restaurants
A6. Encouraging community health and prevention through community workers (e.g. barbers & hairdressers)
A7. Implementing church based screening, and prevention programs
A8. Using worksites as centers for health outreach
A9. Implementing health education and literacy programs in schools and low income communities
A10. Education on and prevention of mental health disorders
A11. Removing pollutants and violence from neighborhood environment
A12. Addressing environmental justice issues
A13. Tobacco Control
A14. Community and National Biomonitoring to Support Upstream Change

B. Better quality health care -- More effective, caring treatment

B1. Improving access to care including clinical trials
B2. Effectively applying the Chronic Care Model
B3. Creating continuity of care across providers
B4. Effectively targeted health information integrated into care delivery systems
B5. Providing effective preventive services
B6. Implementing effective patient centered care
B7. Leveraging telemedicine, particularly for rural areas, including both access and appropriate computer/technology skills for patients
B8. Redesigning clinics and waiting rooms with healthier designs and creating entertaining learning spaces
B9. Deploying electronic medical records and personal electronic health records to low income patients and their providers
B10. Enhanced Consumer Support for Navigation of Health Care
B11. Expanding the use of parish nurses
B12. Using the poly pill (generic statin, metformin, ACE inhibitor, and aspirin) to prevent or slow the progression of heart disease and diabetes.

C. More widespread and effective use of complementary and alternative approaches to health

C1. Identify and use CAM modalities with proven health outcomes

C2. Identify and use CAM modalities that are cost effective, especially for conditions that have high disparities among racial, ethnic or socioeconomic groups
C3. Identify and promote CAM modalities that already exist and are effective in racial and ethnic communities
C4. Incorporating and honoring the deeper wisdom of cultural traditions
C5. Leveraging the power of strong belief systems in reinforcing immune systems
C6. Identify how conventional clinicians can best use CAM or refer patients to CAM providers

D. The use of risk identification to identify communities and individuals

Creating and using better, cost effective, and culturally appropriate identification of personal and community risk factors. These risk factors can be modified to improve health or to target, prioritize screening which can be modified to improve health. Some areas of risk identification include:

D1. Risks based on Genetics
D2. Risks based on Socioeconomic status
D3. Risks based on the physical Environment
D4. Risks based on Personal Choices

E. Biomonitoring/Bioinformatics to treat and prevent disease

E1. Cancer blood tests that identify the early stages of cancer, that are inexpensive, easily performed, provide rapid results for the high volume cancers (e.g. breast, lung, colon, prostate)
E2. Cancer blood tests that identify difficult to diagnose cancers (e.g. ovarian, liver, pancreas)
E3. Cancer blood tests that identify precancer conditions or early stage cancers, for high volume cancers, or for those not adequately screened for or difficult to diagnose.
E4. Continuous, passive biomonitoring with results sent to the patient's health record.
E5. Software programs to interpret biomonitoring information so that the individual and health providers can make better health decisions.
E6. Use common, popular platforms, particularly the cell phone, to link biomonitoring data, electronic medical records, health care providers and reinforcement for the individual/patient.

F. Behavior coaching/reinforcement will advance through new knowledge and technologies

F1. Motivating change in groups through cultural and community technologies
F2. Identify and provide support for those with mental health and substance abuse problems
F3. Using high impact consumer products (e.g. games, cell phones, ipods) as platforms for health motivation and hubs for health information
F4. Personal digital health coach or "digital doctor" to provide ongoing communication and reinforcement, motivating personal change processes using personal health goals with feedback loops (e.g. weight control and exercise)
F5. Advanced communication tools, including low cost cell phones, allowing audio and video conference calls, and internet access to reinforce healthy behavior, physical activity, good nutrition through feedback; coordinate the efforts of health care providers, health coaches or lay health advisers.