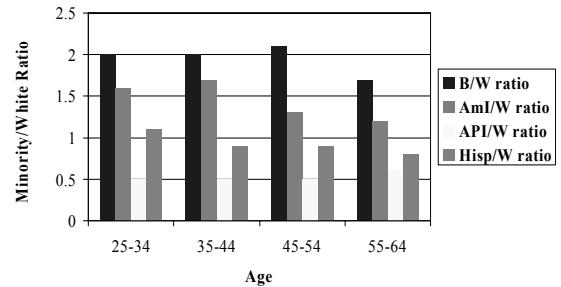


Social Inequalities in Health: Patterns, Causes, Interventions

David R. Williams, Ph.D., MPH
Harold W. Cruse Collegiate Professor of
Sociology, Professor of Epidemiology,
Research Professor
Institute for Social Research
University of Michigan

1

There Is a Racial Gap in Health in Mid Life: Minority/White Mortality Ratios, 2000



Key Fact #1

Racial/Ethnic differences in health are large

2

Immigration and Health

Immigrants of all racial/ethnic groups enjoy better health (adult & infant mortality) than their native-born counterparts.

As length of residence in the U.S. increases, the health of immigrants declines.

For example, infant and adult mortality, low birth weight, poor health practices, & multiple indicators of morbidity increase for Latinos with length of stay in the U.S.

Vega & Amaro 1994; Finch et al. 2002

5

Racial Disparities in Health

- In 2001, African Americans had higher death rates than Whites for 12 of the 15 leading causes of death.
- Blacks and American Indians have higher age-specific mortality rates than Whites from birth through the retirement years.
- The death rate for Blacks today is equivalent to that of Whites some 30 years ago.
- Hispanics have higher death rates than whites for diabetes, hypertension, liver cirrhosis & homicide

3

Research Challenge

What interventions, if any, can reverse the downward health trajectory of immigrants with length of stay in the U.S.?

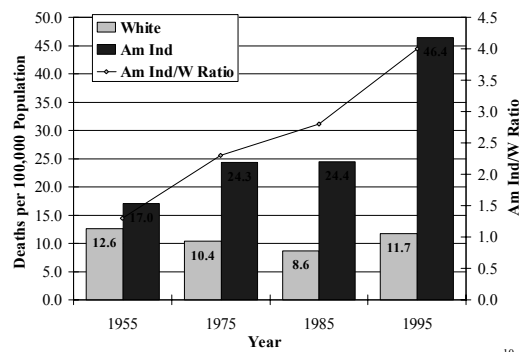
6

Key Fact #2

In the last 50 years, although overall health has improved, racial differences in health are unchanged or have widened.

7

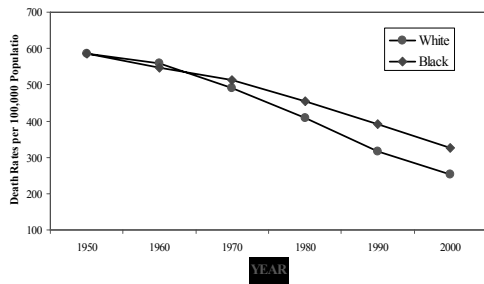
Diabetes Death Rates 1955-1995



Source: Indian Health Service; Trends in Indian Health 1998-99

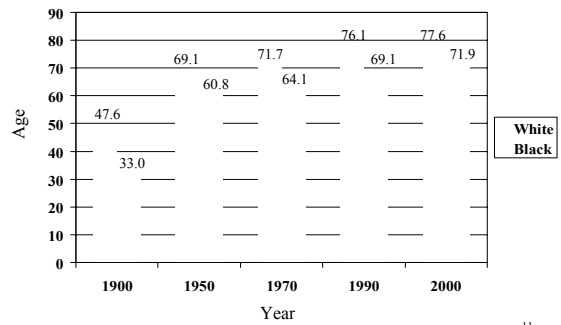
10

Age-Adjusted Heart Disease Death Rates for Blacks and Whites, 1950-2000



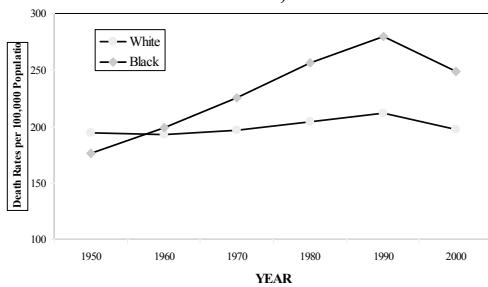
8

Life Expectancy at Birth, 1900-2000



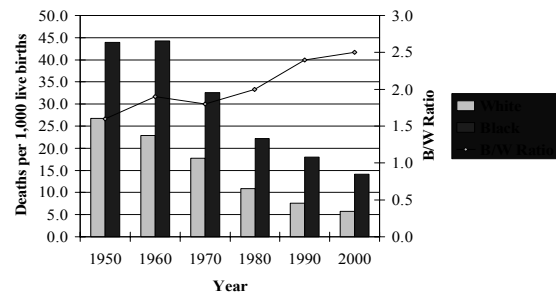
11

Age-Adjusted Cancer Death Rates for Blacks and Whites, 1950-2000



9

Infant Mortality Rates, 1950-2000



12

Excess Deaths for Black Population

Year	Avg.No/Day	Avg.No/Year
1940	183	66,900
1950	144	52,700
1960	139	50,900
1970	198	72,200
1980	221	80,600
1990	285	103,900
1998	265	96,800

TOTAL Premature Deaths, 1940-1999 = 4,272,000

Levine et al. 2001

13

The Limits of Biology

- Our racial categories predate scientific theories of genetics and modern genetic studies and do not capture well the distribution of genetic characteristics across populations
- Groups with similar physical characteristics can be very different genetically
- “The fact that we know what race we belong to tells us more about our society than our biological makeup”¹
- “Race is a pigment of our imagination”²
- We need to understand how risk factors/resources in the social/physical environment interact with biological predispositions to affect health

¹Krieger and Bassett, 1986; ²Ruben Rumbaut

16

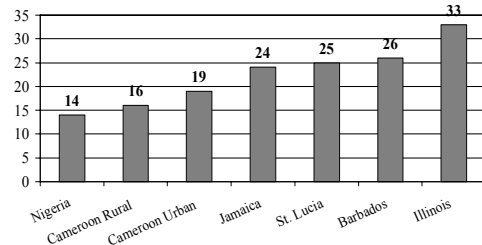
The Persistence of Racial Disparities

- We have FAILED!
- In spite of a War on Poverty, a Civil Rights revolution, Medicare, Medicaid, the Hill-Burton Act, dramatic advances in medical research and technology, we have made little progress in reducing the elevated death rates of blacks relative to whites.

Source: NCHS 2000; Deaths per 1,000 population

14

Hypertension, 7 West African Origin Groups (%)



Source: International Collaborative Study of Hypertension in Blacks, 1995

17

Key Fact #3

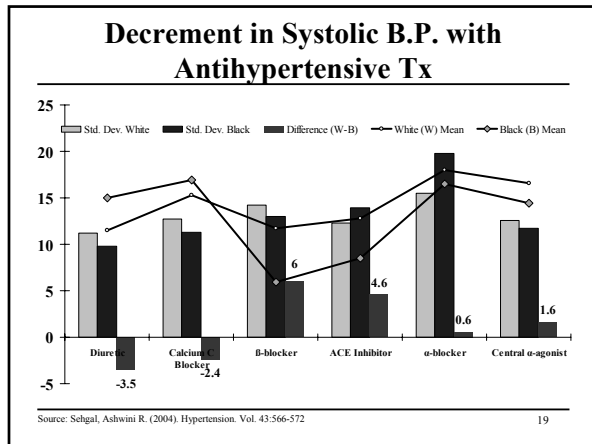
Racial differences in health are not primarily caused by genetic factors

15

A Closer Look at Conventional Wisdom

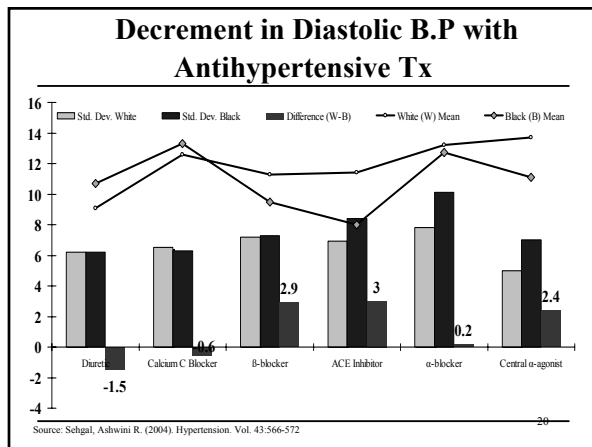
- Blacks and whites differ in their responses to antihypertensive medications
- White patients respond better to beta Blockers and ACE inhibitors
- Black patients respond better to Diuretics and Calcium Channel Blockers

18



Skin Color in the Clinical Context

- This meta analysis of 15 clinical trials reveals that the overwhelming majority of blacks and whites have similar responses to all of the common antihypertensive medications
- Thus, simply knowing a patient's race provides precious little guidance to a clinician in the selection of antihypertensive medications



Key Fact #4

Socioeconomic Status (SES) is a central but incomplete explanation of racial differences in health.

Overlap in Antihypertensive Drug Response Percent of Blacks & Whites with Similar Responses to Medications

Medication	Systolic	Diastolic
Diuretics	86%	90%
Calcium C Blocker	93%	95%
beta-Blocker	83%	90%
ACE Inhibitor	86%	81%
alpha-Blocker	88%	87%
Central alpha-Agonist	92%	78%

Source: Sehgal, 2004. Meta Analysis of 15 Clinical Trials.

SAT Scores by Income

Family Income	Median Score
More than \$100,000	1129
\$80,000 to \$100,000	1085
\$70,000 to \$80,000	1064
\$60,000 to \$70,000	1049
\$50,000 to \$60,000	1034
\$40,000 to \$50,000	1016
\$30,000 to \$40,000	992
\$20,000 to \$30,000	964
\$10,000 to \$20,000	920
Less than \$10,000	873

Source: (ETS) Mantsios; N=898,596

SES and Race

- African Americans and multiple other minorities have lower levels of education, income, professional status, and wealth than whites. These racial differences in SES are the major reason for racial differences in health.
- Education and income are generally more strongly associated with health status than race.
- Racial differences in health status decrease substantially when racial groups are compared at similar levels of SES.

25

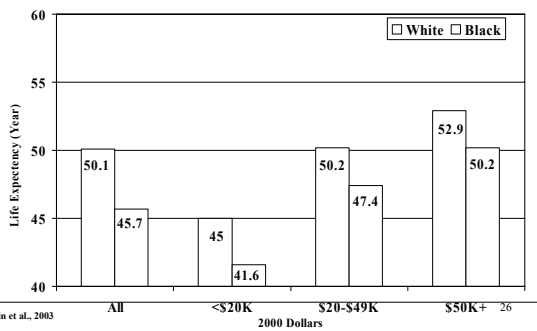
Life Expectancy at 25, Race, SES and Gender

Differences	Men	Women
By Race	4.4 yrs	4.3 yrs
By Income -- Whites	7.9 yrs	3.3yrs
By Income -- Blacks	8.6 yrs	5.0yrs

Lin et al., 2003

28

Life Expectancy at Age 25, Men



Lin et al., 2003

Social Status in Monkeys-1

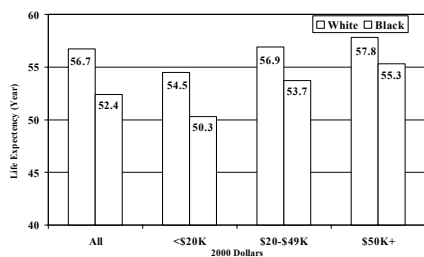
Subordinates are behaviorally different:

1. Subordinates receive three times more hostility and aggression
2. Dominants receive two times more grooming (positive affiliative behavior)
3. Subordinates engage in more vigilant behavior to track and avoid dominants for self-protection
4. Subordinates spend more time alone (more socially isolated)

Shively 2000

29

Life Expectancy at Age 25, Women



Lin et al., 2003

27

Social Status in Monkeys-2

Subordinates are physiologically different:

1. Adrenal functioning: greater secretion of cortisol (hyper-secretion=more stressed)
2. More abnormal menstrual cycles (poorer ovarian function)
3. Subordinates with poor ovarian function have more atherosclerosis. They lose protection of female hormones compared to males, and females with ovaries removed

Shiveley 2000

30

Social Status in Monkeys-3

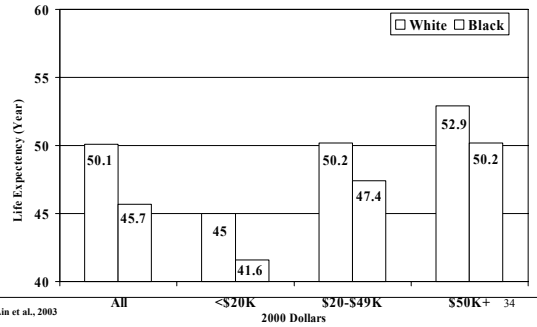
Effects of change in social status and heart disease in female monkeys:

Initial Status	Manipulated Status	Plaque Area
Dominant	Dominant	.03
Subordinate	Subordinate	.04
Subordinate	Dominant	.09
Dominant	Subordinate	.19

Shiveley 2000

31

Life Expectancy at Age 25, Men



Lin et al., 2003

34

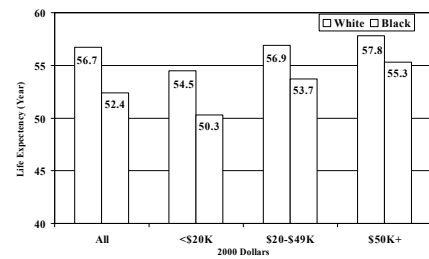
Determinants of Health in the U.S.

Health Behaviors	40%
Environmental exposures	20%
Genetics	30%
Inadequacies in medical care	10%

McGinnis et al. 2002

32

Life Expectancy at Age 25, Women



Lin et al., 2003

35

SES and Health Risks

SES is linked to:

- *Exposures to health enhancing resources
- *Exposures to health damaging factors
- *Exposure to particular stressors
- *Availability of resources to cope with stress

Health practices (smoking, poor nutrition, drinking, exercise, etc.) are all socially patterned

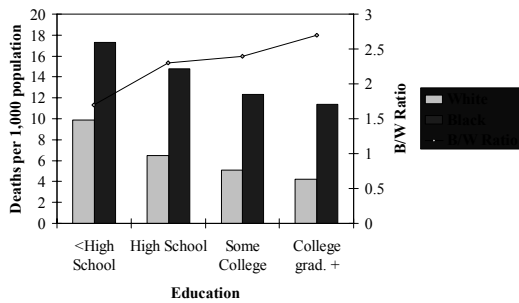
33

Race/Ethnicity and SES

- Race and SES reflect two related but not interchangeable systems of inequality
- In national data, the highest SES group of African American women have equivalent or higher rates of infant mortality, low birth-weight, hypertension and overweight than the lowest SES group of white women

36

Infant Death Rates by Mother's Education, 1995



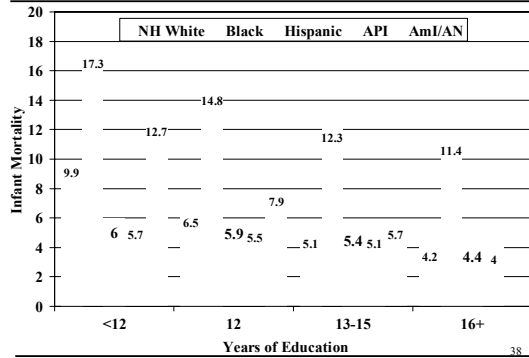
37

Key Fact #5

All indicators of SES are not the same across racial/ethnic groups.

40

Infant Mortality by Mother's Education, 1995



38

Race/Ethnicity and Wealth, 2000 Median Net Worth

Income	White	Black	Hispanic
All	\$79,400	\$7,500	\$9,750
Excl. Hm. Eq.	22,566	1,166	1,850
Poorest 20%	24,000	57	500
2 nd Quintile	48,500	5,275	5,670
3 rd Quintile	59,500	11,500	11,200
4 th Quintile	92,842	32,600	36,225
Richest 20%	208,023	65,141	73,032

Source: Orzechowski & Sepielli 2003, U.S. Census

41

Why Race Still Matters

1. All indicators of SES are non-equivalent across race. Compared to whites, blacks receive less income at the same levels of education, have less wealth at the equivalent income levels, and have less purchasing power (at a given level of income) because of higher costs of goods and services.
2. Health is affected not only by current SES but by exposure to social and economic adversity over the life course.
3. Personal experiences of discrimination and institutional racism are added pathogenic factors that can affect the health of minority group members in multiple ways.

39

Wealth of Whites and of Minorities per \$1 of Whites, 2000

Household Income	White	B/W Ratio	Hisp/W Ratio
Total	\$ 79,400	9¢	12¢
Poorest 20%	\$ 24,000	1¢	2¢
2 nd Quintile	\$ 48,500	11¢	12¢
3 rd Quintile	\$ 59,500	19¢	19¢
4 th Quintile	\$ 92,842	35¢	39¢
Richest 20%	\$ 208,023	31¢	35¢

Source: Orzechowski & Sepielli 2003, U.S. Census

42

Key Fact #6

In addition to SES, racism is an added burden.

43

Discrimination Persists

- Pairs of young, well-groomed, well-spoken college men with identical resumes apply for 350 advertised entry-level jobs in Milwaukee, Wisconsin. Two teams were black and two were white. In each team, one said that he had served an 18-month prison sentence for cocaine possession.
- The study found that it was easier for a white male with a felony conviction to get a job than a black male whose record was clean.

Source: Devan Pager; NYT March 20, 2004

46

Racism Mechanisms

- Institutional discrimination can restrict socioeconomic attainment a group differences in SES a health.
- Segregation can create pathogenic residential conditions.
- Discrimination can lead to reduced access to desirable goods and services.
- Internalized racism (acceptance of society's negative characterization) can adversely affect health.
- Racism can create conditions that increase exposure to traditional stressors (e.g. unemployment).
- Experiences of discrimination may be a neglected psychosocial stressor.

44

Percent of Job Applicants Receiving a Callback

Criminal Record	White	Black
No	34%	14%
Yes	17%	5%

Source: Devan Pager; NYT March 20, 2004

47

MLK Quote

"...Discrimination is a hellhound that gnaws at Negroes in every waking moment of their lives declaring that the lie of their inferiority is accepted as the truth in the society dominating them."

Martin Luther King, Jr. [1967]

45

Every Day Discrimination

In your day-to-day life how often do the following things happen to you?

- You are treated with less courtesy than other people.
- You are treated with less respect than other people.
- You receive poorer service than other people at restaurants or stores.
- People act as if they think you are not smart.
- People act as if they are afraid of you.
- People act as if they think you are dishonest.
- People act as if they're better than you are.
- You are called names or insulted.
- You are threatened or harassed.

48

Everyday Discrimination and Subclinical Disease

- Everyday discrimination was positively related with subclinical carotid artery disease (intima-media thickness) for black but not white women.
- Everyday discrimination was positively related to coronary artery calcification in the study of Women's Health Across the Nation (SWAN)

Troxel et al. 2003; Lewis et al. 2005

49

Understanding Elevated Health Risks

“Has anyone seen the SPIDER that is spinning this complex web of causation?”



Krieger, 1994

52

Arab American Birth Outcomes

- Well-documented increase in discrimination and harassment of Arab Americans after 9/11/2001
- Arab American women in California had an increased risk of low birthweight and preterm birth in the 6 months after Sept. 11 compared to pre-Sept. 11
- Other women in California had no change in birth outcome risk pre-and post-September 11

Lauderdale, 2006

50

Racial Segregation Is ...

1. Myrdal (1944): ... "basic" to understanding racial inequality in America.
2. Kenneth Clark (1965): ... key to understanding racial inequality.
3. Kerner Commission (1968): ... the "linchpin" of U.S. race relations and the source of the large and growing racial inequality in SES.
4. John Cell (1982): ... "one of the most successful political ideologies" of the last century and "the dominant system of racial regulation and control" in the U.S.
5. Massey and Denton (1993): ... "the key structural factor for the perpetuation of Black poverty in the U.S." and the "missing link" in efforts to understand urban poverty.

53

Key Fact #7

Place makes an added contribution to health.

51

How Segregation Can Affect Health

1. Segregation determines quality of education and employment opportunities.
2. Segregation can create pathogenic neighborhood and housing conditions.
3. Conditions linked to segregation can constrain the practice of health behaviors and encourage unhealthy ones.
4. Segregation can adversely affect access to high-quality medical care.

Source: Williams & Collins, 2001

54

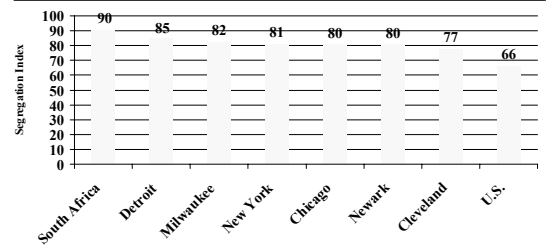
Racial Differences in Residential Environment

- “The sources of violent crime... are remarkably invariant across race and rooted instead in the structural differences among communities, cities, and states in economic and family organization,” p. 41
- In the 171 largest cities in the U.S., there is not even one city where whites live in ecological equality to blacks in terms of poverty rates or rates of single-parent households.
- “The worst urban context in which whites reside is considerably better than the average context of black communities.” p.41

Source: Sampson & Wilson 1995

55

American Apartheid: South Africa (de jure) in 1991 & U.S. (de facto) in 2000



Source: Massey 2004; Iceland et al. 2002; Glaeser & Vigdor 2001

58

Residential Segregation and SES

A study of the effects of segregation on young African American adults found that the elimination of segregation would erase black-white differences in

- Earnings
- High School Graduation Rate
- Unemployment

And reduce racial differences in single motherhood by two-thirds

Cutler, Glaeser & Vigdor, 1997

56

Key Fact #8

There are racial/ethnic differences in access to care and the quality of care

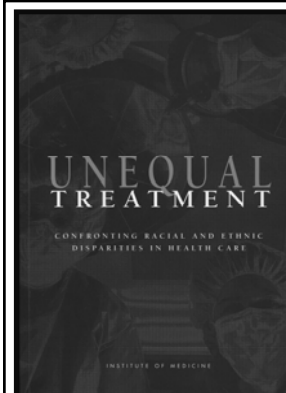
59

Segregation: Distinctive for Blacks

- Blacks are more segregated than any other racial/ethnic group.
- Segregation is inversely related to income for Latinos and Asians, but is high at all levels of income for blacks.
- The most affluent blacks (income over \$50,000) are more highly segregated than the poorest Latinos and Asians (incomes under \$15,000).
- Thus, middle class blacks live in poorer areas than whites of similar SES and poor whites live in much better neighborhoods than poor blacks.
- African Americans manifest a higher preference for residing in integrated areas than any other group.

Source: Massey 2004

57



60

Race and Medical Care

- Across virtually every therapeutic intervention, ranging from high technology procedures to the most elementary forms of diagnostic and treatment interventions, minorities receive fewer procedures and poorer quality medical care than whites.
- These differences persist even after differences in health insurance, SES, stage and severity of disease, co-morbidity, and the type of medical facility are taken into account.
- Moreover, they persist in contexts such as Medicare and the VA Health System, where differences in economic status and insurance coverage are minimized.

Key Fact #9

Minorities are still under-represented among health professionals.

Ethnicity and Analgesia

A chart review of 139 patients with isolated long-bone fracture at UCLA Emergency Department (ED):

- All patients aged 15 to 55 years, had the injury within 6 hours of ER visit, had no alcohol intoxication.
- 55% of Hispanics received no analgesic compared to 26% of non-Hispanic whites.
- With simultaneous adjustment for sex, primary language, insurance status, occupational injury, time of presentation, total time in ED, fracture reduction and hospital admission, Hispanic ethnicity was the strongest predictor of no analgesia.
- After adjustment for all factors, Hispanics were 7.5 times more likely than non-Hispanic whites to receive no analgesia.

Enrollment in Dental School: Blacks, Other Races, Women

	1970-71	2000-01
	Percentages	
Black	4.5	4.7
White	91.4	64.4
Hispanic	1.0	5.3
American-Indian	0.1	0.6
Asian	2.6	25.0
All Women ¹	3.1	37.6

Source: National Center for Health Statistics, 2003; ¹ Comparison years for women are 1971-72 with 1999-2000.

Disparities in the Clinical Encounter: The Core Paradox

How could well-meaning and highly educated health professionals, working in their usual circumstances with diverse populations of patients, create a pattern of care that appears to be discriminatory?

Enrollment in Medical School: Blacks, Other Races, Women

	1970-71	2000-01
	Percentages	
Black	3.8	7.4
White	94.3	63.8
Hispanic	0.5	6.4
American-Indian	0.0	0.8
Asian	1.4	20.1
All Women ¹	13.7	44.4

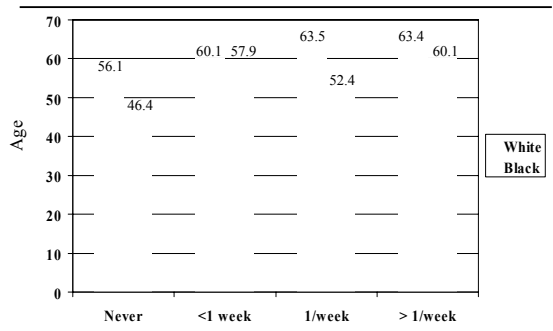
Source: National Center for Health Statistics, 2003; ¹ Comparison years for women are 1971-72 with 1999-2000.

Key Fact #10

African Americans have much better mental health than expected.

67

U.S. Life Expectancy at Age 20 by Religious Attendance



Hummer et al. 1999

Disparities in Mental Health

Blacks have lower rates than whites of :

1. Any Affective Disorder
2. Any Anxiety Disorder
3. Any Substance Abuse/Dependence
4. Any disorder

Source: Kessler et.al. (1994)

68

Life Expectancy at 25, Race, SES and Gender

Differences	Men	Women
By Race	4.4 yrs	4.3 yrs
By Income -- Whites	7.9 yrs	3.3yrs
By Income -- Blacks	8.6 yrs	5.0yrs
By Gender -- Whites	6.6 yrs	
By Gender -- Blacks	6.7 yrs	

Lin et al., 2003

71

Religious Services as Therapy?

1. Several aspects of some religious services are distinctive in the provision of opportunities to articulate and manage personal and collective suffering.
2. The expression of emotion and active congregational participation can promote "collective catharsis" in ways that facilitate the reduction of tension and the release of emotional distress.
3. There are parallels between all the key elements of formal psychotherapy and the rituals of some religious services.

Griffith et al. (1980), Gilkes (1980), Pargament et al. (1983)

69

Key Fact #11

Gender Matters a lot for Health

72

Multiple Jeopardy

- The most advantaged group, high income white women, have a life expectancy at 25 of 58 years
- The most disadvantaged group, low income black men, have a life expectancy at 25 of 42 years
- This difference in life expectancy is 16 years
- This 16 year difference is four times the overall black-white difference, and twice the income and the gender differences.

73

Marginality and the Absence of Work

- Men are over-represented in stigmatizing contexts that reflect separation from the labor market:
- 89% of jail and 94% of prison inmates are men
 - Men are more likely than women to be homeless
Men are 69% of persons in drug or alcohol treatment
 - In the last 30 years, wages of men in the bottom 2/3rds of income have stagnated or declined (increasing job insecurity & precarious employment even as overall per capita income increased)

Williams 2003

76

Gender Differences in Health-I

- In the U.S., and in almost every country, more boys than girls are born each year
- Infant males are more likely than females to die in their first year of life
- This pattern of elevated mortality risks for men persists over the entire life course

Williams 2003

74

Work Conditions and Stress

- Men tend to work in more dangerous jobs than women
- 90% of job fatalities are male
- Minority men in particular are over-represented in hazardous jobs

Williams 2003

77

Gender Differences in Health-II

- Men have higher death rates than women for all of the 15 leading causes of death, except Alzheimer's disease
- For both blacks and whites, men have death rates that are at least twice as high as women, for accidents, suicide, liver cirrhosis and homicide
- Compared to women, men have higher prevalence of hypertension and higher incidence of cancer

Williams 2003

75

Masculinity Scripts: Gendered Coping Patterns

- Men are more likely than women to engage in a broad range of health damaging behaviors
- Women seek, provide and receive more support than men
- Men are more likely than women to use alcohol and drugs to cope with stress
- Men are less likely than women to have preventive health care visits and to adhere to medical regimens

Williams 2003

78

Key Fact #12

Policies to reduce inequalities in health must address fundamental non-medical determinants.

79

Changes in Mortality Rates per 100,000 Population, Age 35-74, Between 1968 and 1978 (Men)

Year	White	Black
1968	2,119.7	2,919.8
1978	1,738.2	2,331.8
Change	-381.5	-588.0
% Change	18.0	20.1

Cooper et al., 1981b

82

Guiding Principles

1. Health Policy must be re-defined to include policies in all sectors of society that have health consequences.
2. Policies which improve average health may have no impact on social inequalities in health.
3. We need policies that improve health overall and targeted interventions to address social inequalities.
4. Major gains are possible through strategies that tackle health problems that occur most frequently.
5. Families with children should be a priority.

80

Changes in Mortality Rates per 100,000 Population, Age 35-74, Between 1968 and 1978 (Women)

Year	White	Black
1968	1,064.9	1,883.8
1978	879.4	1,345.9
Change	-185.5	-537.9
% Change	17.4	28.6

Cooper et al., 1981b

83

Economic Policy = Health Policy!

In the last 50 years, black-white differences in health have narrowed and widened with black-white differences in income

81

Changes in Life Expectancy at Birth Between 1968 and 1978 (Men)

Year	White	Black
1968	67.5	60.4
1978	70.2	65.0
Change	2.7	4.6
% Change	4.0	7.6

Cooper et al., 1981b

84

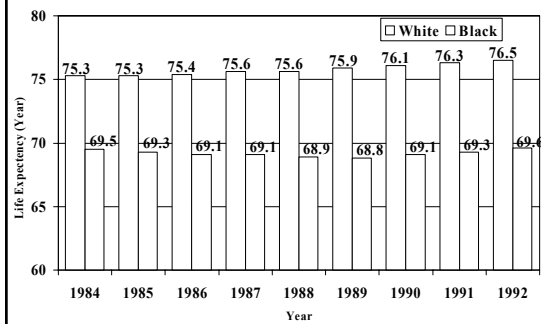
Changes in Life Expectancy at Birth Between 1968 and 1978 (Women)

Year	White	Black
1968	75.0	67.9
1978	77.8	73.6
Change	2.8	5.7
% Change	3.7	8.4

Cooper et al., 1981b

85

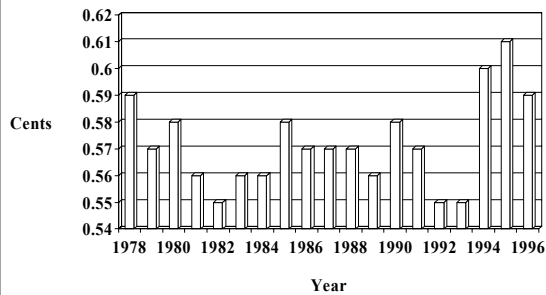
U.S. Life Expectancy at Birth, 1984-1992



NCHS, 1995

88

Median Family Income of Blacks per \$1 of Whites



Source: Economic Report of the President, 1998

86

Reducing Inequalities Address Underlying Determinants of Health- I

- Improve living standards for poor persons and households
- Increase access to employment opportunities
- Increase education and training that provide basic skills for the unskilled and better job ladders for the least skilled
- Invest in improved educational quality in the early years and reduce educational failure

89

Health Status Changes, 1980-1991

Indicator	1980	1991
1. Excess Deaths (Blacks)	59,000	66,000
2. Infant Mortality		
Black/White Ratio, Males	1.9	2.1
Black/White Ratio, Females	2.0	2.3
3. Life Expectancy		
Black/White Gap, Males	6.9	8.3
Black/White Gap, Females	5.6	5.8

Source: NCHS, 1994.

87

Reducing Inequalities Address Underlying Determinants of Health- II

- Improve conditions of work, re-design workplaces to reduce injuries and job stress
- Enrich the quality of neighborhood environments and increase economic development in poor areas
- Improve housing quality and the safety of neighborhood environments

90

Reducing Inequalities Health Care

- Improve access to care and the quality of care
 - Give emphasis to the prevention of illness
 - Provide effective treatment
 - Develop incentives to reduce inequalities in the quality of care
-

91

Improving Health Care

Health Care Delivery must take the Social Context Seriously

94

Reducing Inequalities: Engage Multiple Communities

- Knowledge of the extent of disparities and their causes is a prerequisite for effective action
 - In the U.S., over 50% of whites and over 50% of blacks are unaware that racial disparities in health exist.
 - Partnerships needed with government, industry, and other private organizations
 - Important role for community involvement in the identification and management of interventions
 - Strengthen the capacity of community organizations to take action
-

92

Service Delivery and Social Context

• 244 low-income hypertensive patients, 80% black (matched on age, race, gender, and blood pressure history) were randomly assigned to:

- Routine Care: Routine hypertensive care from a physician.
 - Health Education Intervention: Routine care, plus weekly clinic meetings for 12 weeks run by a health professional.
 - Outreach Intervention: Routine care, plus home visits by lay health workers*. Provided info on hypertension, discussed family difficulties, financial strain, employment opportunities, and, as appropriate, provided support, advice, referral, and direct assistance.
-

Source: Syme et al.

95

Limits of Health Behavior

***Behavioral risk factors account for only 10-20% of SES differences in mortality and morbidity**

***Interventions addressing health behaviors alone are unlikely to eliminate disparities.**

***The experience of the last 100 years suggests that interventions on intermediary risk factors will have limited success in reducing social inequalities in health as long as the more fundamental social inequalities themselves remain intact.**

House & Williams 2000; Lantz et al. 1998; Lantz et al. 2000

93

Service Delivery and Social Context: Results

After 7 months, patients in the outreach group:

1. Knew twice as much about blood pressure as patients in the other two groups. Those in the outreach group with more knowledge were more successful in blood pressure control (KNOWLEDGE).
 2. Were more compliant with taking their hypertensive medication than patients in the health education intervention group. Moreover, good compliers in the outreach group were twice as successful at controlling their blood pressure as good compliers in the health education group (ADHERENCE).
 3. Were more likely to have their blood pressure controlled than patients in the other two groups (CONTROL).
-

Source: Syme et al.

96

A Call to Action

“The only thing necessary for the triumph [of evil] is for good men to do nothing.”