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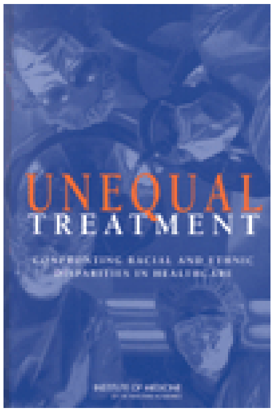

Unequal Treatment: Confronting Racial and Ethnic Disparities in Health Care (with CD)

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Introduction and Literature Review

Despite steady improvement in the overall health of the U.S. population, racial and ethnic minorities, with few exceptions, experience higher rates of morbidity and mortality than non-minorities. African Americans, for example, experience the highest rates of mortality from heart disease, cancer, cerebrovascular disease, and HIV/AIDS than any other U.S. racial or ethnic group. American Indians disproportionately die from diabetes, liver disease and cirrhosis, and unintentional injuries. Hispanic Americans are almost twice as likely as non-Hispanic whites to die from diabetes. In addition, some Asian-American subpopulations experience rates of stomach, liver, and cervical cancers that are well above national averages. The reasons for these health status disparities are complex and poorly understood, but may largely reflect socioeconomic differences, differences in health-related risk factors, environmental degradation, and direct and indirect consequences of discrimination (Williams, 1999).

Differences in access to healthcare are also likely to play a role in these health disparities. Hispanics, Asian Americans, American Indians and Alaska Natives, and African Americans are less likely than whites to have health insurance, have more difficulty getting healthcare, and have fewer choices in where to receive care. Hispanic and African-American patients are also more likely to receive care in hospital emergency rooms, and are less likely than whites to have a regular primary care provider (Collins, Hall, and Neuhaus, 1999).

Concern is growing, however, that even at equivalent levels of access to care, racial and ethnic minorities experience a lower quality of health services and are less likely to receive even routine medical procedures than white Americans. For example, relative to whites, African Americans and Hispanics are less likely to receive appropriate cardiac medication (e.g., thrombolytic therapy, aspirin and beta blockers) or to undergo coronary artery bypass surgery, even when variations in such factors as insurance status, income, age, co-morbid conditions, and symptom expression are taken into account (Ayanian et al., 1993; Hannan et al., 1999; Ramsey et al., 1997; Johnson et al., 1993; Canto et al., 2000). African Americans with end-stage renal disease are less likely to receive peritoneal dialysis and kidney transplantation (Kasiske, London, and Ellison, 1998; Barker-Cummings, McClellan, Soucie, and Krisher, 1995; Gaylin et al., 1993), and African-American and Hispanic patients with bone fractures seen in hospital emergency departments are less likely than whites to receive analgesia (Todd et al., 2000; Todd, Samaroo, and Hoffman, 1993). In terms of quality of care, a recent study of Medicare patients revealed that African-American patients with congestive heart failure or pneumonia received poorer quality care than whites, using explicit process criteria and implicit review by physicians (Ayanian, Weissman, Chasen-Taber, and Epstein, 1999). Further, these differences are associated with greater mortality among African-American patients (Peterson et al., 1997).

STUDY CHARGE AND COMMITTEE ASSUMPTIONS

These disparities prompted Congress in 1999 to request an Institute of Medicine (IOM) study to assess disparities in the kinds and quality of healthcare received by U.S. racial and ethnic minorities and non-minorities. Specifically, Congress requested that the IOM:

- Assess the extent of racial and ethnic differences in healthcare that are not otherwise attributable to known factors such as access to care (e.g., ability to pay or insurance coverage);
- Evaluate potential sources of racial and ethnic disparities in healthcare, including the role of bias, discrimination, and stereotyping at the individual (provider and patient), institutional, and health system levels; and
- Provide recommendations regarding interventions to eliminate healthcare disparities.

In its interpretation of the charge, the study committee assumes responsibility for assessing variation in the quality of healthcare services provided to individuals of different racial and ethnic backgrounds, independently of patients' insurance status, education, income, or other factors that are known to affect access to care. This is a somewhat artificial and difficult distinction, as many access-related factors, such as the type of health insurance coverage that healthcare consumers purchase or are provided, as well as their level of education and other unmeasured aspects of socioeconomic status (e.g., assertiveness in seeking care) significantly affect the quality and intensity of healthcare that they receive, and are highly correlated with race and ethnicity. The relationship of these variables to healthcare quality is therefore highlighted where appropriate in this report. For purposes of addressing the study charge, however, the committee's focus extends only to the direct and indirect effects of race and ethnicity in the process, structure, and outcomes of healthcare.

Further, the committee assumes that *healthcare* refers to the continuum of services provided in traditional healthcare settings—including public and private clinics, hospitals, community health centers, nursing homes, and other healthcare facilities—as well as home-based care. These include services provided by a range of healthcare professionals, including physicians, nurses, physician assistants, psychologists, and other licensed professionals. The term *healthcare services* refers to the provision of preventive, diagnostic, rehabilitative and/or therapeutic medical or health services to individuals or populations. *Quality of care* refers to the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge. These definitions, and their interrelationship, are best summarized in the 1999 IOM report, *Measuring the Quality of Health Care*:

> The IOM stated . . . that "quality of care is the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge" (IOM, 1990, p. 21). This definition has been widely accepted and has proven to be a robust and useful reference in the formulation of practical approaches to quality assessment and improvement (Blumenthal, 1996). Several ideas in this definition deserve elaboration.
>
> The term *health services* refers to a wide array of services that affect health, including those for physical and mental illnesses. Furthermore, the definition applies to many types of healthcare practitioners (physicians, nurses, and various other health professionals) and to all settings of care (from hospitals and nursing homes to physicians' offices, community sites, and even private homes). . . .
>
> The inclusion in the definition of both *populations* and *individuals* draws attention to the different perspectives that need to be addressed. On the one hand, there is concern with the quality of care that individual organizations, health plans, and clinicians deliver. On the other hand, attention must be paid to the quality of care across the entire system. In particular, one must ask whether all parts of the population have access to needed and appropriate services, whether services meet or exceed their expectations, and whether their health status is improving. That focus embraces all groups, whether or not they have access to care and whether they are

> defined by cultural heritage, sociodemographic characteristics, geography (e.g., a state or a region), or diagnosis. It recognizes that such individuals will include the most vulnerable, whether the source of vulnerability is economic, the rarity or severity of the health problem, physical frailty, or physical or emotional impairment. (Institute of Medicine, 1999a; emphasis in text).

The study committee defines *disparities* in healthcare as racial or ethnic differences in the quality of healthcare that are not due to access-related factors or clinical needs, preferences,[1] and appropriateness of intervention (Figure 1-1). The committee's analysis is focused at two levels: 1) the operation of healthcare systems and the legal and regulatory climate in which health systems function; and 2) discrimination at the individual, patient-provider level. Discrimination, as the committee uses the term, refers to differences in care that result from biases, prejudices, stereotyping, and uncertainty in clinical communication and decision-making. It should be emphasized that these definitions are not legal definitions. Different sources of federal, state and international law define discrimination in varying ways, some focusing on intent and others emphasizing disparate impact.

Finally, in defining *racial and ethnic minority groups*, the committee uses the definitions provided by the federal Office of Management and Budget in its proposed Revisions to the Standards for the Classification of Federal Data on Race and Ethnicity (Office of Management and Budget, 2001). The revised standards (see Box 1-1) establish five categories for "racial" groups (American Indian or Alaska Native, Asian, Black or African American, Native Hawaiian or other Pacific Islander, and White), and two categories for "ethnic" groups (Hispanic or Latino and Not Hispanic or Latino).[2] It should be noted that these definitions have been subject to considerable criticism, including:

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[1] The committee defines patient *preferences* as patients' choices regarding healthcare that are based on a full and accurate understanding of treatment options. As discussed in Chapter 3 of this report, patients' understanding of treatment options is often shaped by the quality and content of provider-patient communication, which in turn may be influenced by factors correlated with patients' and providers' race, ethnicity, and culture. Patient preferences that are not based on a full and accurate understanding of treatment options may therefore be a source of racial and ethnic disparities in care. The committee recognizes that patients' preferences and clinicians' presentation of clinical information and alternatives influence each other, but found separation of the two to be analytically useful.

[2] Consistent with the OMB classification scheme, the terms "African American" and "black" are used interchangeably throughout this report, as are the terms "Hispanic" and "Latino."

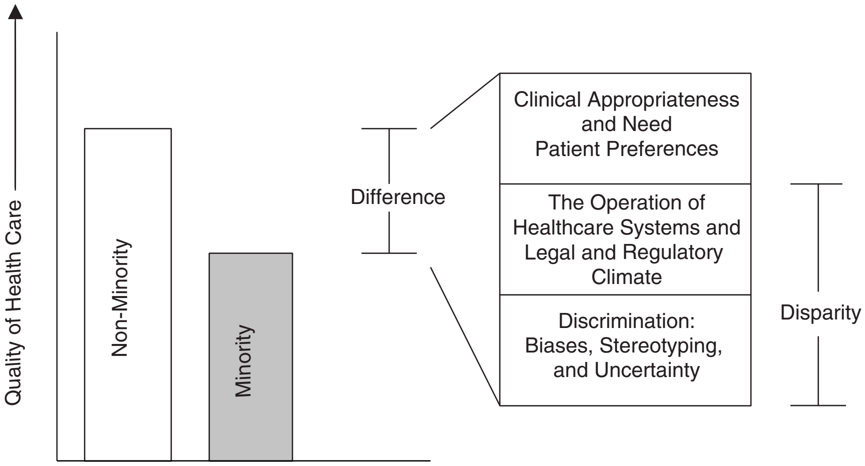

FIGURE 1-1 Differences, disparities, and discrimination: Populations with equal access to healthcare. SOURCE: Gomes and McGuire, 2001.

- reinforcement of the concept of "race" as reflecting genetic or biologic differences between population groups;
- failure to reflect the fluid and dynamic nature of sociopolitical identity, and
- failure to reflect the way many Americans choose to define themselves (Institute of Medicine, 1999b).

Nonetheless, the committee adopts these racial and ethnic definitions because they are commonly accepted among researchers, and most federally funded research utilizes these terms. Further, as will be noted below, access to and the allocation of healthcare resources differ with striking consistency across these population groups, making them useful in tracking disparities in care.

To summarize, racial and ethnic minorities are less likely than whites to posses health insurance (Collins, Hall, and Neuhaus, 1999), are more likely to be beneficiaries of publicly funded health insurance (e.g., Medicaid [The Henry J. Kaiser Family Foundation, 2000b]), and even when insured, may face additional barriers to care due to other socioeconomic factors, such as high co-payments, geographic factors (e.g., the relative scarcity of healthcare providers and healthcare facilities in minority communities), and insufficient transportation. These access-related factors are likely the most significant barriers to equitable care, and must be addressed as an important first step toward eliminating healthcare disparities. The

BOX 1-1
Revised Standards for the Classification of Federal Data on Race and Ethnicity

Categories for Race:

American Indian or Alaska Native. A person having origins in any of the original peoples of North and South America (including Central America), and who maintains tribal affiliation or community attachment.

Asian. A person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent including, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand, and Vietnam.

Black or African American. A person having origins in any of the black racial groups or Africa. Terms such as "Haitian" or "Negro" can be used in addition to "Black or African American."

Native Hawaiian or Other Pacific Islander. A person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands.

White. A person having origins in any of the original peoples of Europe, the Middle East, or North Africa.

Categories for Ethnicity:

Hispanic or Latino. A person of Cuban, Mexican, Puerto Rican, South or Central American, of other Spanish culture or origin, regardless of race. The term "Spanish origin" can be used in addition to "Hispanic or Latino."

Not Hispanic or Latino.

SOURCE: Office of Management and Budget, 2001.

committee is asked, however, to assess whether other factors may contribute to health-care disparities once these "threshold" factors (i.e., racial and ethnic differences in income, health insurance status, and geography) are held constant, and to specifically address whether bias, discrimination, or stereotyping at the individual, institutional, and health systems levels may explain some part of these disparities. To a great extent, attempts to separate the relative contribution of these factors risks presenting an incomplete picture of the complex interrelationship between racial and ethnic minority status, socioeconomic differences, and discrimination in the United States. For example, as will be discussed in Chapter 2, racial and ethnic housing segregation is a by-product of both historic and contemporary racism and discrimination, as well as socioeconomic differences (itself the legacy of poorer opportunities for many minority groups). The committee therefore stresses that attempts to "parcel out" access-related factors from the quality of healthcare for minorities remains an artificial exercise, and that policy solutions must consider the historic and contemporary forces that contribute to differences in access to and quality of healthcare.

THE RELATIONSHIP BETWEEN RACIAL AND ETHNIC DISPARITIES IN HEALTH STATUS AND HEALTHCARE

The health gap between minority and non-minority Americans has persisted, and in some cases, has increased in recent years. African-American men, for example, experienced an average life expectancy of 61 years in 1960, compared with 67 years for their white male peers; in 1996, this gap increased to 8 years, as white males enjoyed an average life expectancy of 74 years, relative to 66 years for African-American males. American-Indian men in some regions of the country can expect to live only into their mid-fifties. Further, African-American and American-Indian infant mortality rates remain approximately 2.5 and 1.5 times higher, respectively, than rates for whites (Collins, Hall, and Neuhaus, 1999).

As noted above, the reasons for these health status disparities are complex. Individual risk factors for poor health are pronounced among many racial and ethnic minorities, yet these risks are confounded by the disproportionate representation of minorities in the lower socioeconomic tiers. Moreover, socioeconomic position in and of itself is correlated with health status, independently of individual risk factors, as people in each ascending step along the socioeconomic gradient tend to have better health, even when individual health risk factors are accounted for (Kaplan, Everson, and Lynch, 2000). Cultural factors also play an important role in health disparities; among some immigrant Hispanic populations, for example, birth outcomes have been found to be better than among those of their U.S.-born peers, suggesting that sociocultural risk *increases* with subsequent generations living in the United States (Korenbrot and Moss, 2000). Further, environmental health risks, such as degradation, air, water, and soil pollution, and other physical health hazards are more prevalent in low-income racial and ethnic minority communities. These and other risk factors associated with health and poor health illustrate that racial and ethnic disparities in health status largely reflect differences in social, socioeconomic, and behavioral risk factors and environmental living conditions (House and Williams, 2000). Healthcare is therefore necessary but insufficient in and of itself to redress racial and ethnic disparities in health status (Williams, 1999). A broad and intensive strategy to address socioeconomic inequality, concentrated poverty in many racial and ethnic minority communities, inequitable and segregated housing and educational facilities, individual behavioral risk factors, as well as disparate access to and use of healthcare services is needed to seriously address racial and ethnic disparities in health status.

WHY ARE RACIAL AND ETHNIC DISPARITIES IN HEALTHCARE IMPORTANT?

The preceding discussion should not be interpreted as suggesting that racial and ethnic disparities in healthcare are unimportant, either to individuals in need of care or to a society that prides itself on equality of opportunity. To the contrary, disparities in healthcare are problems that have significant implications for health professionals, administrators and policymakers, and healthcare consumers of all backgrounds.

For the health professions, racial and ethnic disparities in healthcare pose moral and ethical dilemmas that will be among the most significant challenges of today's rapidly changing health systems. Increasingly, physicians and other health professionals are faced with a complex set of societal expectations. On one hand, they are expected to adhere to the highest ethical standards of service that mandate fairness and compassion. On the other hand, physicians are placed in the position of serving as managers of vital, yet limited healthcare resources. Their decisions may result in the allocation of more resources to some individuals than to others, resulting in the unequal distribution of healthcare across population groups. These challenges occur in the context of increasing financial and bureaucratic pressures on healthcare providers, which may exacerbate the problem of inequitable care. Yet the public's trust in the health professions may be irrevocably harmed should the healthcare industry be engaged, even inadvertently, in "social triaging." It is vitally important to preserve this trust, which is already fragile in many racial and ethnic minority communities, as it can significantly affect patients' willingness to seek care and adhere to treatment regimens.

Health professionals and policymakers must also be cognizant of the importance of healthcare as a resource that is tied to social justice, opportunity, and the quality of life for individuals and groups. The productivity of the workforce is closely linked with its health status, yet if some segments of the population, such as racial and ethnic minorities, receive a lower quality and intensity of healthcare, then these groups are further hindered in their efforts to advance economically and professionally. It is therefore important from an egalitarian perspective to expect equal performance in healthcare, especially for those disproportionately burdened with poor health.

From a public health standpoint, racial and ethnic disparities in healthcare threaten to hamper efforts to improve the nation's health. As will be discussed in Chapter 3, the United States is becoming increasingly diverse; while white Americans currently constitute 71% of the population, by the year 2050 nearly one in two Americans will be a person of color (U.S. Bureau of the Census, 2000). These groups, as noted earlier, experience a poorer overall health status and lower levels of access to heathcare than white Americans, and experience a disproportionate burden of chronic and infectious illness. This higher burden of disease and mortality among minorities has profound implications for all Americans, as it results in a less healthy nation and higher costs for health and rehabilitative care. All members of a community are affected by the poor health status of its least healthy members—infectious diseases, for example, know no racial/ethnic or socioeconomic boundaries. For this reason, the federal *Healthy People 2010* initiative has established an overarching goal of eliminating health disparities, noting that "the health of the individual is almost inseparable from the health of the larger community, and . . . the health of every community in every State and territory determines the overall health status of the Nation" (U.S. Department of Health and Human Services, 2000a, p. 15).

From an economic standpoint, the costs of inadequate care may have significant implications for overall healthcare expenditures. Poorly managed chronic conditions or missed diagnoses can result in avoidable, higher subsequent healthcare costs. For example, inadequately treated and managed diabetes can result in far more expensive complications, such as kidney disorder requiring dialysis or transplantation. To the extent that minority beneficiaries of publicly funded health programs are less likely to receive high quality care, these beneficiaries—as well as the taxpayers that support public healthcare programs—may face higher future healthcare costs.

Further, the problem of racial and ethnic disparities in healthcare poses a significant dilemma for a society that is still wrestling with a legacy of racial discrimination (Byrd and Clayton, this volume). Public opinion polls indicate that the vast majority of Americans abhor any form of racial discrimination and believe that all Americans should—and do—enjoy equal opportunities in accessing educational and job opportunities, as well as healthcare (Morin, 2001). Yet this ideal falls far from reality in many sectors of American life, including healthcare, as will be discussed in later sections of this report. The discrepancy between Americans' widely held values and beliefs regarding the importance of equality and the reality of persistent racial inequities tears at the social fabric of the nation and contributes to the gulf of understanding between racial, ethnic and socioeconomic groups.

Finally, for the population at large, racial and ethnic disparities in healthcare raise concerns about the overall quality of care in the United States. Given that racial and ethnic minority groups experience greater challenges and barriers to high quality care, their experiences expose healthcare systems' greatest weaknesses and problems—problems that any American may face in attempting to access healthcare. In this context, the extent to which minorities are well or poorly served provides an important indicator of the state of healthcare in the nation. The provision of equitable care that does not vary by patient race, ethnicity, gender, and age is therefore among one of the six overarching goals identified in the Institute of Medicine's *Crossing the Quality Chasm* report (IOM, 2001a). As the *Chasm* report suggests, evidence of unequal or substandard care for some segments of the population, particularly on the basis of group membership, should raise the concern that the provision of care may be inconsistently and subjectively administered. Inequities in care, therefore, expose a threat to quality care for all Americans.

For all of these reasons, should evidence be available to suggest that racial and ethnic disparities in care are widespread, these disparities would be unacceptable.

EVIDENCE OF RACIAL AND ETHNIC DISPARITIES IN HEALTHCARE

The literature review that follows summarizes articles published in peer-reviewed journals within the last 10 years, with an emphasis on the most recent publications. In selecting literature to review, the committee identified studies that assess racial and ethnic variation in healthcare while controlling for differences in access to healthcare (e.g., by studying similarly insured patients or by statistically adjusting for differences in insurance status) and/or socioeconomic status. To ensure that the committee's search was not limited to studies with "positive" findings of racial and ethnic differences in care, searches were conducted for studies that attempted to assess variations in care by patient socioeconomic status and geographic region. These studies were included if the researchers assessed racial or ethnic differences in care while controlling, as noted above, for patient access-related factors. In addition, the committee focused its review on those studies that attempt to assess the contribution of a range of other potential confounding variables, such as racial and ethnic differences in disease severity, stage of illness progression, patient preferences for non-invasive procedures or to avoid complex treatments, types of settings where care is received (e.g., public vs. private clinics, teaching vs. non-teaching hospitals), availability of procedures (e.g., whether catheterization is offered on-site), suitability of intervention (e.g., whether subtle racial differences in response to treatments may counter-indicate use), as well as other factors. Further, the committee paid particular attention to studies that assessed the appropriateness of services relative to established clinical guidelines. To the extent that these studies shed light on potential sources of disparities in care, they are summarized in this review. The committee's criteria for selecting literature to review are listed in Box 1-2.

Almost all of the studies reviewed by the committee contained one or more weaknesses of study design, methodology, or data analysis that limited the committee's ability to draw findings and conclusions. These weaknesses are noted below, where appropriate. The majority of studies of racial and ethnic disparities in care, for example, use odds ratios, which is a consequence of using logistic regression models, rather than risk ratios to assess the extent of disparities in care. Relative to risk ratios, odds ratios exaggerate the apparent effect of a co-variable when the prevalence of the dependent variable is above 5%-10%. The committee therefore cautions that in some instances, the magnitude of racial and ethnic disparities as reported in the literature may be exaggerated. In addition, as will be discussed below, no single study adequately controlled for all potential confounding factors (e.g., patient preferences, racial differences in disease severity or presentation, geographic availability of specific services or procedures) simultaneously. The committee therefore considered findings in light of the preponderance of evidence and the merits of each individual study. Noting the importance of assessing study strengths and limitations in context, Mayberry and colleagues (2000) write, "[t]he methodological inadequacy of an individual study may be a relatively moot point in the context of the body of literature that gives consistent findings and in which one study, often the more recent study, may overcome the specific failing of a previous investigation" (Mayberry, Mili, and Ofili, 2000, p. 116).

This review yielded over 100 studies (summarized in Appendix B) that assessed racial and ethnic variation in a range of clinical procedures, including the use of diagnostic and therapeutic technologies. This body of literature, however, represents only a fraction of the published studies that investigate racial and ethnic differences in access to and use of healthcare services. Geiger (this volume), for example, has identified over 600 such articles published over the last three decades. For a more comprehensive review of this literature, the reader is referred to Geiger (this volume) or the reviews of Mayberry and colleagues (Mayberry, Mili, and Ofili, 2000); Kressin and Petersen (2001); Sheifer, Escarce, and Schulman (2000); Ford and Cooper (1995); and the AMA Council on Ethical and Judicial Affairs (1990).

Cardiovascular Care

Some of the strongest and most consistent evidence for the existence of racial and ethnic disparities in care is found in studies of cardiovascu-

BOX 1-2
Criteria for Literature Review

To assess the evidence regarding racial and ethnic differences in healthcare, the committee conducted literature searches via PUBMED and MEDLINE databases to identify studies examining racial and ethnic differences in medical care for a variety of disease categories and clinical services. Searches were performed using combinations of following keywords:

- *Race, racial, ethnicity, ethnic, minority/ies, groups, African American, Black, American Indian, Alaska Native, Native American, Asian, Pacific Islander, Hispanic, Latino.*
- *Differences, disparities, care*
- *Cardiac, coronary, cancer, asthma, HIV, AIDS, pediatric, children, mental health, psychiatric, eye, ophthalmic, glaucoma, emergency, diabetes, renal, gall bladder, ICU, peripheral vascular, transplant, organ, cesarean, prenatal, hip, hypertension, injury, surgery/surgical, knee, pain, procedure, treatment, diagnostic.*

This search yielded over 600 citations. To further examine this evidence base and address the study charge that called for an analysis of "the extent of racial and ethnic differences in healthcare that are not otherwise attributable to known factors such as access to care," only studies that provided some measure of control or adjustment for racial and ethnic differences in insurance status (e.g., ability to pay/insurance coverage or co-morbidities) were included in the literature review. Other "threshold" criteria included:

- Publication in past 10 years (1992-2002; this criterion was established because more recent studies tend to employ more rigorous research methods and present a more accurate assessment of contemporary patterns of variation in care);
- Publication in peer-reviewed journals;
- Elimination of studies focused on racial and ethnic differences in health status (except as it is affected by the quality of healthcare) and healthcare access, as well as publications that were editorials, letters, published in a foreign language, were non-empirical, or studies that controlled for race or ethnicity; and
- Inclusion only of studies whose primary purpose was to examine variation in medical care by race and ethnicity, contained original findings, and met generally established principles of scientific research (e.g., studies that stated a clear research question, provided a detailed description of data sources, collection, and analysis methods, included samples large enough to permit statistical analysis, and employed appropriate statistical measures).

In addition, to ensure the comprehensiveness of the review, the committee examined the reference lists of major review papers that summarize this literature (e.g., Geiger, this volume; Kressin and Petersen, 2001; Bonham, 2001; Sheifer, Escarce, and Schulman, 2000; Mayberry, Mili, and Ofili, 2000; Ford and Cooper, 1995). Articles not originally identified in the initial search were retrieved and analyzed for appropriateness of inclusion in the committee's review. Finally, to ensure that the committee's search was not limited to studies with "positive" findings of racial and ethnic differences in care, searches were conducted for studies that attempted to assess variations in care by patient socioeconomic status and geographic region. These studies were included if the researchers assessed racial or ethnic differences in care while controlling, as noted above, for patient access-related factors.

To assess the quality of this evidence base, the committee ranked studies on several criteria:

- Adequacy of control for insurance status (studies of patients covered under the same health system or insurance plan were considered to be more rigorous than studies that merely assessed the availability of health insurance among the study population);
- Use of appropriate indicators for patient socioeconomic status (e.g., studies that measured patients' level of income, education, or other indicators of socioeconomic status);
- Analysis of clinical data, as opposed to administrative claims data (see limitations of administrative claims data noted below);
- Prospective or retrospective data collection (prospective studies were considered to be more rigorous than retrospective analyses);
- Appropriate control for patient co-morbid conditions;
- Appropriate control for racial differences in disease severity or stage of illness at presentation;
- Assessment of patients' appropriateness for procedures (e.g., studies that provide primary diagnosis and include well-defined measures of disease status, as in studies of cardiovascular care that assess racial differences in care following angiography) or that compare rates of service use relative to standardized, widely accepted clinical guidelines; and
- Assessment of racial differences in rates of refusal or patient preferences for non-invasive treatment.

Studies that met the committee's "threshold" criteria are summarized in Appendix B. Many of these studies are summarized in this chapter, with an emphasis on more rigorous studies, as defined by the committee's quality criteria, above.

lar care. The most rigorous studies in this area assess both potential underuse and overuse of services and appropriateness of care using well-established clinical and diagnostic criteria. Several studies, for example, have assessed racial and ethnic differences in cardiovascular care relative to RAND criteria for the necessity of revascularization procedures. These studies have therefore been able to demonstrate that differences in treatment are not due to factors such as racial differences in the severity of coronary disease.

No one study reviewed by the committee simultaneously controlled for all of the variables likely to confound the relationship between race/ethnicity and receipt of care. In addition, in almost all cases, studies that employ rigorous measures of potential confounding variables find that racial and ethnic disparities diminish once these variables are included in multivariate analysis. The preponderance of studies, however, find that even after adjustment for many potentially confounding factors—including racial differences in access to care, disease severity, site of care (e.g., geographic variation or type of hospital or clinic), disease prevalence, co-morbidities or clinical characteristics, refusal rates, and overuse of services by whites—racial and ethnic disparities in cardiovascular care remain. This conclusion was also reached by authors of all major review articles that the committee identified in its search, including Kressin and Petersen (2001); Mayberry, Mili, and Ofili (2000); Sheifer, Escarce, and Schulman, (2000); Ford and Cooper (1995); Gonzalez-Klayman and Barnhart (1998); the AMA Council on Ethical and Judicial Affairs (1990); and Geiger (this volume).

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Studies Using Administrative Databases

Data from several large, national datasets have been analyzed and demonstrate both national and regional patterns of disparities in care. These datasets typically rely on administrative claims data to assess differences in receipt of services. A variety of limitations should be noted regarding administrative claims data. One, these data provide little or no information regarding co-morbid illnesses, the severity of disease, or the stage at which illness was detected. Findings of racial differences in these studies therefore cannot rule out the possibility that minority patients might be less appropriate for specific clinical services. Second, administrative data provide little indication as to whether patients were presented with all clinical options, whether patients accepted or refused recommendations, or whether the physician did not recommend clinical procedures. Third, these data typically provide no information regarding patients' education level or other socioeconomic background information. Given that whites generally enjoy higher socioeconomic and educational status, and given the correlation between these attributes and care-seeking behavior (e.g., greater assertiveness in seeking care), socioeconomic status is potentially a significant confounding factor. Fourth, administrative data typically provide no information regarding the appropriateness of services relative to patients' needs, and therefore overuse of services among whites and/or underuse among minorities cannot be ruled out.

Nonetheless, the consistency of findings from these studies, many using large sample sizes, is striking. Ford et al. (1989), for example, assessed rates of coronary arteriography and coronary artery bypass graft surgery (CABG) among nearly 4 million patients with acute myocardial infarction sampled in the National Hospital Discharge Survey (NHDS). The authors found that African-American men and women were significantly less likely to undergo CABG or angiography than whites. Escarce et al. (1993), McBean et al. (1994), and Gornick et al. (1996) found significant racial differences in rates of cardiovascular procedures among Medicare patients, with African-American patients approximately one-half to one-third less likely to receive services. Similarly, Goldberg et al. (1992), in an analysis of over 86,000 Medicare patients, found that whites were nearly four times more likely than African Americans to receive CABG, after adjusting for age- and gender-related differences in rates of myocardial infarction (MI). When data were analyzed by state, the authors found greater racial differences in CABG rates in the Southeast, particularly in non-metropolitan areas. For whites, CABG rates were significantly associated with the availability of thoracic surgeons and location in the Southeast, but physician availability and location were not correlated with CABG rates for African Americans.

To address some of the deficiencies of studies using administrative data, several studies have adjusted for the influence of variables such as site of care (e.g., geographic location or type of hospital or clinic) to assess racial differences in the receipt of coronary revascularization procedures. Ayanian et al. (1993) assessed racial differences in rates of revascularization following angiography and the relationship of these differences to hospital characteristics among more than 27,000 Medicare patients. Controlling for age, sex, region, Medicaid eligibility, and principal and secondary diagnoses, the authors found that whites were 78% more likely than African Americans to receive a revascularization procedure. These differences were apparent in public, private, teaching, non-teaching, and urban/suburban hospitals, as well as in hospitals where patients were referred to other facilities for revascularization procedures and those that offer such procedures in-house. Similarly, Weitzman et al. (1997) assessed rates of performance of cardiac procedures in relation to gender, race, and geographic location among 5,462 patients in four states (North Carolina, Mississippi, Maryland, and Minnesota) hospitalized for MI. After controlling for the severity of MI and co-morbid conditions, blacks admitted to teaching hospitals in this study were significantly less likely to receive percutaneous transluminal coronary angiography (PTCA), CABG, or thrombolytic therapy. Similarly, blacks admitted to non-teaching hospitals were significantly less likely to receive these procedures.

Giles et al. (1995) used data from NHDS to assess race and sex differences in the rate of receipt of catheterization, PTCA, or coronary artery bypass surgery (CABS), while adjusting for differences in the type of hospital admission, insurance status, and disease severity among 10,348 patients hospitalized with acute myocardial infarction (AMI). Significant differences by race and gender were found after statistical adjustment and a patient matching procedure, which matched individuals admitted to the same hospital and who underwent a cardiac procedure with individuals who did not undergo a procedure. With white males as the referent, black men were less likely to receive catheterization or CABS, while black women were less likely to receive catheterization, PTCA, or CABS. Among only those patients who underwent catheterization (and therefore had access to a cardiologist), black women were less likely to receive subsequent PTCA or CABS.

Similarly, Allison et al. (1996) assessed the rate of receipt of thrombolysis, beta-adrenergic blockade and aspirin in a retrospective medical record review of 4,052 patients hospitalized in all acute care hospitals in Alabama with principle discharge diagnosis of AMI. After controlling for patient age, gender, clinical factors, severity of illness, algorithm-determined candidacy for therapy, and hospital characteristics (e.g., rural vs. urban, teaching vs. non-teaching), the authors found that white patients were 50% more likely to receive thrombolytics than black patients. No differences were found in receipt of beta-blockers or aspirin by patient race.

In one of the few studies to assess rates of revascularization procedures among a multiethnic sample of patients, Carlisle et al. (1995) found that African Americans, Hispanics, and Asian Americans were significantly less likely than whites to receive coronary angiography, CABG, and/or angioplasty, controlling for primary diagnosis, age, gender, insurance type, income, and co-morbid factors. When differences in the volume of revascularization procedures among hospitals were controlled, however, Asian Americans did not differ from whites in the rates of cardiac procedures. African-American and Hispanic patients remained less likely than whites to receive angioplasty, and African Americans were less likely to receive CABG when hospital characteristics were controlled. Similarly, Herholz et al. (1996) analyzed discharge data for 982 Mexican-American and white patients hospitalized for definite or possible myocardial infarction. Mexican Americans received 38% fewer medications than whites, even after adjusting for clinical and demographic characteristics. Mexican Americans were less likely to receive almost all major medications, especially antiarrhythmics, anticoagulants, and lipid-lowering therapy. Using data from the same study as Herholz et al. (1996), Ramsey et al. (1997) found that after adjusting for age, sex, previous diagnosis of coronary heart disease, MI, diabetes mellitus, hypertension, occurrence of congestive heart failure during MI, and location and type of MI, Mexican Americans were less likely to receive PTCA, but not aortocoronary bypass surgery, than whites.

Other studies indicate that the likelihood of receiving revascularization procedures varies by the stage or typical sequence of events leading to care. Blustein, Arons, and Shea (1995), for example, found that among patients hospitalized for acute myocardial infarction, race and insurance status significantly predicted the likelihood of 1) gaining initial admittance to a hospital that offers revascularization services; 2) actually receiving revascularization following initial admission; or 3) receiving revascularization services following transfer or subsequent readmission. Whites, those with private insurance, and those with more severe heart disease were more likely to gain initial admittance to hospitals providing revascularization services. Once hospitalized, whites, males, those with private insurance, and those with more severe disease were more likely to actually receive revascularization. Racial disparities grew larger as patients “progressed” though the phases leading to revascularization.

Studies of the Role of Financial and Institutional Characteristics

Several studies suggest that financial and institutional characteristics may mediate the relationship between the use of cardiac procedures and patient race, in some cases significantly attenuating or eliminating racial and ethnic disparities. Leape et al. (1999) explored racial differences in revascularization procedures as a function of demographic characteristics and type of hospital among 631 patients at 13 New York City hospitals for whom revascularization procedures were deemed clinically necessary according to RAND criteria. The authors found no racial differences in rates of revascularization procedures among African-American patients (72%), Hispanic patients (67%) and white patients (75%). Rates of revascularization were significantly lower, however, among patients initially seen in hospitals that did not provide revascularization services (and therefore had to refer patients to other hospitals) than those treated in settings that did provide revascularization (59% to 76%, respectively). Subsequent criticism of the study noted that the limited sample and geographic setting, coupled with the fact that most of the facilities studied offered both angiography and revascularization on-site, may have limited the study's ability to detect group differences in procedure use (Kressin and Peterson, 2001).

Similarly, Gregory et al. (1999) studied the relationship between the availability of hospital-based invasive cardiac procedures and racial differences in the use of these services. The authors studied records of 13,690 black and white New Jersey residents hospitalized with a primary diagnosis of AMI. For all patients, the likelihood of receiving catheterization within 90 days of AMI was significantly greater among those hospitalized in facilities that provided cardiac services. Black patients in this sample were more likely to be admitted first to hospitals equipped to perform cardiac catheterization and/or PTCA or CABG. Despite this, blacks were less likely to receive catheterization than whites within 90 days of admission, even after controlling for age, sex, health insurance status (for those younger than age 65), anatomic location of primary infarct, co-morbidities, and the availability of cardiac services. Similarly, blacks were less likely than whites to receive revascularization procedures within 90 days of admission, again after controlling for patient demographic and clinical factors and availability of cardiac services.

Other researchers have assessed whether racial and ethnic disparities in healthcare are mediated by the type of health system in which care is delivered. Taylor et al. (1997), for example, abstracted chart reviews from 1,441 patients with principal or secondary diagnosis of AMI receiving care in one of 125 military hospitals. The authors found no differences in rates of catheterization procedures between white and "non-white" patients (all patients who described their race or ethnicity as other than white or Caucasian, including African Americans) during AMI admission or between white and black patients. Similarly, no differences were found in rates of revascularization (PTCA or CABG) between white and "non-white" patients or between white and black patients. No differences were found in mortality or rates of readmission within 180 days following initial discharge. However, white patients were significantly more likely than non-white patients to be considered for future catheterization. Among studies of disparities in Veterans Administration hospitals, which significantly reduce financial barriers to care, findings are mixed. Mickelson et al. (1997) found no differences between white and Hispanic VA patients in receipt of cardiovascular procedures following AMI. In contrast, Peterson et al. (1994), Mirvis et al. (1994), Whittle et al. (1993), and Mirvis and Graney (1998) all found that African-American VA patients were less likely to receive cardiovascular procedures. Sedlis et al. (1997) found that therapeutic cardiac procedures (surgery or PTCA) were offered more frequently for white VA patients (72.9%) than African-American VA patients (64.3%). This difference could not be explained by simple clinical differences between the two groups. Even though they were offered care at lower rates, however, African-American patients were more than twice as likely as whites to refuse invasive procedures. In contrast, Petersen et al. (2002) found significant differences in rates of thrombolytic therapy and bypass surgery among a sample of African-American and white VA patients with a confirmed diagnosis of acute myocardial infarction, with black patients receiving lower rates of these invasive procedures. Like Sedlis et al. (1997), Petersen et al. assess racial differences in rates of refusal for these procedures, but found no differences in rates of refusal when angiography, PTCA, or bypass surgery were offered.

Daumit et al. (1999), in one of the few studies to longitudinally assess receipt of cardiovascular procedures among a cohort of patients, followed nearly 5,000 African-American and white patients with end-stage renal disease (ESRD) to determine whether the acquisition of health insurance (ESRD patients are eligible for Medicare and generally enter a comprehensive system of care, if not already enrolled in one, upon diagnosis) could reduce racial and ethnic disparities in receipt of cardiovascular procedures (ESRD patients are at high risk for cardiovascular disease). Prior to development of ESRD, white patients were nearly three times more likely than African-American patients to receive catheterization, angioplasty, or CABG, even after controlling for clinical and socioeconomic variables. At follow-up, this disparity diminished to the point where whites were only 40% more likely to receive a cardiovascular procedure. Significantly, among patients who were already enrolled in Medicare at baseline, racial disparities in cardiovascular procedures disappeared at follow-up. Daumit et al. caution, however, that "a substantial baseline disparity between black and white patients . . . exists in the privately insured and Medicare subgroups, providing evidence against acquisition of health insurance as the only factor in narrowing the ethnic gap" (Daumit et al., 1999, p. 179). As with many of the studies reviewed above, however, this study did not obtain detailed clinical data or information on patient preferences, which could explain some of the observed differences (Kravitz, 1999).

These studies strongly suggest that addressing racial and ethnic gaps in insurance coverage is one of the most important factors in narrowing the racial and ethnic gap in cardiovascular services. Health insurance alone does not completely eliminate disparities, however, as the studies above illustrate. This finding is confirmed in a study of cardiovascular care in the United Kingdom, which offers universal access and free care at the point of use. In a prospective study of 2,552 patients seen in London hospitals who were deemed "appropriate" for cardiovascular procedures according to standardized criteria, Hemingway et al. (2001) found that "non-white" patients were more likely to receive only medical treatment (received by 20% of these patients), rather than CABG (received by 14% of these patients), after controlling for demographic and clinical variables. These differences were not found among white patients similarly deemed appropriate for invasive treatment.

Studies to Assess Appropriateness of Services

Critics of many of the studies reviewed above charge that comparisons of minority patients' receipt of revascularization procedures with that of whites' may identify differences caused by overuse of procedures by whites, rather than clinical necessity. To address this concern, several studies have examined use of coronary procedures relative to established criteria for necessity. Hannan et al. (1999) assessed rates of CABG among 1,261 post-angiography patients who would benefit from CABG according to RAND appropriateness and necessity criteria. Controlling for age, gender, severity of disease, patient risk status, type of insurance, and other clinical characteristics, the authors found that African-American and Hispanic patients were significantly less likely than whites to undergo CABG. Similarly, Laouri et al. (1997), using RAND/UCLA criteria for necessity of revascularization procedures, found that African Americans were half as likely as whites to undergo necessary CABG and one-fifth as likely to undergo PTCA. In this study, patients at public hospitals were less likely to undergo PTCA than those at private hospitals. Conigliaro et al. (2000) also assessed racial variation in coronary revascularization relative to RAND appropriateness criteria at six hospital sites that offered CABG on site or at an adjacent university hospital. This was a VA patient population with few financial barriers to care. Further, all patients had unstable angina or acute myocardial infarction and had undergone coronary angiography. Overall, African-American patients were found to be less likely then whites to undergo CABG and PTCA, but when RAND appropriateness criteria were considered, African Americans were still less likely to receive CABG when deemed "necessary."

In a larger study, Canto et al. (2000) studied the use of reperfusion therapy among more than 26,000 patients meeting eligibility criteria as a result of acute myocardial infarction. After controlling for clinical and demographic characteristics, the authors found that African Americans were slightly less likely than whites to undergo reperfusion therapy. Further, Schneider et al. (2001) used RAND criteria to assess whether overuse of PTCA or CABG by whites explained racial differences in revascularization rates among 3,960 African-American and white Medicare patients. As with other studies cited above, Schneider et al. found that whites were more likely than African Americans to receive PTCA and CABG. When assessed relative to RAND appropriateness criteria, white males were found to be nearly 2.5 times more likely to receive PTCA than African Americans when the procedure was judged to be "inappropriate;" no other racial or gender differences were found in rates of inappropriate CABG. The authors conclude, however, that the racial difference in rates of inappropriate PTCA "was not sufficiently large to account for more than a small fraction of the substantial disparities in rates of revascularization between white patients and African-American patients" (Schneider et al., 2001b, p. 334).

These studies of disparities in cardiovascular care relative to appropriateness criteria offer an important means of assessing whether observed racial and ethnic differences in care may be "explained" by differences in clinical necessity. It should be noted, however, that even among studies employing objective criteria to assess racial and ethnic differences in care relative to clinical necessity, "there may not always be a perfect fit between the clinical indications considered by the [panel evaluating appropriateness] and the characteristics of real patients" (Kravitz, 1999).

In a more comprehensive study of whether racial disparities in receipt of revascularization procedures reflect clinical necessity or merely overuse among whites, Peterson et al. (1997) assessed racial differences in receipt of coronary angioplasty and CABG among patients with documented coronary disease, and assessed whether differences were associated with survival. Peterson et al. followed 12,402 patients seen annually at Duke University Medical Center for an average of five and a half years, and found that African Americans were 13% less likely than whites to undergo angioplasty and 32% less likely to undergo CABG during the study period. Racial differences in procedure rates were more marked among patients with severe disease. Analysis of survival benefit of surgery also revealed racial differences; among patients expected to survive more than one year, 42% of African Americans underwent surgery, compared with 61% of whites. Finally, analysis of the adjusted five-year mortality rate among patients revealed that African-American patients were 18% more likely than whites to die. The Peterson et al. study can be criticized on the grounds that the findings may not generalize beyond the single study setting. Nevertheless, the study provides strong evidence that lower rates of intervention among this sample of African-American patients were associated with lower rates of survival.

Summary of Literature on Racial and Ethnic Disparities in Cardiovascular Care

The literature reviewed above illustrates that racial and ethnic disparities in cardiovascular care are robust and consistent across a range of studies conducted in different geographic regions with diverse patient populations seen in a range of clinical settings. This literature does not, however, provide a clear account of the sources of these disparities; rather, these studies provide clues regarding the types of factors that are *not* likely to fully explain disparities in cardiovascular care. Racial differences in clinical presentation or disease severity do not fully explain differences in receipt of services (Hannan et al., 1999; Lauori et al., 1997; Conigliaro et al., 2000; Canto et al., 2000), although minority and non-minority patients may not respond equally well to some therapeutic interventions, as will be discussed in Chapter 3. White patients have been found to use some clinical services at higher rates than minorities, even when not necessarily indicated. Therefore, when minority patients' use of services is compared with that of whites, differences may be observed. But this "overuse" of cardiovascular procedures by whites does not fully explain disparities in care (Schneider et al., 2001), and studies that assess racial differences in care relative to established clinical criteria still find significant differences (Conigliaro et al., 2000b; Hannan et al., 1999; Laouri et al, 1997). Racial and ethnic disparities in cardiovascular services are found among patients insured by Medicare (Gornick et al., 1996; McBean et al., 1994; Escarce et al., 1993), and among patients in VA settings (Peterson et al., 1994; Mirvis et al., 1994; Whittle et al., 1993; Mirvis and Graney, 1998; Sedlis et al., 1997; Petersen et al., 2002), although these findings are not consistent (Mickelson et al., 1997). Significantly, however, even among patients whose care is covered by nationalized health plans (e.g., Great Britain), minority racial and ethnic groups are found to receive fewer clinical services (Hemingway et al., 2001).

Several studies find that African-American patients are more likely than whites to refuse invasive procedures (e.g., Hannan et al., 1999; Oddone et al., 1998; Sedlis et al., 1997), but when the relative contribution of patient refusal to racial differences in care is assessed, this factor is not found to account completely for these disparities. Further, physician recommendation appears to be the major factor in determining whether patients receive invasive cardiac procedures (Hannan et al., 1999). These factors as potential sources of disparities will be assessed in greater detail in Chapter 3.

Almost all of the studies reviewed here find that as more potentially confounding variables are controlled, the magnitude of racial and ethnic disparities in care decreases. In a few studies, disparities disappeared entirely when appropriate confounding variables were included in multivariate analysis. In general, these findings are limited to studies of patients seen in universally accessible care settings, such as the U.S. Department of Defense healthcare systems (e.g., Taylor et al., 1997), or studies employing small samples in one or a handful of clinical settings (e.g., Leape et al., 1999). These findings strongly suggest that access-related factors, such as insurance status, ability to pay, and characteristics of institutional and clinical settings are the largest contributors to observed racial and ethnic disparities in cardiovascular care. The vast majority of studies assessing disparities in cardiac care, however, find that racial and ethnic disparities persist even after variations in insurance status are controlled.

As a "second level" analysis of the quality of evidence regarding racial and ethnic disparities in cardiovascular care, the committee identified a subset of studies that permit a more detailed analysis of the relationship between patient race or ethnicity and quality of care, while considering potential confounding variables such as clinical differences in presentation and disease severity. Several criteria were established to identify these studies, using generally accepted criteria of research rigor and quality. To begin, the committee identified only studies using clinical, as opposed to administrative data, for the reasons cited above. Secondly, the committee identified studies that provided appropriate controls for likely confounding variables, and/or employed other rigorous research methods. These criteria included the use of adequate control or adjustment for racial and ethnic differences in insurance status; prospective, rather than retrospective data collection; adjustment for racial and ethnic differences in co-morbid conditions; adjustment for racial and ethnic differences in disease severity; comparison of rates of cardiovascular services relative to measures of appropriateness; and assessment of patient outcomes.

Several caveats should be noted in undertaking this approach. One, studies using clinical data allow researchers to better assess whether disparities in care exist and are significant after potential confounding factors such as clinical variation and the appropriateness of intervention are taken into account. However, these studies often are limited to small patient samples in one or only a few clinical settings, therefore sacrificing statistical power and potentially underestimating the role of institutional variables as contributing to healthcare disparities. Second, assessments of racial and ethnic differences in patients' clinical outcomes following intervention must be made with caution. Patients' outcomes following medical intervention reflect a wide range of factors, some of which are unrelated to the intervention itself (e.g., the degree of social support available to patients following treatment) and may vary systematically by race or ethnicity. In addition, a finding of no racial or ethnic differences in patient outcomes (e.g., survival) despite disparate rates of treatment should not be interpreted as demonstrating that disparities in the use of medical intervention are inconsequential. In such instances, researchers should ask whether equivalent rates of intervention might be associated with *better* patient outcomes among minorities. Finally, this second level of analysis should not be interpreted as suggesting that the larger literature presented above is insufficient to draw conclusions regarding disparities in healthcare. Almost all of the individual studies reviewed earlier possess limitations, but the collective body of this evidence is robust. Despite these caveats, this second review afforded an opportunity to assess whether racial and ethnic disparities in care remain when racial differences in clinical presentation and other potentially confounding variables are controlled. Studies were considered in this second review only if they met four of six criteria noted above, in addition to the "threshold" criteria that studies employ clinical databases. Thirteen studies were identified through this process (see Table B-2 in Appendix B). Of these, only two (Leape et al., 1999; Carlisle et al., 1999) found no evidence of racial and ethnic disparities in care after adjustment for racial and ethnic differences in insurance status, co-morbid factors, disease severity, and other potential confounders as noted above. The remaining studies found racial and ethnic disparities in one or more cardiac procedures, following multivariate analysis. Almost all studies found that adjustment for one or more confounding factors reduced the magnitude of unadjusted racial and ethnic differences in care. Among the five studies that collected data prospectively, however, all found racial and ethnic disparities remained after adjustment for confounding factors.

Cancer

Studies of racial disparities in cancer diagnosis and treatment are less clear and consistent than studies of cardiac care, in part because many studies rely on data that use crude or incomplete indicators of the type of treatment provided and/or do not control for co-morbid factors. Variations in the extent of disease among patients are rarely well controlled, and the comprehensiveness of treatment cannot be evaluated. In addition, many studies indicate that ethnic minorities are diagnosed at later stages of cancer progression, further confounding efforts to assess the quality of treatment. Nonetheless, several studies demonstrate significant racial differences in the receipt of appropriate cancer treatments and analgesics.

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In one of the largest early studies of racial disparities in cancer care, Diehr et al. (1989) assessed the quality of care for 7,781 women treated for breast cancer in 107 hospitals relative to 10 dimensions of breast cancer care established by a panel of experts convened by the National Cancer Institute (NCI). While African Americans were less likely than whites to have health insurance, were less likely to be treated by an experienced, board-certified physician, and were more likely to be treated in large, public hospitals, racial differences in care persisted when these and other clinical and demographic factors were controlled. African-American women were less likely than white women to receive progesterone receptor assays (a prognostic test), were less likely to receive radiation therapy in combination with radical/modified mastectomy, and were less likely to receive rehabilitation support services following mastectomy.

Similarly, Harlan et al. (1995) assessed variations in the use of radical prostatectomy and radiation to treat prostate cancer by geographic area, age, and race. Data for 67,693 men with localized and regional cancer, obtained from Surveillance, Epidemiology, and End Results (SEER) program database, revealed that black men aged 50 to 69 years were less likely than similarly aged white men to undergo prostatectomy. For black and white men aged 70 to 79 years, rates of prostatectomy were similar in 1984, but became significantly divergent by 1991, as a larger proportion of white men underwent the procedure. In 1991, a significantly higher proportion of black men aged 50 to 59 years received radiation. For all age groups in 1991, twice as many blacks as whites (12.5% vs. 6.6%) received no treatment. In a similar analysis of 4,154 Medicare claims for radical prostatectomy to treat prostate cancer, Imperato et al. (1996), found that rates of prostatectomy were lower among African Americans than among whites, with the black/white ratio ranging from 0.59 in 1991 to 0.86 in 1993.

McMahon et al. (1999) assessed the contribution of patient age, sex, race, urbanicity, per capita income, and education level of patients' community, and availability of physicians, internists, and gastroenterologists per 100,000 population to predict use of diagnostic procedures for colon cancer among all Medicare Part B transactions in the state of Michigan from 1986 to 1989. African Americans were more likely than whites to receive a barium enema only, were less likely to receive a combination of barium enema and sigmoidoscopy, and were less likely to undergo colonoscopy. While this study could not control for stage of disease and the reason for performing diagnostic procedures, it suggests that African Americans received less effective diagnostic evaluations. Relative to whites, African Americans in this study received 28% fewer sigmoidoscopic examinations—which are generally considered to be more technically advanced diagnostic procedures than barium enema— despite a 20% higher incidence of colon cancer.

African-American cancer patients are also less likely to receive post-treatment surveillance care. Elston Lafata et al. (2001) assessed colorectal cancer surveillance care among 251 patients enrolled in a managed care organization at diagnosis, and found that within 18 months of treatment, over half of the total cohort received a colon examination (55%), nearly three-fourths had received carcinoembryonic antigen (CEA) testing, and nearly six in ten (59%) received metastatic disease testing. Whites were more likely than African Americans, however, to receive CEA testing and displayed a slight but non-significant trend toward higher rates of colonic examination. The small sample size and single setting of this study, however, may limit these findings.

In one of the few studies to analyze the effect of both stage of illness at the time of diagnosis and reasons for no receipt of treatment, Merrill, Merrill, and Mayer (2000) assessed the receipt of surgery or radiation therapy among 8,119 white and African-American women with invasive cervical cancer. Overall, 8.03% of whites and 11.64% of blacks did not receive either radiation therapy or surgery. For both blacks and whites, the odds of not receiving treatment increased with older age, distant and unstaged disease (vs. localized disease), unknown grade (vs. well-differentiated disease), and unknown lymph node (vs. no lymph node) status. Blacks were more likely to be diagnosed unstaged and were less likely to have localized disease; once stage was accounted for, racial differences in treatment status became insignificant. However, among those not treated, blacks were more likely than whites to have treatment not recommended (53.68% vs. 40.32%). Of those cases not receiving therapy, few were due to patient refusal (3.76% among whites, 5.88% among blacks).

Similarly, Howard, Penchansky, and Brown (1998) assessed racial differences in of breast cancer survival among 246 black and white women who sought care for breast cancer in one of three health maintenance organizations (HMOs). No significant racial differences were found in stage of disease, utilization of health services before diagnosis of breast cancer, or receipt of breast examination. However, African-American patients were more likely to die than whites (30% vs. 18%, respectively) and experienced shorter average survival (1.63 years vs. 2.77 years, respectively). Two percent of whites and eight percent of African Americans missed two or more appointments following diagnosis; after adjusting for the number of appointments made, African Americans were more likely than whites to miss appointments. Missed appointments and stage of diagnosis were strongly associated with survival, and reduced the impact of race on survival. As with the study by Elston Lafata et al. (2001), however, findings of this study are limited by the small sample size and study setting.

In a larger study, Ball and Elixhauser (1996) assessed racial differences in treatment for colorectal cancer among over 20,000 patients in a national sample. Among patients with primary tumor and no metastasis, African Americans were 41% less likely than whites to receive a major procedure for treatment of colorectal cancer (i.e., colon resection, total cholecystectomy, colonoscopy, or bronchoscopy), after controlling for patient demographic characteristics, comorbidities, therapeutic complications, and hospital characteristics. Among patients with metastasis, African-American patients were 27% less likely to receive a major treatment. Bach et al. (1999) found similar results in a study of nearly 11,000 Medicare patients with a diagnosis of resectable non-small-cell lung cancer. The authors found that African-American and white patients who underwent surgery had similar rates of survival at five years (39.1% and 42.9%, respectively). No racial differences were found in survival rates at five years for those patients who did not undergo surgery (4% among African Americans and 5% among whites). African Americans, however, were 12.7% less likely to undergo resection, a difference that was not due to comorbid factors, age, gender, income, geographic region, or type of Medicare insurance. Further, using survival analysis, the authors estimate that 308 African-American patients would have been alive at five years if black patients had undergone surgery at a rate similar to that of white patients.

Racial and ethnic differences are also found in the use of analgesics to manage pain due to cancer. Bernabei et al. (1998) assessed the adequacy of pain management among 13,625 elderly and minority cancer patients admitted to nursing homes following treatment. More than a quarter of patients who experienced daily pain (26%), as assessed by self-report and independent raters, received no pain medication. After adjusting for gender, cognitive status, communication skills, and indicators of disease severity (e.g., explicit terminal prognosis), being bedridden, number of diagnoses, and use of other medications, the authors found that African Americans had a 63% greater probability of being untreated for pain relative to whites. Older age, low cognitive performance, and increased number of other medications were also associated with failure to receive any analgesic agent. Similarly, Cleeland et al. (1997) assessed the adequacy of pain management among minority patients receiving care in settings that primarily serve minorities vs. patients who receive care in settings where few minority patients are treated. In addition, the authors compared the adequacy of analgesia received by minority patients vs. that received by non-minority patients, as determined by independent, widely accepted pain assessment criteria. Sixty-five percent of patients in this study who reported pain received inadequate pain medication. Patients treated in settings where the patient population was primarily black or Hispanic and those who were treated at university medical centers were more likely to receive inadequate analgesia (77%) than those who received treatment in settings where the patient population was primarily white (52%). In addition, minority patients were more likely to be undermedicated for pain than white patients (65% vs. 50%, respectively), and were more likely to have the severity of their pain underestimated by physicians.

As is the case with some studies of cardiovascular care, the type of health system in which minority patients access care may influence the quality of cancer care received. Optenberg and colleagues, for example (Optenberg et al., 1995), assessed the long-term survival of 1,606 black and white prostate cancer patients who were active duty personnel, dependents, or retirees eligible for care in the military medical system. Black patients in this study presented at a significantly higher stage of cancer development than whites (26.4% of blacks presenting with distant metastases compared to 12.3% of whites), and demonstrated a greater percentage of recurrence (30.6% vs. 21.4%, respectively). There were no significant racial differences in wait time to receive treatment, and no significant differences were found in the type of treatment when stratified by stage of presentation. Overall, stage, grade, and age were found to affect survival, but not race. When analyzed by stage, blacks demonstrated longer survival for distant metastatic disease. Similarly, Dominitz et al. (1998) assessed racial differences in receipt of treatment and survival among 3,176 patients with colorectal cancer treated in the "equal access" Veterans Administration (VA) health system. After adjusting for patient demographic characteristics, co-morbidities, distant metastases, and tumor location, no significant racial differences were found in rates of receipt of surgical resection (70% among blacks, 73% among whites), chemotherapy (23% for both black and whites), or radiation therapy (17% among blacks, 16% among whites). Five-year relative survival rates were similar for black and white patients (42% vs. 39% respectively). These findings are not consistent, however; Dominitz et al. (2002), for example, assessed rates of surgical intervention versus chemotherapy and radiation therapy among a sample of African-American and white male veterans diagnosed with esophageal cancer and treated at VA hospitals. The authors found that after controlling for a variety of patient demographic and clinical characteristics, African-American patients with esophageal adenocarcinoma were less likely to undergo surgery than whites, but had similar rates of chemotherapy and radiation therapy. Similarly, black patients with squamous cell carcinoma were less likely than whites to undergo surgical resection, but were more likely to receive radiation therapy and chemotherapy. Further, in contrast to Optenberg et al. (1995) and his earlier study (Dominitz et al., 1998), in this study Dominitz and colleagues (2002) found that post-treatment mortality was higher for African-American than white patients with squamous cell carcinoma.

Cerebrovascular Disease

Racial and ethnic variation in the rates of diagnostic tests and clinical procedures for cerebrovascular disease have not been studied as extensively as variation in cardiac procedures, despite the relatively higher risk among African Americans for stroke (Mitchell et al., 2000). Moreover, few studies have compared rates of procedures conditional upon angiography or other diagnostic testing. The preponderance of studies, however, finds generally lower rates of diagnostic and therapeutic procedures among African Americans with cerebrovascular disease.

Oddone et al. (1999) studied racial differences in rates of carotid artery imaging among patients diagnosed with transient ischemic attack, ischemic stroke, or amaurosis fugax seen at one of four VA Medical Centers. After controlling for patients' age, co-morbid factors, clinical presentation, anticipated operative risk, and hospital, African-American patients were found to be half as likely as whites to receive carotid imaging. White patients in this study, however, were more likely to be assessed as appropriate candidates for surgery using RAND criteria because of a higher prevalence of significant carotid artery stenosis among blacks.

Mitchell and colleagues (Mitchell et al., 2000) assessed rates of tests and treatment (including noninvasive cerebrovascular tests, cerebral angiography, carotid endarterectomy, and anticoagulant therapy) for cerebrovascular disease among a sample of Medicare patients admitted to hospitals with a principal diagnosis of transient ischemic attack (TIA). Further, they assessed the relative probability of receiving care from a neurologist. After adjusting for comorbid illness (including hypertension and prior history of stroke), ability to pay (using a proxy based on dual Medicaid-Medicare eligibility and area of residence), and other clinical and demographic variables, the authors found that African Americans were 83% less likely than whites to receive noninvasive cerebrovascular testing. Among those receiving noninvasive testing, African Americans were 54% as likely to receive cerebral angiography, and among those receiving angiography, the odds of African Americans receiving carotid endarterectomy was 0.27. African Americans were 62% less likely than whites to receive anticoagulant therapy, but this difference was not statistically significant given the small number of African-American subjects. African-American patients were 21% less likely than whites to receive care from a neurologist. Overall, patients who received care from a neurologist were more likely to receive both noninvasive and invasive cerebrovascular testing, but were significantly less likely to undergo surgery. The authors note that while the findings could have been affected by unmeasured differences in the severity of carotid artery stenosis that could explain the lower rates of carotid endarterectomy among African Americans (African Americans are less likely to have extracranial disease that is most amenable to carotid endarterectomy), this difference would not explain the disparity in rates of testing (Mitchell et al., 2000).

Renal Transplantation

African Americans are at greater risk for end-stage renal disease (ESRD) than white Americans. Although African Americans constitute 12% of the U.S. population, they represent almost one-third of those with ESRD. Kidney dialysis was once considered the optimal treatment for ESRD, but recent advancements in kidney transplantation techniques have made transplantation more cost-effective than dialysis. African-American patients with ESRD , however, are less likely than similar white patients to receive a kidney transplant (Epstein et al., 2000). African-American patients are also less likely than white patients to be referred for transplantation and to appear on waiting lists within the first year of Medicare eligibility (Kasiske, London, and Ellison, 1998). In addition, average waiting time for African-American patients awaiting kidney transplantation is almost twice as long as that for white patients, a difference that is not apparent for transplantation of other solid organs (Young and Gaston, 2000). These findings, however, must be interpreted with caution, as many clinical considerations complicate interpretation of these data. For example, in general, fewer African Americans than whites desire or are appropriate for transplantation, and immunologic matching criteria result in fewer donor matches for African Americans than whites.

Several studies are consistent in finding that African-American patients (and in some instances, other ethnic minority patients) are less likely to be judged as appropriate for transplantation, are less likely to appear on transplantation waiting lists, and are less likely to undergo transplantation procedures, even after patients' insurance status and other factors are considered. Garg, Diener-West, and Powe (2001) longitudinally followed adult ESRD patients to assess racial differences in rates of placement on transplantation waiting lists over time. The authors found that lower rates of placement on the waiting list for blacks than whites persisted after adjustment for differences in both sociodemographic characteristics and health status, and that the gap between blacks and whites did not narrow over time. Epstein and colleagues (2000), in a study of patients with end-stage renal disease from four regional networks in geographically diverse areas, found that African-American patients were less likely than white patients to be rated as appropriate candidates for transplantation, according to expert-identified criteria (9.0% vs. 20.9%, respectively). Among patients considered appropriate for transplantation, however, African-American patients were less likely than whites to be referred for evaluation (90.1% vs. 98.0% respectively), were less likely to be placed on a waiting list (71.0% vs. 86.7% respectively), and were less likely to ultimately undergo transplantation (16.9% vs. 52.0%, respectively). Similarly, in a study of over 41,000 patients awaiting transplantation, Kasiske, London, and Ellison (1998) found that white patients were more likely to be placed on waiting lists before initiating maintenance dialysis than African-American, Hispanic, or "Asian/other" patients. Other factors predicting being placed on waiting lists before dialysis included patients' age, receipt of a prior transplant, level of education, employment status, insurance status, receiving insulin, listing for kidney and pancreas transplant vs. kidney only, and listing through a center that performs a high volume of procedures.

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African-American patients are also found to be less likely to receive dialysis as an initial treatment for ESRD. Barker-Cummings, McClellan, Soucie, and Krisher (1995) found that after controlling for patients' sociodemographic and clinical characteristics (including age, education, social support, home ownership, functional status, albumin level, presence of hypertension, history of MI, peripheral neuropathy, and comorbid diabetes), African Americans were half as likely as white patients to be initially treated with peritoneal dialysis.

Some evidence suggests that African-American patients are less likely than whites to desire kidney transplantation. Ayanian, Cleary, Weissman, and Epstein (1999) found that African-American male patients were significantly less likely than white males to report wanting a transplant. This difference was not significant among female patients. However, even when differences in preference were taken into account, African-American patients were much less likely than white patients to have been referred to a transplant center for evaluation (50.5% of African-American women vs. 70.7% of white women, and 53.9% of African-American men vs. 76.2% of white men), and to have been placed on a waiting list or to have received a transplant within 18 months after initiating dialysis (31.9% of African-American women vs. 56.5% of white women, and 35.3% for African-American men vs. 60.6% of white men). Similarly, Alexander and Sehgal (1998) found that African-American patients were less likely than white patients to be "definitely interested" in receiving a transplant, to complete pre-transplant workup, and finally, to progress on waiting lists to receive a transplant. These analyses controlled for patient age, gender, cause of renal failure, years receiving dialysis, and median income of patients' zip code area. Ozminkowski et al. (1997) surveyed 456 ESRD patients to assess the effects of patient sociodemographic characteristics, health and functional status, and attitudes about dialysis or transplantation on waiting list entry and receipt of a cadaver kidney transplant. The authors found that approximately 60% of the differences between African-American and white waiting list entry rates and 52% of the black-white differences in transplantation rates were due to race-related differences in socioeconomic status, health and functional status, severity of illness, biological factors, the existence of contraindications to transplantation, transplant center characteristics, and patients' attitudes about dialysis and transplantation.

At least one study has assessed the influence of patients' clinical and non-clinical factors, including race, on physicians' recommendations for renal transplantation. Thamer et al. (2001) surveyed 271 nephrologists who were presented with scenarios that varied the age, race, gender, living situation (alone or with family), history of compliance with treatment, diabetic status, residual renal function status, HIV status, weight, and cardiac ejection fraction of hypothetical patients. Asian-American males were less likely than white males to be recommended for transplantation, as were women, those with a history of non-compliance, low cardiac ejection fraction, overweight, or positive HIV status. The fact that African-American and white "patients" were recommended for transplantation at similar rates suggests that the observed black-white differences may emerge at other steps in the transplantation process, according to the authors. The low rate of recommendation for Asian-American males, however, is inconsistent with the fact that Asians have the highest cadaveric allograft survival rates of all racial and ethnic groups, the authors note.

HIV/AIDS

HIV infection continues to spread more rapidly among African-American and Hispanic populations than any other racial/ethnic group in the United States. While federal programs have been expanded in recent years to increase the availability of antiretroviral therapies, especially among low-income and ethnic minority populations, minorities face greater barriers than whites to appropriate care. African Americans with HIV infection are less likely to receive antiretroviral therapy, less likely to receive prophylaxis for pneumocystic pneumonia, and less likely to receive protease inhibitors than non-minorities with HIV. These disparities remain even after adjusting for age, gender, education, and insurance coverage (Shapiro et al., 1999). Differences in the quality of HIV care may be related to survival rates, even at equivalent levels of access to care. Cunningham et al. (2000), for example, in a study of relative risk of six-year mortality for Hispanic, African-American, and white patients hospitalized as a result of HIV-related illness, found that Hispanics experience twice the risk of dying as whites, after controlling for sociodemographic characteristics, (e.g., access to care and insurance) and clinical characteristics (e.g., severity of illness and disease stage). Use of antiretroviral drugs prior to hospitalization did not diminish the impact of ethnicity on survival.

African Americans with HIV infection are less likely to receive antiretroviral therapy, less likely to receive prophylaxis for pneumocystic pneumonia, and less likely to receive protease inhibitors than non-minorities with HIV. These disparities remain even after adjusting for age, gender, education, and insurance coverage.

Shapiro et al. (1999) assessed racial/ethnic, gender, and other sociodemographic variations in care (number of care-seeking visits and use of protease inhibitors [PI] or nonnucleoside reverse transcriptase inhibitors [NNRTI]) for persons infected with HIV. Adjusting for insurance status, CD4 cell count, sex, age, method of exposure to HIV, and region of country, African-American and Hispanic patients were 24% less likely than whites to receive PI or NNRTI at initial assessment. This disparity declined to 8% at the final assessment stage, a difference that remained statistically significant. On average, blacks waited 13.5 months to receive these medications, compared with 10.6 months for whites.

Moore et al. (1994) assessed use of anti-retroviral drugs and prophylactic therapy to treat Pneumocystis carinii pneumonia (PCP) in an urban population infected with HIV. No racial differences were found in the stage of HIV disease at the time of presentation. However, 63% of eligible whites, but only 48% of eligible blacks received antiretroviral therapy, and PCP prophylaxis was received by 82% of eligible whites and only 58% of eligible blacks. African-American patients were significantly less likely than whites to receive antiretroviral therapy or PCP prophylaxis. Noting that whites were more likely to report a usual source of care (59%) than African Americans (34%), the authors suggested that increased access to regular healthcare providers among minorities might reduce disparities in HIV treatment.

Bennett et al. (1995) assessed quality of care for Pneumocystis carinii pneumonia (PCP) among white, Hispanic and African-American patients with HIV receiving care in either Veterans Administration (VA) hospitals or non-VA systems. For all patients, regardless of the type of hospital in which they were treated, anti-PCP medications were initiated within two days of admission for 70% to 77% of patients. Approximately 60% of patients underwent a bronchoscopy at some point during hospitalization. Black and Hispanic patients at non-VA hospitals, however, were more likely to die during hospitalization, and were less likely to undergo bronchoscopy in the first two days of admission. No racial differences were found in use of bronchoscopy, receipt of anti-PCP medications within two days of admission, or mortality in VA hospitals.

Asthma

African Americans, particularly those living in urban areas characterized by concentrated poverty, are at greater risk of morbidity and mortality due to asthma. It is unclear if the greater prevalence of asthma among African Americans is due to biologic or genetic predisposition, socioeconomic factors, or environmental living conditions, although high rates of air pollutants in urban communities is likely a key factor (Institute of Medicine, 1999c). Management and control of the disease is affected by socioeconomic as well as cultural considerations; African Americans are more likely to receive treatment for asthma in emergency rooms, and are more likely to use inhaled bronchodilator medications than inhaled corticosteroids, suggesting that management of the disease in this population has been focused more on acute symptom control as opposed to suppression of chronic airway inflammation. These patterns are not fully explained by socioeconomic differences between blacks and whites (Zoratti et al., 1998).

Zoratti and colleagues (Zoratti et al., 1998), in a study of African-American and white patients enrolled in a managed care system, found that after controlling for income, marital status, gender, and age, African-American patients were more likely than whites to access care in emergency rooms, were hospitalized more often, and were less likely to be seen by an asthma specialist. African Americans were also more likely to use oral corticosteroids and were less likely to be prescribed inhaled anticholinergic medications. The authors note that the population at highest risk for the most severe asthma and the poorest management of the disease had the least access to specialists and the appropriate medications to manage chronic symptoms. While this study was unable to assess the severity of disease in the patient population and could not assess long-term follow-up, African Americans seen in emergency rooms appeared not to receive appropriate rates of referral to specialty care. The authors speculate that several barriers to referral may exist, particularly for low-income African Americans, including geographic distance from specialists (who are primarily located in suburban and higher-income communities), the presence of other life demands and challenges, and assumptions on the part of primary care physicians that low-income patients would be unable to maintain compliance with treatment regimens.

A combination of poor patient understanding of asthma management and inadequate physician monitoring may contribute to disparities in asthma care. Blixen et al. (1997) surveyed 24 African-American patients with asthma who were treated in an emergency department for acute asthma symptoms, and found that despite having relatively high levels of access to care (half reported belonging to an HMO, 54% lived within 10 minutes away from a regular source of healthcare, and 70.8% reported having a regular physician to treat their asthma), the disease was typically poorly managed. Overall disease-related quality of life scores suggested that these respondents experienced poorer quality of life related to asthma than white patients assessed with the same instrument in prior studies. Fewer than half (45.8%) used NIH-recommended prophylactic anti-inflammatory medication, and a majority (70.8%) managed symptoms with an inhaled beta agonist inhaler. Over half (58.3%) knew what a home peak flow meter was, but fewer than half reported that their doctor had recommended its use and only 29.2% had one in the home. A majority (62.5%) made one to three visits to the emergency departments within the past three months, and fewer than half reported speaking with their physician or nurse about asthma-related problems.

In contrast, in a study of over 5,000 patients to assess the consistency of asthma care in relation to national guidelines, Krishnan et al. (2001) found that after controlling for patient age, education, employment, and symptom frequency, no significant differences existed between African-American and white patients in use of medication regimens and asthma specialty care. Findings of racial or ethnic differences in asthma care are therefore somewhat mixed, and may vary as a function of the educational level of patient populations studied.

Diabetes

African Americans, Hispanics, and Native Americans experience a 50%-100% higher burden of illness and mortality due to diabetes than white Americans, yet the disease appears to be more poorly managed among minority patients. In a study of nearly 1,400 Medicare beneficiaries with a diagnosis of diabetes, Chin, Zhang, and Merrell (1998) found that even after controlling for patients' gender, education, and age, African-American patients were less likely to undergo a measurement of glycosylated hemoglobin, lipid testing, ophthalmologic visits, and influenza vaccinations than white patients. African-American patients with diabetes were also more likely to use hospital emergency departments and had fewer physician visits. Similarly, Cowie and Harris (1997) found that African-American non-insulin dependent diabetes patients were more likely to be treated with insulin than whites and Mexican Americans. No significant differences were found among the racial and ethnic groups, however, in rates of visits to specialists for diabetes complications, physician testing of blood glucose, and screening for hypertension, retinopathy, and foot problems. In addition, a higher proportion of African-American patients than non-Hispanic whites and Mexican Americans were found to receive patient education, but the median number of hours of instruction was lower for African Americans. Harris et al. (1999) found that while the majority of subjects in a nationwide study of adults with type 2 diabetes used pharmacologic treatment to manage the disease, a higher proportion of African-American patients were treated with insulin and a higher proportion of Mexican-American patients were treated with oral agents when compared with non-Hispanic whites. Multiple daily insulin injections were also more common among whites. Further, a larger percentage of African-American women and Mexican-American men were found to have poor glycemic control (HbA1c > 8%) when compared with other groups. There was no relationship between glycemic control and patient socioeconomic status or access to care for any racial or ethnic group.

Analgesia

Given the role of cultural and linguistic factors in both patients' perceptions of pain and in physicians' ability to accurately assess patients' pain (to be discussed in greater detail in Chapter 3), it is reasonable to suspect that healthcare disparities might be greater in pain treatment and other aspects of symptom management than in treatment of objectively verifiable disease. Several studies have documented underuse of analgesics among minority patients, both in in-patient and outpatient settings.

Todd, Samaroo, and Hoffman (1993), for example, found that among Hispanic and non-Hispanic white patients with long-bone fracture treated at the UCLA Medical Center emergency department, Hispanic patients were twice as likely as white patients to receive no pain medication, even after controlling for patient, injury, and physician characteristics. A follow-up study (Todd, Lee, and Hoffman, 1994) revealed that physicians' assessments of pain severity did not differ among Hispanic and non-Hispanic white patients presenting to the emergency department with extremity trauma, ruling out physicians' ability to assess pain as a possible explanation for disparities in analgesic use. Todd and colleagues (Todd et al., 2000) also found that after controlling for time since injury, time in the emergency department, need for fracture reduction, and payer status, African-American patients with long-bone fractures seen in emergency rooms were less likely than whites to receive analgesia. Similarly, as noted above, Bernabei et al. (1998), in a study of elderly nursing home residents with cancer, found that African Americans were 63% more likely than whites to receive no pain medication, after accounting for patients' gender, marital status, severity of illness, and cognitive status. Cleeland et al. (1997) found that minority cancer patients were more likely than whites to receive inadequate pain medication.

Study findings regarding use of analgesia, however, are not entirely consistent. Ng et al. (1996), for example, found that white and African-American post-operative patients were prescribed more narcotics than Asian-American and Hispanic patients. This difference persisted after adjustment for age, gender, preoperative use of narcotics, health insurance, and pain site. These findings suggest that cultural and linguistic barriers, which may have been more pronounced among Hispanic and Asian-American patients, may indeed play a significant role in physicians' ability to detect pain symptoms. These findings are in contrast to that of Todd and colleagues (Todd, Lee, and Hoffman, 1994; Todd, Samaroo, and Hoffman, 1993), who controlled for patient characteristics such as language in finding that Hispanic patients seen in emergency care settings were less likely to receive analgesia. In addition, Weisse et al. (2001) used an experimental design to assess primary care physicians' recommendations regarding treatment of hypothetical patients presenting with pain (kidney stone pain or lower back pain) or a control condition (sinusitis). Symptom presentation and severity were held constant, but the investigators varied the "patients'" race (African American or white) and gender. No overall racial or gender differences were found in treatment recommendations. However, when the physicians' recommendations were analyzed by gender, a significant interaction was observed. Male physicians prescribed higher doses of pain treatment to white than African-American patients and to male than female patients. Female physicians, on the other hand, prescribed higher doses to African Americans than whites and females than males. Among "patients" presenting with sinusitis, no overall differences were observed in physicians' decisions to treat patients with antibiotics, but white patients were prescribed a longer course of antibiotics and were prescribed refills more often than African-American patients. These findings lead the authors to conclude that male and female physicians respond differently to patients' gender and race.

Rehabilitative Services

Studies of racial differences in the use of rehabilitative services, such as occupational or physical therapy, yield mixed results. Hoenig, Rubenstein, and Kahn (1996) assessed racial and other sociodemographic and geographic differences in the use of physical and occupational therapy among elderly Medicare patients with acute hip fracture. Assessing records of 2,762 Medicare patients treated in 297 randomly selected hospitals from five states, the authors found that after controlling for patient clinical characteristics, African-American patients (63%) were more likely to receive a lower intensity of physical or occupational therapy than non-African Americans (43%). Similarly, Harada et al. (2000) assessed use of physical therapy among patients hospitalized in acute and/or postacute settings following hip fracture, and found that African-American patients were less likely than whites to receive acute physical therapy only, were less likely to receive therapy in both acute care and skilled nursing facilities, and were more likely to receive no physical therapy at all.

In contrast, Horner et al. (1997), in a study of inpatient utilization of physical and occupational therapy following stroke, found that a larger proportion of African American patients received physical or occupational therapy during hospitalization. After adjusting for clinical and socioeconomic factors associated with the use of physical and occupational therapy, however, no racial differences were found in the likelihood of use of therapy or time to initiate therapy (African Americans = 6.6 days, whites = 7.4). Similarly, no racial differences were found in length of physical or occupational therapy in days or as a proportion of hospital stay.

Maternal and Child Health

In recent years, several federal and state initiatives have been implemented to promote access to appropriate prenatal, perinatal and postnatal care for pregnant women and their children. Despite these efforts, many of which have been directed at low-income and uninsured women, racial and ethnic disparities have been found with modest consistency in a range of maternal and child health services.

Aron et al. (2000) assessed differences in rates of cesarean delivery by patient race and insurance status among over 25,000 women seen in 21 hospitals in northeastern Ohio. While the unadjusted overall rate of cesarean delivery was similar in white and non-white (over 90% African-American and other racial and ethnic groups) patients, adjusted analyses that controlled for clinical risk factors revealed that non-white patients were more likely to receive cesarean delivery. In contrast, Braveman et al. (1995) found that after adjusting for insurance status and personal, community, medical, and hospital characteristics, black women were 24% more likely to undergo cesarean than whites. Latino women were also at a slightly elevated risk for cesarean delivery compared with whites. Among women who delivered high-birth-weight babies, gave birth at for-profit hospitals, or resided in communities where 25% or more of the population were non-English speaking, cesarean delivery was more likely among non-whites and was more than 40% more likely among black women than white women.

Brett, Schoendorf, and Kiely (1994) assessed use of prenatal care technologies (i.e., ultrasonography, tocolysis, amniocentesis) among African-American, Hispanic, and white women, and found inconsistent racial differences in these services, after controlling for maternal age, education, marital status, location of residence, birth order, timing of first prenatal care visit, and plural births. Amniocentesis was used substantially less frequently by black women, while black women underwent ultrasonography slightly less frequently than white women. Black women with singleton births were slightly more likely to receive tocolysis than white women, although the risk of idiopathic pre-term delivery is estimated to be three times higher in black women. Black women with plural births received tocolysis two-thirds as often as white women.

In a study of civilian vs. military outcomes in prenatal care utilization, birth weight distribution, and fetal and neonatal mortality rates, Barfield et al. (1996) found that prenatal care utilization was lower for black patients than white patients in both military and civilian populations. The magnitude of the disparity was lower, however, in the military population. Similarly, Kogan et al. (1994) assessed self-reported receipt of prenatal care advice from providers among over 8,300 white and African-American women. After adjusting for age, marital status, education, income, site of prenatal care, type of payment, maternal health behaviors, when trimester care began, and prior adverse pregnancy outcomes, the authors found that white women were more likely to report receiving advice for alcohol and smoking cessation than African-American women.

Breast-feeding promotion narrowly missed significance with a trend toward more advice for white women. A significant interaction between race and marital status emerged, such that black single women were 1.4 times more likely than single white women to not receive advice on drug cessation, while there were no racial differences among married women.

Childrens' Health Services

As is the case with maternal and infant health services, several federal and state initiatives have been initiated to improve access to healthcare among low-income children and adolescents (most notably, the federal State Child Health Insurance Program [SCHIP]). Several studies note racial and ethnic disparities in hospital-based and outpatient child health services. However, no studies to date have assessed the effectiveness of SCHIP in reducing racial and ethnic disparities in care.

Furth et al. (2000) assessed access to kidney transplantation among over 3,000 African-American and white youth under age 20 with ESRD. Controlling for factors such as age, gender, cause of ESRD, family socioeconomic status (SES), incident year of ESRD, ESRD network, and facility characteristics, the authors found that African-American youth were 12% less likely than white patients to be activated on the kidney transplant wait list. Family socioeconomic characteristics, however, reduced this disparity; the relative hazard for black patients in the lowest SES quartile being activated on the wait list was .84, compared with relative hazard of 1.0 for black patients in the highest SES quartile.

Hahn (1995) assessed use of prescription medications between two samples of children (ages 1 to 5 and ages 6 to 17) who had at least one ambulatory care visit in 1987. Among children aged one to five, African-American children were half as likely to receive prescription medication compared with white children. Adding health factors to the model did not change this relationship. However, the addition of numbers of physician visits reduced these differences, such that they were no longer significant. There was no difference in the probability of receiving medication for Hispanic children compared with white children. After controlling for age, maternal education, insurance, poverty status, source of care, geographic location, health status, number of bed days, number of reduced activity days, and physician visits, black children received the fewest number of medications. The average number of medications for black children was 86.5% compared to that of white children, while Hispanic children averaged 94.1% of medications compared to that of white children. Among children aged 6 to 17 years, African-American and Hispanic children were 46% and 38% less likely, respectively, to receive any prescription medication compared with white children. The addition of health factors and numbers of physician visits did not change these relationships, and they remained after controlling for age, maternal education, insurance, poverty status, source of care, geographic location, health status, number of bed days, number of reduced activity days, and physician visits. Similarly, Zito et al. (1998) found that white children were twice as likely to receive psychotropic prescriptions compared with African-American children.

A study examining parents' perceptions of pediatric care found striking racial and ethnic differences. Weech-Maldonado et al. (2001) used data from the National Consumer Assessment of Health Plans (CAHPS) Benchmarking database and found that minority parents, particularly non-English speakers, were less satisfied than white parents with pediatric services, after controlling for parents' gender, age, education, and their children's health status. African-American and American-Indian parents were found to be less satisfied than whites in getting needed care, the timeliness of care, provider communication, and health plan services. Among Asian-American and Hispanic parents, parental satisfaction was lower than for whites only among those who were non-English speakers. Asian-American and Hispanic non-English speakers rated staff helpfulness, timeliness of care, provider communication, health plan services, and getting needed care lower than did white parents, while Asian-American and Hispanic parents who were proficient in English did not differ significantly from whites on any reports of care.

Mental Health Services

Several studies document racial and ethnic variation in receipt of mental health services. Significantly, the U.S. Surgeon General recently completed a major report assessing racial and ethnic disparities in mental health and mental healthcare that reviews much of the available literature. That report finds that more so than in other areas of health and medicine, mental health services are "plagued by disparities in the availability of and access to its services," and that "these disparities are viewed readily through the lenses of racial and cultural diversity, age, and gender" (U.S. DHHS, 2001a, p. vi). Major findings of the report include that: mental illnesses are real and disabling conditions that affect all populations (regardless of race/ethnicity); striking disparities are found for racial and ethnic minorities; and these disparities impose a greater disability burden on racial and ethnic minorities. In addition to universal barriers to quality care (e.g., cost, fragmentation of services), the report notes that other barriers, such as mistrust, fear, discrimination, and language differences carry special significance for minorities in mental health treatment, as these barriers affect patients' thoughts, moods, and behavior. Communication and trust are particularly critical in treatment, the report notes, and differences in the cultural perspectives of the patient and clinician/healthcare system must be acknowledged and addressed (U.S. DHHS, 2001a).

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Several studies have examined disparate use of psychotropic medications and mental health services and find disparities, with minorities in some cases receiving *higher* quantities of medications. For example, in a study examining prescriptions of antipsychotic medications by physicians in psychiatric emergency services, Segal, Bola, and Watson (1996) found that African-American patients received more oral doses and injections of antipsychotic medications. The 24-hour dosage of antipsychotic medication given to African Americans was also significantly higher that for other patients. Analyses controlled for several clinical factors including presence of psychotic disorder, severity of disturbance, dangerousness, psychiatric history, if physical restraints were used, hours spent in the emergency service, clinician's efforts to engage patient in treatment, and whether optimum time was spend on the evaluation. The study also found that the tendency to overmedicate African-American patients was lower when a clinician's efforts to engage the patients in treatment were rated as being higher. Models predicting number of medications, number of oral and injected antipsychotic and 24-hour dosage became non-significant.

In contrast, a study examining medication prescribed for depression yielded different results. Melfi and colleagues (2000) assessed antidepressant treatment in a population of Medicaid beneficiaries diagnosed with depression. Analyses controlled for age, gender, Medicaid eligibility status, and several clinical factors. Forty-four percent of whites and 27.8% of blacks received antidepressant treatment within 30 days of the first indicator of depression. White patients were more likely to receive antidepressants than black patients and patients in the other/unknown racial category.

An examination of privately insured federal employees, conducted by Padgett and colleagues (1994), assessed racial and ethnic differences in use of inpatient psychiatric services. Analyses controlled for a variety of predisposing factors (e.g., education, family size, racial/ethnic composition of residing county), enabling factors (region of country, salary, high or low option selected for insurance coverage), and need factors (annual medical expenses, family's annual medical expenses, other family member receipt of inpatient psychiatric care, sum of outpatient mental heath visits by other family members). No significant differences were found among blacks, whites and Hispanics as to the probability of a psychiatric hospitalization or in number of inpatient psychiatric days.

Racial and Ethnic Differences in Other Clinical and Hospital-Based Services

Several studies document racial and ethnic disparities in other clinical and hospital-based services. Ebell et al. (1995) assessed the rate of survival by patient race following in-hospital cardiopulmonary resuscitation (CPR) of 656 patients at one of three teaching hospitals. Black patients in this study were less likely than non-black patients to have an admitting diagnosis of myocardial infarction (MI), were less likely to have a history of coronary artery disease, but had a higher severity of illness according to a standard screening instrument. Controlling for these variables, black patients were found to have poorer survival to discharge than non-black patients. Because resuscitation was provided in-hospital, differences in ambulance response time, access to telephones, or other community factors could not account for this difference. Further, because there were no significant racial differences in the success of the resuscitation effort, the difference in survival appears to be related to the quality of care after resuscitation, or to other unmeasured factors.

Devgan et al. (2000) assessed surgical treatment for glaucoma among large samples of African-American and white Medicare patients, and found that African-American patients received argon laser trabeculoplasty or trabeculectomy surgery at nearly half of expected rates, once the age-race prevalence of glaucoma was considered. Arozullah et al. (1999) assessed rates of laparoscopic cholecystectomy among more than 16,000 Veterans Administration (VA) patients diagnosed with gall bladder or biliary disease. After controlling for patient age, marital status, co-morbid illness, year of surgery, and hospital geographic location, the investigators found that African-American patients who underwent cholecystectomy were less likely than white patients to undergo the laparoscopic procedure. In contrast, another study of VA patients (Selim et al., 2001) found that among patients presenting with low-back pain, "non-white" patients in higher levels of pain were more likely to receive lumbar spine radiographs than white patients experiencing similar pain levels, although this racial difference disappeared after controlling for clinical characteristics.

Fewer studies have assessed the quality of basic healthcare services.

In one such study, Ayanian et al. (1999) utilized explicit process criteria and implicit review by physicians to assess the quality of care for patients hospitalized with congestive heart failure and pneumonia. Using records from a stratified random sample of over 2,000 Medicare beneficiaries, the authors found that among patients with congestive heart failure, African Americans received a lower overall quality of care than other patients by implicit review, but not explicit review. Among patients with pneumonia, African-American patients received a lower quality of care by explicit criteria, but not explicit review. These differences persisted in analyses adjusting for patient and hospital characteristics. Adjusted analyses also revealed no significant differences in quality of care for patients from poor communities, as compared with other patients. Similarly, in a review of discharge data from over 1.7 million patients assessed via the Hospital Cost and Utilization Project (HCUP-2), Harris, Andrews, and Elixhauser (1997) found that African Americans were less likely than whites to receive major therapeutic procedures for 37 of 77 conditions, and more likely than whites to receive a major therapeutic procedure in 9.1% of conditions studied. These differences persisted even after controlling for patients' age, expected pay source, indicators of clinical condition, and hospital-level characteristics (e.g., bed size, public ownership, teaching status, and urban location).

In a study of racial differences in mortality and resource use among patients admitted to intensive care units, Williams et al. (1995) found no significant differences in risk-adjusted in-hospital mortality. The authors did find, however, that African-American patients had a shorter length of stay and lower resource use in the first seven days compared with white patients. For example, whites received more technological monitoring (arterial and pulmonary artery catheters, pulse oximetry), more laboratory testing, and a greater proportion of life-saving treatments. These differences persisted after adjusting for patient characteristics and insurance status, leading the researchers to conclude that these differences could reflect undertreatment for African Americans or overutilization of services by whites.

In another study of Medicare patients, Wilson, May, and Kelly (1994) assessed racial differences in receipt of total knee arthroplasty among older adults with osteoarthritis. The authors found that while osteoarthritis was slightly, but not significantly, more common among African Americans, whites were more likely to receive total knee arthroplasty. This relationship held true at all income levels and could not be explained by prior procedures or the use of alternative procedures.

White-Means (2000) assessed the use of long-term care services (paid caregiver, therapist, mental health, dentist, foot doctor, optometrist, chiropractor, ER visit, doctor visits, prescription medications) by disabled elderly Medicare patients, as a function of medical conditions and disabilities, income, insurance status, regional and rural residence, whether unpaid caregivers provide in-home services, and sociodemographic characteristics (e.g., gender, education). Given similar medical conditions, African-American patients were found to be less likely to use long-term care services, particularly prescription medications and physician services. African-American patients who lived in rural areas, small cities, and western states or who had more joint and breathing problems were more likely to use services. Differences in personal attributes (e.g., income, health) did not fully explain racial differences in use of prescriptions and physician services. Similarly, Khandker and Simoni-Wastila (1998) assessed racial differences in use and level of use of prescription drugs among a sample of Medicaid patients, controlling for age, sex, and Medicaid eligibility characteristics. African-American children were found to use 2.7 fewer prescriptions compared with white children. African-American adults used 4.9 fewer prescriptions, and African-American elders used 6.3 fewer prescriptions than white elders. White Medicaid enrollees had higher use and spending than black enrollees across most high-volume therapeutic drug categories.

In a study of primary care, Shi (1999) assessed patients' perceptions of intake, service delivery, referral, and follow-up among nearly 15,000 white, African-American, Hispanic, and Asian respondents to the Medical Expenditure Panel Survey (MEPS). Controlling for patients' perceived need for care, ability to obtain services, and frequency of use of care, Shi found that African-American, Hispanic, and Asian-American patients tended to experience greater barriers to receiving primary care. Hispanic patients were over 40% less likely to have a usual source of care, while those African-American and Hispanic patients who did report a regular primary care provider tended to reference a facility (hospital or clinic) rather than an individual provider. African Americans were less likely to have a primary care specialist as a regular provider. All three minority groups were 39% to 48% more likely than whites to report long waiting periods before seeing their care provider, but Asian-American patients were more likely than any racial/ethnic groups to report that getting an appointment was "very difficult." On an encouraging note, this study also found that overwhelming numbers of whites and minority patients reported confidence in their provider and that their usual care provider "listened to them"—over 90% agreement for all groups.

A small number of studies have assessed racial and ethnic differences in preventable hospitalizations. Preventable hospitalizations are those that might not have occurred had patients received timely and appropriate preventive care in the case of acute conditions, as well as effective and continuous care for chronic conditions. Gaskin and Hoffman (2000) assessed rates of preventable hospitalizations among children, working-age adults, and the elderly, while adjusting for a range of sociodemographic (e.g., age, income, insurance status), community-level (e.g., neighborhood characteristics, physicians, and hospital beds per capita), and health status (e.g., co-morbidities) variables. Results indicated that African Americans and Hispanics were significantly more likely to be hospitalized for preventable conditions than whites, even after adjusting for patient differences in healthcare needs, socioeconomic status, insurance coverage, and the availability of primary care providers. Subsequent analyses of individuals within similar health insurance plans confirmed that these differences exist independently of insurance status. The findings were limited by the lack of information on the competency of providers seen by minority patients, the adequacy of insurance plans, and personal health-seeking behavior.

Minority patients are more likely to undergo amputation than white patients. Such is the case with limb amputation, where more than 50,000 procedures are performed each year among patients with diabetes. Guadagnoli et al. (1995) assessed racial differences in the use of amputation and leg-sparing surgery among a random sample of Medicare patients. The authors found that African-American patients were nearly twice as likely as whites to undergo above-knee amputation, and were slightly more likely than whites to undergo toe and/or foot amputation, controlling for co-morbid disease, prior hospitalizations, geographic region, hospital teaching status, and other factors. Whites, on the other hand, were more likely to undergo lower-extremity arterial revascularization and percutaneous transluminal angioplasty than African-American patients. The study did not, however, control for disease severity, although the authors note that controls for co-morbid disease and prior hospitalizations may attenuate this potential confounding factor. Similarly, Gornick et al. (1996), in a study of 26.3 million Medicare beneficiaries, found that African Americans were more likely than whites to undergo bilateral orchiectomy or amputation of the lower limbs, even after controlling for income differences. Finally, Collins et al. (2002) assessed racial and ethnic differences in rates of lower extremity amputation versus lower extremity bypass revascularization among a sample of VA patients with peripheral arterial disease. In this prospective study, the authors statistically adjusted for a range of factors that may be associated with the use of amputation versus revascularization (e.g., presence of diabetes, hypertension, heart disease, or other co-morbid conditions, behavioral risk factors such as smoking or alcohol use, geographic location of the VA hospital), and found that African-American and Hispanic patients were 1.5 and 1.4 times, respectively, more likely than white patients to undergo amputation than revascularization (Collins et al., 2002).

Gaps in Existing Research

While the research reviewed here points to significant variation in access to and use of services by race and ethnicity, several gaps exist that must be addressed to develop a more comprehensive understanding of racial and ethnic disparities in healthcare. The most significant gap in this research is the failure to identify mechanisms by which these disparities occur. A robust research agenda is needed to better understand how the process and structure of care may vary by patient race (see chapter on "Needed Research"). Such research must consider the range of influences on patients' and providers' attitudes and expectations in the clinical encounter, clinical decision-making processes employed by healthcare providers and the influence of patient race in these processes, the nature and quality of communication between patients and providers (particularly as it occurs across cultural and/or linguistic lines), the environments and settings in which care is delivered, and other factors that will be discussed later in this report. In addition, as noted below, no research has yet illuminated the relative contribution of these factors to the healthcare disparities observed in the literature.

Assessing sources of disparities in care in the current literature is also complicated by many methodological considerations. Attempts to control for SES differences are inconsistent, with some researchers employing patient income or education as sole indicators of SES, and others using proxy variables such as estimates of income on the basis of patients' zip code information. Most studies control for insurance status, but some combine data from patients insured via different types of health systems (e.g., HMO or fee-for-service) or different sources of insurance coverage (e.g., public vs. private).

Some studies have explicitly examined differences in where racial and ethnic groups receive care (e.g., public vs. private healthcare settings), and clinical factors such as stage of illness progression at presentation (e.g., on average, ethnic minority cancer patients present at later stages of disease progression, thereby limiting treatment options) or other co-morbid factors that may limit treatment options. Other studies have attempted to control for the quality of diagnostic evaluation and disease severity. Adequate assessment of these factors, however, is often limited by a lack of sufficient information in administrative claims data upon which many studies are based. These datasets often rely on crude or incomplete measures of disease severity and the types of treatment provided, and contain limited information on prior diagnoses or treatments. Further, most studies (with the exception of several studies of cardiovascular care) lack comparison to standards for the appropriateness of care, leaving open the question of whether care received was sufficient given the type and severity of disease.

Finally, one of the most significant limitations of existing research is the failure to analyze differences in care beyond comparisons of African-American and white patients. With the exception of a few large studies conducted in ethnically diverse regions of the United States such as California and New York, few studies have assessed whether disparities in care exist for Hispanic and Asian-American populations. Further, few studies have examined subgroup differences within these populations. These issues are particularly salient for Hispanic and Asian-American subgroups, whose healthcare may be complicated by linguistic and cultural differences, immigration status, and other access-related issues.

The Extent of Racial and Ethnic Disparities in Healthcare

As the discussion above suggests, many factors influence the provision and receipt of diagnostic and therapeutic healthcare services. Further, healthcare outcomes are influenced by a wide variety of factors, many of which are beyond the scope of clinical factors such as the efficacy of treatment protocols. Assessing the relative contribution of the many patient, provider, and system-level influences on care is therefore an imprecise exercise. Similarly, assessing the extent of racial and ethnic differences in healthcare that are not otherwise attributable to known factors such as access to care is not likely to yield reliable estimates.

Some studies have attempted to assess the extent of racial and ethnic disparities in a small number of key indicators of healthcare use. Weinick, Zuvekas, and Cohen (2000) assessed racial and ethnic differences in access to and use of healthcare services (i.e., having a usual source of care and the use of ambulatory care services), and evaluated the magnitude of these differences above and beyond access-related factors such as insurance status, income, and other socioeconomic characteristics. The authors found that after adjusting for health insurance, income, age, sex, marital status, education, health status, region of the country, and residence in a metropolitan area, Hispanics and African Americans were significantly more likely to lack a usual source of care and were less likely to use any ambulatory care services than white Americans. Hispanics were nearly 10% more likely to lack a usual source of care, and African Americans and Hispanics were nearly 9% and over 10% less likely, respectively, to have made any ambulatory care visits. The authors performed additional analyses to assess the extent of these disparities, simulating conditions in which all racial and ethnic groups earned equivalent income and were insured at the same level. For all groups, 55% to 77% of the observed differences remained, demonstrating that "health insurance coverage and income typically each account for only about one fifth, and never even as much as one half, of the disparities . . . observed" (Weinick, Zuvekas, and Cohen, 2000, p.43). The authors acknowledge, however, that these racial and ethnic disparities in the use of services could be related to unmeasured factors, such as job-related and non-financial barriers, poor cultural and linguistic access, an inadequate geographic distribution of healthcare providers in racial and ethnic minority communities, and other factors.

More such studies are needed to assess the relative contribution of access-related factors (e.g., insurance status), other socioeconomic and geographic variables (e.g., patients' education, income, and the availability of healthcare providers in a community), and racial and ethnic differences in healthcare preferences and attitudes to determine the extent of disparities in care. This research is needed across a range of health conditions. Currently, however, this research does not present a sufficient empirical foundation to assess the extent of racial and ethnic healthcare disparities. The committee therefore concludes that while evidence of racial and ethnic disparities in care appears consistently across a range of health conditions and medical procedures, attempts to assess or quantify the extent of these disparities, based on evidence currently available, are not likely to prove to be reliable or valid.

SUMMARY

Racial and ethnic minority patients are found to receive a lower quality and intensity of healthcare and diagnostic services across a wide range of procedures and disease areas. This finding is remarkably consistent and robust, as only a handful of the several hundred studies reviewed here and by others (e.g., Geiger, this volume; Kressin and Peterson, 2001; Mayberry et al., 2000) find no racial and ethnic differences in care. In studies where patients' sociodemographic characteristics (e.g., education level, income), insurance status (e.g., public or privately funded insurance) and clinical factors (e.g., co-morbid illness, severity of disease) are controlled, these racial and ethnic differences are generally attenuated, but rarely disappear completely. Further, in a few well-designed, prospective studies, these disparities in care have been linked to poorer clinical outcomes and higher mortality among minorities (Peterson et al., 1997; Bach et al., 1999).

Insurance status, in particular, emerges in several studies as a key predictor of the quality of care that patients receive. The privately insured generally receive a higher quality of care than those who are insured through publicly funded sources (e.g., Medicaid), or those who have no health insurance. Racial and ethnic minorities are disproportionately represented between the latter two categories, yet when sources of insurance are controlled statistically or by study design, race and ethnicity remain as significant predictors of the quality of care. This disparity is best illustrated in studies of care among Medicare populations (Gornick et al., 1996), which reveal lower rates of use of effective, higher technology diagnostic and therapeutic procedures among minorities for illnesses such as heart disease, cancer, and other chronic illnesses, and higher rates of less desirable procedures, such as amputation and bilateral orchiectomy.

The quality of care that minority and non-minority patients receive is also partly a function of where these populations tend to receive care. Several studies note that patient care is of lower quality in non-teaching hospitals, public hospitals and clinics than in teaching hospitals or private settings. While some minorities are more likely to receive care in the former settings, they are more likely to access care in emergency departments, and are less likely to have a regular source of care (Collins, Hall, and Neuhaus, 1999). Further, minorities tend to have lower access than whites to specialty care, and are less likely to be treated in settings that offer higher-technology procedures—all factors related to the quality of care in the studies reviewed here. Again, however, when these variables are controlled statistically or by study design, racial and ethnic minorities tend to receive a lower quality of care.

Most studies have compared the quality of care received by minority patients relative to that of whites as the standard of comparison. This type of analysis, however, fails to provide a complete picture of the appropriateness of care, as whites may over-utilize some services, and racial differences in the severity of disease at presentation or treatment response may contraindicate the use of similar therapeutic interventions. Some of the best-designed studies reviewed here, however, assessed the quality of care provided relative to well-established clinical criteria, and use objective diagnostic measures to assess the extent and severity of disease. In these studies, race and ethnicity again typically emerge as significant predictors of the quality of care received, indicating that disparities in care are not simply a function of disproportionate use by whites or greater disease severity among minorities.

These findings appear consistently in studies of differences in care received by African-American and white populations, and increasingly, in studies involving Hispanic patients. A few studies suggest that Asian Americans also are less likely to receive the same quality of care as whites (e.g., Carlisle et al., 1995). This review produced no studies where the quality of care for American Indian, Alaska Native, or Pacific Islander populations were explicitly studied, or where the sample size of these populations permitted analysis. Further, in few instances were subgroups of these populations explicitly studied. As will be discussed in a later chapter, research is urgently needed to assess the quality of care for these populations relative to the burden of illness.

A few of the studies that find no racial and ethnic differences in care indicate that characteristics of health systems may serve an important role in mediating these disparities. Studies of patients in military healthcare systems reviewed here indicate a lower prevalence of racial or ethnic differences in the quality of healthcare that active-duty personnel or their families receive. Similarly, some studies of patients in VA systems demonstrate reductions in racial and ethnic differences in care, although these studies are less consistent. Future research must assess the range of factors that distinguish these heath systems from other private or publicly funded systems to better understand how patient race and ethnicity are related to care and care outcomes. For example, the impact of differences in provider profiles should be investigated, as VA hospitals commonly are staffed by a larger percentage of trainees than other systems. Nonetheless, these studies suggest that characteristics of these health systems, perhaps related to universal or equal access to care, may attenuate disparities that are typically found in other systems.

Collectively, these findings support the hypothesis that patients' race and ethnicity significantly predict the quality and intensity of care that they receive. Succeeding chapters of this report will review the historical context in which these disparities occur, and examine the types of settings in which minorities typically receive care, as well as the characteristics of healthcare providers that serve them. Potential sources of healthcare disparities will be closely examined, including patient preferences; provider biases, stereotyping, and clinical decision-making; and the impact of financial and institutional characteristics of health systems on the quality of care for minority patients. Finally, several strategies to eliminate these disparities are proposed, and future research directions are outlined.

Finding 1-1: Racial and ethnic disparities in healthcare exist and, because they are associated with worse outcomes in many cases, are unacceptable.

Racial and ethnic disparities in healthcare exist. These disparities are consistent and extensive across a range of medical conditions and healthcare services, are associated with worse health outcomes, and occur independently of insurance status, income, and education, among other factors that influence access to healthcare. These disparities are unacceptable.