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Commissioned Paper: Healthcare Disparities Measurement

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THE DISPARITIES
SOLUTIONS CENTER
One Goal – High Quality Care for All

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EXECUTIVE SUMMARY

The purpose of this report is to: 1) provide guidance to a National Quality Forum (NQF) Steering Committee charged with selecting and evaluating disparity-sensitive quality measures, 2) describe methodological issues with disparities measurement, and 3) identify cross-cutting measurement gaps in disparities.

1. Background: Disparities and Quality Measurement

The Institute of Medicine (IOM) reports *Crossing the Quality Chasm* and *Unequal Treatment* highlight the critical nexus between improving quality and eliminating racial and ethnic disparities in healthcare. Racial and ethnic minorities and people with limited English proficiency (LEP) often receive lower quality of care. The ability of hospitals, health plans, and other healthcare organizations to identify and address disparities hinges on effective collection of patient demographic data that captures race, ethnicity, language, and income. This information, however, often is not collected by providers and, when collected, rarely analyzed to examine disparities in quality of care. We note here that some analysts differentiate between "health disparities" and "healthcare disparities." The former usually refers to differences in health status or health outcomes, which may be difficult to attribute to individual providers. In this report we focus on disparities in *healthcare,* defined by the IOM as "racial and ethnic differences in the quality of healthcare that are not due to access related factors or clinical needs, preferences, and appropriateness of intervention.[*],[1]

2. Data Collection: Building the Foundation

The Office of Management and Budget's (OMB) basic racial/ethnic categories (i.e., White, Black, Asian, American Indian/Alaskan Native, Native Hawaiian/Other Pacific Islander) should be supplemented by additional questions that identify subgroups within each group to capture better the unique experiences of smaller populations within each major category (e.g., the category "Asian" encompasses people of Japanese, Indian, Laotian, etc., origin). Additionally, people should be able to identify as multiracial a group that should not be considered homogenous but rather should be divided into subgroups based on the component identities.

To assess language proficiency and preference, we endorse the approach proposed by the IOM's Subcommittee on Standardized Collection of Race/Ethnicity Data for Healthcare Quality

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[*] Since the IOM report was published, the phrase "not due to access-related factors," has fallen out of favor with some groups. An alternative definition, although not one focused on racial/ethnic disparities, is contained in a toolkit from the National Partnership for Action (NPA) to End Healthcare Disparities. "A health disparity is a particular type of health difference that is closely linked with social or economic disadvantage. Health disparities adversely affect groups of people who have systematically experienced greater social and/or economic obstacles to health and/or a clean environment based on their racial or ethnic group; religion; socioeconomic status; gender; age; mental health; cognitive, sensory, or physical disability; sexual orientation or gender identity; geographic location; or other characteristics historically linked to discrimination or exclusion."
(http://minorityhealth.hhs.gov/npa/files/Plans/Toolkit/NPA_Toolkit.pdf)

Improvement (the "IOM Subcommittee") in conjunction with the Committee on Future Directions for the National Healthcare Quality and Disparities Report, which recommends using two types of questions to assess both proficiency and preferred language for medical encounters—"Spoken English language proficiency" and "Spoken language preferred for healthcare." Because of the great degree of variability in the languages spoken in different parts of the country, local and regional providers are best positioned to develop a response list relevant to their area.

Information on race, ethnicity, and language should be obtained by self-report. However, these data are not widely available. In particular, although they are uniquely positioned to track disparities in ambulatory care, insurance plans have limited ability to obtain self-identified race and ethnicity due to minimal contact with enrollees, limits by some states that prohibit insurers from requesting such information from applicants, enrollee reluctance to disclose, and member turnover. When self-report data are not available, estimations using a combination of geo-coding and surname analysis should be used.

> **Recommendation: Directly reported race/ethnicity and language (self-identified) is the preferred method for data collection. Efforts should be taken to solidify and support the infrastructure for race, ethnicity, and language proficiency data collection from patients/members within all healthcare settings. There is clear guidance from IOM/NQF/HRET that should be followed for self-reports (the "gold standard"). Where not feasible in the short term, indirect estimation can be put into place immediately.**

In considering the future collection of information on race, ethnicity, and language, several considerations should be taken into account. First, as legislation increasingly requires the reporting of this information, it will be more widely available; and as the use of electronic health records continues to spread, obtaining and sharing this information among different levels of the health system may make measuring disparities more efficient. However, during this time of transition, there also is the possibility that because of their generally more limited access to resources, providers who care for large numbers of minority and LEP patients will lag behind providers of less diverse populations in their ability to collect this information and analyze health outcomes and quality measures by it.

3. Disparities Measures and Indicators: What to Measure?

NQF has previously developed a set of criteria to determine whether a quality measure would qualify as "disparities sensitive." Disparities-sensitive measures are those that serve to detect not only differences in quality across institutions or in relation to certain benchmarks, but also differences in quality among populations or social groupings (race/ethnicity, language, etc.). The NQF portfolio of endorsed standards and measures includes more than 700 performance measures of quality of care for both ambulatory and institution-based settings, including disease-specific measures and cross-cutting measures that apply across disease areas. None of these

measures was designed specifically with the idea of detecting disparities in care by race/ethnicity or language. However, as a broad assessment of quality of care, it is reasonable to assume that some of these measures would be more sensitive to disparities in care than others. We envision identifying current and potential disparities-sensitive measures as a three-step process (below).

Measure Selection/Development Algorithm

Step 1: Assess the portfolio of NQF performance measures using disparities sensitive principles
- Special emphasis on quality gap and prevalence
- NQF measures should be cross-walked with the literature on known areas of disparities

Step 2: Applying new criteria for disparities sensitivity
- When the NQF does not have access to performance data stratified by race/ethnicity, or when known disparities do not exist, additional criteria can be applied to determine potential disparities sensitive measures
  - Care with a high degree of discretion
  - Communication-sensitive services
  - Social determinant dependent measures
  - Outcomes and communication sensitive process measures

Step 3: Developing New Disparities Specific Measures
- Known disparities exist but no quality measure to date
  - Create Disparities Specific Measures
- Consider measures that may occur along clinical pathway

4. Methodological Approaches to Disparities Measurement: How to Measure/Monitor?

In addition to the choice of race/ethnicity measures to use, how data are analyzed and reported can affect the identification and perception of disparities. We discuss several issues around the mathematical analysis of disparities in healthcare. These issues include a selection of reference point, sample size considerations, reporting relative versus absolute differences in care, and adjusting results by demographic case mix versus stratifying results by demographic characteristics, among others.

Whether to report relative or absolute differences in care or favorable or unfavorable events should be determined in the context of the measure, but neither approach is universally superior for each outcome of interest. Summary statistics may be used when groups are arbitrarily defined or when sample size of one group is very small, but should otherwise generally be avoided in favor of paired comparisons because of the many non-transparent characteristics of the statistic. To circumvent this, we recommend a few strategies, including combining smaller groups into broader categories, (i.e., using the OMB categories instead of measures of greater granularity) and using composite quality measures. In addition, when used

for quality improvement and not necessarily for high-stakes reporting, it may be valuable to providers to analyze even small samples for disparities in case it suggests practice patterns that, while not statistically significant, are opportunities for improvement. We also weigh the pros and cons of risk adjustment versus stratification by race/ethnicity, and LEP, and recommend that the ultimate use of the measurement be used to guide selection of one approach over the other. We recommend that stratified models of race/ethnicity should not be adjusted for socioeconomic status (SES). However, payment systems also should consider risk adjusting payments to providers, while holding those providers accountable for equitable performance.

Recommendations:

Whereas some organizations consider any differences in quality to be evidence of a disparity, in this report we believe that for purposes of achieving equity in healthcare that is fair and just, the choice of the reference group should always be the historically advantaged group.

The choice of a disparity measure can lead to different interpretations when making comparisons over time or among providers. Therefore, both absolute and relative statistics should be calculated, and if they lead to conflicting conclusions, both should be presented, allowing the readers to make their own interpretation.

Public reporting of disparities should calculate statistics using both favorable and adverse events. If the results are notably different, both statistics should be reported, allowing the reader to judge the importance by taking the context of the report into consideration.

Because most summary measures of disparities lack "directionality," great care must be taken before using them to track disparities. Paired comparisons using the historically advantaged group as the reference point should be checked to see if a positive finding from the summary statistic reflects superior care received by the disadvantaged group. If so, the context of the report and relevant policy goals need to be considered explicitly.

When clear differences in quality exist by racial/ethnic substrata, further stratification of results will serve to highlight areas of the greatest potential for intervention.

Stratification by race/ethnicity and primary language should be performed when there are sufficient data to do so. Risk adjustment may be appropriate when performance is highly dependent on community factors beyond a provider's control.

Performance reports stratified by race/ethnicity should not be risk adjusted by SES or other contributory factors and instead could optionally be stratified by SES if the data permit.

5. Priorities and Options for Quality Improvement and Public Reporting of Healthcare Disparities

Disparities measurement should achieve generally the same aims as overall quality measurement, that is, to monitor progress, inform consumers and purchasers, stimulate competition, and stimulate innovation. Short case studies of government initiatives, organizations, and institutions that have begun to collect, analyze, and report disparities on quality measures illustrate the incipient progress that is attainable and provide valuable lessons. Massachusetts in particular has been at the forefront of disparities measurement and reduction, experiencing both progress and setbacks. As discussed above, health plans face several barriers to collecting demographic information. Very large plans may not have the resources to invest in collecting these data given the limited contact they have with their large number of enrollees, although smaller plans may have the ability to do so. A few hospitals have begun to construct "dashboards" or disparities reports that display disparities in outcomes for a few standardized measures, and to use these to develop targeted interventions to reduce disparities.

At the same time, challenges exist in program design due to the potential for unintended consequences, such as: 1) minority patients tend to have poorer outcomes than majority patients; 2) hospitals with high numbers of minority patients could be disadvantaged in high-stakes incentive programs; 3) "teaching to the test" may result in the inappropriate provision of services to patients; 4) "color-blind" quality improvement programs could fail to reduce disparities if minority patients do not benefit from them to the same degree as majority patients; and 5) reducing the disparity in situations in which differences can be traced by inappropriate overuse by the majority population would not improve the overall quality of care.

Disparities measurement is undoubtedly an area that will grow in the coming years. To date, regulating bodies and federal and state legislative efforts are fostering the collection of race, ethnicity, and language proficiency data as a precursor to measurement efforts that will allow us to monitor quality and equity of care across the nation and perhaps design programs to encourage their reduction. To avoid unintended consequences, a number of design features should be considered as either alternatives to, or more likely, supplements to be used in combination with, standard components. Among these are:

- Using payment for improvement (versus payment to achieve quality benchmarks or thresholds). The Centers for Medicare & Medicaid Services (CMS) Value-Based Payment program, for example, uses a mix of achievement (median), benchmark (90th percentile) and improvement thresholds.

- Paying for performance based on lower racial/ethnic disparities (versus paying for higher-quality performance applied generally to all patients).

- Conducting special studies that monitor for potential unintended consequences, such as increased difficulty accessing care or adverse financial impacts on safety net providers.

- Paying for performance focused on improving quality of care for minority populations.

- Exception reporting (as used in the United Kingdom).

- Quality improvement efforts targeting safety net providers and high-minority providers (and directing supplemental resources to those providers including the sharing of best practices).

- Assessing structural characteristics of providers until more evidence-based process and outcome measures are developed.

- One option that has not appeared in the literature to our knowledge is the idea of risk adjusting *payments to providers* rather than risk adjusting performance measures. Such an approach recognizes the greater resource needs of providers to reach populations with multiple social disadvantages. Once these resources are available, it may then be more reasonable to hold all providers to the same quality performance standards applied to everyone without risk adjustment.

Developing a standardized and comprehensive set of disparities-sensitive measures that are used across the healthcare continuum is essential in enabling meaningful comparison of equality among providers, institutions, health plans, and regions. While these are being developed, existing measures should be stratified using modifications of the OMB categories and examined for disparities in care. As we move forward, on what level disparities are measured and how this information will be used and reported remains to be determined.

1. Background: Disparities and Quality Measurement

The Institute of Medicine (IOM) reports *Crossing the Quality Chasm* and *Unequal Treatment* highlight the critical nexus between improving quality and eliminating racial and ethnic disparities in healthcare.[1, 3] *Unequal Treatment* found that even with the same insurance and socioeconomic status—and when comorbidities, stage of presentation, and other confounders are controlled for—racial and ethnic minorities often receive a lower quality of healthcare than do their white counterparts. In sum, racial and ethnic disparities in healthcare may be characterized as poorer-quality care for minorities that are not due to access-related factors, patient preferences, or clinical needs or appropriateness of the intervention.[*] Disparities populations include Blacks/African-Americans, Hispanics/Latinos, Asian/Pacific Islanders, Native Americans/Alaska Natives, and persons with Limited English Proficiency (LEP).[†]

Crossing the Quality Chasm suggests that to truly achieve high-quality care, healthcare systems must, among other things, be equitable. Equity is achieved by providing care that is free from disparities and does not vary by personal characteristics such as race, ethnicity, gender, geographic location, and socioeconomic status. Over the past few years, there has been an increased focus on improving quality, eliminating disparities, and achieving equity. These efforts have intensified as research has shown that racial and ethnic disparities in healthcare, and their root causes, have an impact on quality, safety, cost, patient experience, and risk management. For example:

- Patients with LEP and racial/ethnic minorities are more likely than their English-speaking white counterparts to suffer from adverse events, and these adverse events tend to have greater clinical consequences.[4-6]

- Communication problems are the most frequent cause of serious adverse events (as recorded in the Joint Commission database) and arise due to language barriers, cultural differences, and low health literacy, all of which are particularly important issues for racial/ethnic minority patients.[5]

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[*] Some analysts differentiate between "health disparities" and "healthcare disparities." The former usually refers to differences in health status or health outcomes, which may be difficult to attribute to individual providers. IOM defines disparities in *healthcare* as "racial and ethnic differences in the quality of healthcare that are not due to access-related factors or clinical needs, preferences, and appropriateness of intervention."[1]

[†] For the purpose of this work, we are focusing on disparities measures that compare racial, ethnic, and linguistic minorities with the majority population. Although we acknowledge that there are other vulnerable groups that should be considered "disparities populations"—such as women, the disabled, and lesbian/gay/bisexual/transgender (LGBT) individuals, among others—we are concentrating our efforts on the aforementioned groups because: 1) the evidence on racial/ethnic disparities is substantial and has garnered national attention, and 2) efforts to develop measures for these other vulnerable populations are still in the developmental phase. By no means does our focus diminish the importance of disparities in these other groups, and we hope this work can serve as the foundation for future advancements for all vulnerable populations.

- In the presence of communication difficulties with patients (i.e., due to language barriers or cultural barriers) healthcare providers may tend to order expensive tests (such as CT scans) for conditions that could have been diagnosed through basic history taking.[7]

- Patients with LEP have longer hospital stays for some common medical and surgical conditions (unstable coronary syndromes and chest pain, coronary artery bypass grafting, stroke, craniotomy procedures, diabetes mellitus, major intestinal and rectal procedures, and elective hip replacement) than their white counterparts.

- Minorities are more likely to be readmitted for certain chronic conditions,[8-10] such as congestive heart failure.[11] Moving forward, this issue might take on greater financial importance given that the Centers for Medicare & Medicaid Services (CMS) will likely limit or refuse reimbursement for Medicare patients with congestive heart failure who are readmitted within 30 days of discharge.[12, 13]

- Minorities, even when controlling for insurance status, may be at greater risk for ambulatory care sensitive/avoidable hospitalizations for chronic conditions (hypertension and asthma) than their white counterparts.

- There are multiple liability exposures that arise when there is a demonstrated failure to address the root causes for disparities. These include patients' misunderstanding of their medical condition, treatment plan, or discharge instructions (including how to identify complications and when to follow up); ineffective or improper use of medications or serious medication errors; improper preparation for tests and procedures; and poor or inadequate informed consent.

The ability of hospitals, health plans, and other healthcare organizations to identify and address racial and ethnic disparities hinges on their capacity to collect information about their patients' race, ethnicity, and language proficiency. This essential step was recommended in *Unequal Treatment*, as well as in the 2004 National Research Council report *Eliminating Health Disparities: Measurement and Data Needs*.[14, 15] Collecting race and ethnicity data alone is not enough to address disparities, however. Once such data are collected, healthcare organizations should routinely and regularly analyze and review them internally to monitor for disparities. This would allow them to identify variations in quality of care by race, ethnicity, and language proficiency and develop interventions to address them. For example, health plans and hospitals could determine whether patients of different racial and ethnic backgrounds were receiving the recommended testing and treatment for particular clinical conditions and develop quality improvement interventions to address any disparities or variations in care, if found.

To date, several studies have attempted to measure variations in quality by race and ethnicity,[8-11, 16, 17] and some have even tried to address disparities through quality improvement

strategies such as provider education and detailing.[18] However, a 2006 survey of 500 hospitals nationwide found that while 78.4 percent collected patient race information, 50 percent collected data on patient ethnicity, and 50 percent collected data on primary language,[19] fewer than one in five of the hospitals that collected race/ethnicity and language information routinely used it to assess disparities in quality of care, healthcare outcomes, or patient satisfaction.

The National Quality Forum (NQF) has taken the lead on the important issue of disparities measurement, building on its previous work, including the development of the *National Voluntary Standards for Ambulatory Care–Measuring Healthcare Disparities*[20] and the consensus report on *A Comprehensive Framework and Preferred Practices for Measuring and Reporting Cultural Competency*.[15, 21] Ultimately, the development of a set of standardized disparities measures will be a major contribution to monitoring for—and achieving—equity in healthcare.

2. Data Collection: Building the Foundation

2.a. Categories, Methods, and Modes of Data Collection

A significant amount of research has been conducted on, and efforts devoted to, how to collect race, ethnicity, and language data from patients.[22] This work is critical, as it serves as the foundation for any disparities measurement efforts.

Usually, the first challenge organizations face when seeking to collect race/ethnicity data is determining what questions to ask and which racial, ethnic, and linguistic categories to use. In 2008, IOM convened the Subcommittee on Standardized Collection of Race/Ethnicity Data for Healthcare Quality Improvement in conjunction with the Committee on Future Directions for the National Healthcare Quality and Disparities Reports and produced a report that is the most complete and often-cited source on this topic.[23] This report made several key observations and recommendations that are worth noting:

2.a.i. Race/Ethnicity Categories

- The concepts of race and ethnicity are defined socially and culturally and, in the case of federal data collection, by legislative and political necessity.[24]

- The Office of Management and Budget (OMB) has developed a minimum set of standardized categories for reporting on race and Hispanic ethnicity by federal agencies and recipients of federal funds.[25-27] The five OMB race categories are: Black or African American, White, Asian, American Indian or Alaska Native, and Native Hawaiian or Other Pacific Islander. The only ethnicity choice is one of "yes" or "no" to Hispanic/Latino ethnicity. NQF[20] has endorsed these categories, at minimum. Additionally, NQF has endorsed the use of the Hospital Research & Education Trust (HRET) Toolkit as the preferred method for asking patients about race/ethnicity. Of

note, at the time of endorsement, the HRET Toolkit recommended the use of OMB categories with a modification to include multiracial. Since the NQF endorsement, the toolkit has been updated to endorse the approach of collecting granular ethnicity as recommended by IOM (see Figure 1).

2.a.ii. Language Categories

- OMB has not established a list of language categories. The preferred option is local choice informed by data on the languages spoken most frequently in the service area by persons with LEP.

- IOM concluded that spoken language can best be assessed by asking two types of questions: one aimed at determining whether an individual speaks English less than very well, and a second aimed at identifying the individual's preferred spoken language during a healthcare encounter (see Figure 1). However, IOM does not recommend suggest specific language for these two types of questions.

- When the individual is a child, the language need of the parent/guardian must be determined. Similarly, if an adult has a guardian/conservator, that individual's language need must be assessed.

- A single list of languages does not suit all areas given that the top non-English languages vary greatly from area to area. The aim is to have data on each individual's specific language need; but when an entity designs its collection instruments, whether paper or electronic, it may, because of space considerations, have to use a limited number of response categories. Therefore, such a response list should always include an "Other, please specify: __" option.

2.a.iii. Ethnic Granularity and Multiracial Categories and Other Key Issues

One limitation with the OMB minimum race and ethnicity set is that using too few categories can frustrate respondents who do not self-identify with those groups. It also can mask disparities by aggregating heterogeneous subpopulations with different cultures, behaviors, and risk factors.

For example, the group of individuals who identify as Asian varies tremendously, including individuals from Japan, India, Laos, and other countries with vastly differing cultures and experiences in the United States. Similarly, the Latino category includes many different ethnic groups that have been found to have very different experiences with health care utilization, such as Puerto Ricans, Mexicans, and Central Americans.[28, 29]

OMB encourages the collection of more detailed data provided they can be aggregated back to the minimum categories.[30] IOM recommended a separate question to collect data on granular ethnicity—defined as "a person's ethnic origin or descent, 'roots,' or heritage, or the

place of birth of the person or the person's parents or ancestors…"[23]—in addition to OMB race and Hispanic ethnicity categories.

In addition, according to the U.S. Census Bureau, the number of Americans identifying as multiracial increased by approximately one-third between 2000 and 2010, making them one of the fastest-growing racial or ethnic groups during this interval. In the 2010 census, more than 9 million people, or 2.9 percent of all respondents, identified with two or more races (see Figure 2). Among those who reported two or more races in the most recent census, more than 90 percent identified with two races. Predominant among those reporting two or more races were those identifying as white and another racial group (see Figure 3). In particular, those identifying as white and black, some other race, Asian, or American Indian and Alaska Native collectively comprised more than two-thirds of those who reported multiple races. Among Hispanics, a relatively high proportion of those reporting multiple races identified as some other race in combination with another category.[31]

The Subcommittee suggested adding "Some other race" to the OMB list.[23] Finally, the Subcommittee recommended reporting specific multiple-race combinations to enable reporting detailed breakdowns rather than just "multiracial," as used by the toolkit. Essentially, the emerging philosophy is that patients should be allowed to choose as many categories as they want and also should be allowed to write in a response if they do not see a category that fits them.

This approach is not without its own limitations. Including too many racial and ethnic categories in a data collection tool can strain the data collection system and can make it difficult for workers at the registration site to locate a particular racial or ethnic group. More categories also mean that some groups will have few members, making it unlikely that the data reported will be statistically reliable.

Another minor issue is frequency of collection. While a change in race or ethnicity is highly unusual, race/ethnicity categories do in fact change. Thus, the Subcommittee recommended reconfirming race and ethnicity data every five years.[28, 29, 32]

2.a.iv. Data Collection Methods and Training

The primary modes of collecting information on race, ethnicity, and language are self-report, observation, and indirect estimation. Surveys typically use questionnaire items for self-report. In the past, patient intake procedures used observation but are moving in the direction of allowing the patient to self-identify. Medical records often rely on observation. Self-reported race/ethnicity is considered the gold standard because it reflects the individual's self-judgment and the population with which he or she identifies, and thus is endorsed by national experts from IOM and OMB.

- Eliciting accurate and reliable race, Hispanic ethnicity, and granular ethnicity data depends on the ways in which the questions are asked, the instructions provided to

respondents (e.g., "Select one or more"), and the format of the questions (i.e., OMB one-question versus two-question format). This latter issue is especially relevant to how Hispanic populations self-identify. Pilot projects and further study are necessary to confirm the best ways to collect accurate data that are useful for healthcare quality improvement.

- Each of the entities involved in the nation's healthcare system has some capability to collect race, ethnicity, and language data. However, some are better positioned than others to collect these data through self-report, generally the agreed-upon best way to define a person's racial and ethnic identity.

- Training of staff, upgrades to health information technology (health IT) systems, and communication with patients and enrollees are potential avenues for improved data collection and building of trust. This is essential because in practice, the uniform implementation of the population definitions is as challenging as the initial population definition specification.

- In IOM's proposed framework, optional categories are offered (e.g., declined, unavailable, unknown, self-reported, observer-reported); these are not for patient response but for tracking the portion of the patient population for which an entity has been able to collect data or the nature of the data collection.

2.b. Interim Methods for Race/Ethnicity Data when Direct Self-Reports Are not Feasible

2.b.i. Challenges Faced by Health Plans

Because individuals receive most of their healthcare in the ambulatory setting, the greatest potential at this time for tracking healthcare disparities lies with health plans.[*] The ability to take a population-centered approach, in which enrollment in health plans clearly defines a group, will become increasingly important in our reformed health system. In fact, a survey conducted by America's Health Insurance Plans (AHIP) found that health plan executives reported at least five reasons for collecting race/ethnicity data: 1) to identify enrollees at risk for certain medical conditions; 2) to support linguistically and culturally appropriate communications; 3) to structure quality improvement efforts to reduce disparities; 4) to assess variation in quality measures; and 5) to develop targeted disease management or similar programs.[33] However, health plans face sizeable barriers to obtaining self-reported race/ethnicity data:

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[*] Most U.S. hospitals collect data on patients' race or ethnic group, but few record this information systematically. Furthermore, the value of this data is limited since in the course of any given year only a small fraction of people are hospitalized. Many more people visit doctors, but very few physician practices collect race and ethnic data routinely. The reality is that most healthcare is provided in the ambulatory setting, and health insurers and payers, including Medicare, Medicaid, and commercial health plans, are the largest source of information.

1. Health plans have only sporadic direct contact with enrollees, principally at the time of enrollment. Since most individuals enroll in plans through their place of employment, employers provide one avenue for collecting race, ethnicity, and language need data. It is possible in principle for individuals to self-identify during open enrollment, but employers rarely use the opportunity and are not required to do so.

2. Health plan enrollees may be reluctant to provide their race or ethnic background.[34]

3. Some states prohibit insurers from requesting such information from applicants at the time of enrollment to prevent the possibility of being denied access to insurance or certain services, a practice sometimes referred to as "redlining."[23]

4. Even if they decide to collect the race/ethnicity data themselves, data-collection costs are high due to the costs of contacting patients.

5. Member turnover means that health plans need to update their files constantly.

Despite these obstacles, some health plans have actively begun to collect race/ethnicity from their members. This is attempted in a variety of ways, including by member self-identification through enrollment forms, incoming and outgoing customer service calls, disease/care/case management, health risk appraisals and health needs assessments, member surveys via providers or hospitals, Web portals, and interactive voice response surveying.[35]

However, even plans that have tried to collect race data after enrollment have had limited success. For example, after a decade of making direct reporting of race/ethnicity a priority, Aetna has collected these data for more than 60 million encounters and yet have self-reported data for only one-third of active members.[36] Among states, Massachusetts is one of only a few in the country to require self-reported race/ethnicity by health plans; but due to pressure from stakeholders, the state set a floor that requires reporting on only 5 percent of membership by 2012.[37] Thus, the majority of race/ethnicity fields in the submitted claims are empty.

2.b.ii. Indirect Estimation Methods

As an interim strategy, until a healthcare data infrastructure exists for routinely collecting and reporting race/ethnicity data, IOM recommends imputing information on race or ethnic background through indirect estimation.[23] The most common method uses geo-coded data from the U.S. Census to characterize people on the basis of their address or ZIP code as living in a high-, medium-, or low-minority area.

A second approach uses each person's surname, along with Census information on the self-identification of people with that name. The U.S. Census Bureau created a new surname list based on data from the 2000 census that was far more detailed compared with earlier lists.[38] The new list compared surnames shared by 100 or more individuals with self-reported race and ethnicity data. The enhanced list covers 151,671 people, or 89.8 percent of persons listed in the census. For each name, the lists provide the frequency of occurrence in *each* of six categories: 1)

Hispanic, 2) White, 3) Black, 4) Asian and Pacific Islander, 5) American Indian/Alaska Native, and 6) Multiracial. Thus for each such name, one can calculate the probability of being in that self-reported category. Surnames are especially useful for identifying Hispanics and Asians, whereas "geo-coding" is most useful for identifying blacks.

Combining geo-coding and surnames can substantially increase imputation's accuracy. For example, someone named Smith living in an area with a high proportion of blacks is more likely to be black than someone named Smith living in a largely white community. The newer indirect methods do not assign a single race or ethnic background to any individual, instead estimating probabilities for each race or ethnic category.[39] The probabilities can then be "rolled up" to estimate racial distributions in populations or combined with utilization data to examine disparities in care. Used in this way, imputed data can reveal aggregate disparities with remarkable accuracy, achieving an average accuracy of 93 percent by the common "area under the ROC curve" (AUC) measure in a validation using nearly 2 million commercially insured beneficiaries.[39] RAND researchers compared indirect estimation with self-reports and were able to match within a percentage point or two the demographic characteristics of a population and measurements of healthcare disparities (see Table 1 and Table 2).[40]

Table 1. Comparing Population Estimates Using Self-Report vs. RAND Indirect Estimation in Health Plan of 2 Million

	Hispanic	Asian	Black	White/Other
Self-Report	8.9	5.0	8.0	78.1
RAND	10.0	4.5	9.1	76.4

Source: Elliott, et al., 2008.[41]

Table 2. Comparing Disparities from Self-Report vs. RAND Indirect Method in a Health Plan of 2 Million

(~30k Diabetics)	Racial Disparity (White vs. Black)	
	Direct Method	Indirect Method
B-Blocker	22.7	23.1
HgbA1c	14.5	14.5
Lipids	21.6	21.3
Eye Exam	7.6	7.4

Source: Fremont, et al., 2005.[40]

The indirect method of race/ethnicity estimation is not without its critics. For example, its reliance on housing segregation to maximize its predictive power makes some potential users uncomfortable and, of course, makes it less useful in highly integrated communities. Further, it lacks precision for American Indians and Alaska natives and multiracial groups, and, as currently

implemented, it is unable to distinguish sub-ethnic groups such as Haitians among the black population or Vietnamese among Asians. Thus, it might not be useful for organizations serving increasingly diverse populations. Finally, the method is best applied in the aggregate and never should be used to make clinical decisions for individuals.

Despite these reservations, experts now suggest that until self-reported data on race/ethnicity become feasible on a broad scale, implementing indirect estimation methods by insurance plans would provide an unprecedented opportunity to populate vast quantities of health-claims records with racial and ethnic information.[42]

> **Recommendation: Directly reported race/ethnicity and language (self-identified) is the preferred method for data collection. Efforts should be taken to solidify and support the infrastructure for race, ethnicity, and language proficiency data collection from patients/members within all healthcare settings. There is clear guidance from IOM/NQF/HRET that should be followed for self-reports (the gold standard). Where not feasible in the short term, indirect estimation can be put into place immediately.**

2.c. Looking Toward the Future

The capacity for disparities measurement hinges on the effective collection of patient race, ethnicity, and language data. Aside from public health bodies that collect vital statistics, the data providing the ability to link health data to patients' race, ethnicity, or linguistic proficiency for measurement purposes are collected haphazardly and are not routinely available.

There are, however, several key considerations for the future that are relevant to these efforts:

- Looking ahead, information infrastructure may enable integrated data exchange so that all entities will not need to collect all data. For now, however, all health and healthcare entities have roles to play in collecting these data directly from individuals.

- The Joint Commissions hospital accreditation standards currently require organizations to collect the patient's preferred language for discussing healthcare in the medical record (RC.02.01.01, EP 1). A new standard for collecting patient race and ethnicity data in the medical record (RC.02.01.01, EP 28) is targeted for implementation no earlier than 2012.

- Some electronic data collection systems may evolve and be more sophisticated, allowing the use of keystroke recognition to accommodate hundreds races/ethnicities and languages.

- The American Recovery and Reinvestment Act of 2009's (ARRA) goal of having a national electronic health record (EHR) for each individual by 2014 that incorporates collection of data on the person's race, ethnicity, and primary language, will foster efforts of data collection and disparities measurement.

- To be eligible for meaningful use incentives related to EHRs, the Health Information Technology for Economic and Clinical Health Act (HITECH) requires physicians to record race or ethnic background for at least half their patients.

- The Patient Protection and Affordable Care Act (PPACA) includes provisions requiring race and ethnicity to be collected for selected federal programs including population surveys, Medicaid, and the Children's Health Insurance Program.

- Differential adoption and slow diffusion of health IT may lead to a "digital divide" that could impact disparities data collection, measurement, and reduction. For example, providers who cared for uninsured and Medicaid black and Hispanic patients had 12 percent to 36 percent lower odds of using electronic health records than privately insured non-Hispanic white patients.[43] In addition, federally qualified health centers with high rates of uninsured patients had 47 percent lower odds of EHR adoption.[44] Hospitals that disproportionately care for the poor (defined by a hospital's Medicare disproportionate-share hospital [DSH] index) have slightly lower rates of adoption of either basic or comprehensive EHR compared to low-DSH-index hospitals.[45]

In summary, race, ethnicity, and language proficiency, data collection serves as the foundation for disparities measurement, and the field is rapidly evolving. Key lessons from the field as well as legislative efforts should facilitate advances in this area.

Figure 1. IOM Recommended Categories

Race and Ethnicity

OMB Hispanic Ethnicity[a]
- Hispanic or Latino
- Not Hispanic or Latino

OMB Race (Select one or more)
- Black or African American
- White
- Asian
- American Indian or Alaska Native
- Native Hawaiian or Other Pacific Islander
- Some other race[b]

Granular Ethnicity
- Locally relevant choices from a national standard list of approximately 540 categories with CDC/HL7 codes[c]
- "Other, please specify:___" response option
- Rollup to the OMB categories

Language Need

Spoken English Language Proficiency[d]
- Very well
- Well
- Not well
- Not at all

(Limited English proficiency is defined as "less than very well")

Spoken Language Preferred for Health Care
- Locally relevant choices from a national standard list of approximately 600 categories with coding to be determined
- "Other, please specify:___" response option
- Inclusion of sign language in spoken language need list and Braille when written language is elicited

FIGURE S-1 Recommended variables for standardized collection of race, ethnicity, and language need.
NOTE: Additional categories for HIT tracking might include whether respondents have not yet responded (unavailable), refuse to answer (declined), or do not know (unknown), as well as whether responses are self-reported or observer-reported.
[a] The preferred order of questioning is Hispanic ethnicity first, followed by race, as OMB recommends, and then granular ethnicity.
[b] The U.S. Census Bureau received OMB permission to add "Some other race" to the standard OMB categories in Census 2000 and subsequent Census collections.
[c] Additional codes will be needed for categories added to the CDC/HL7 list.
[d] Need is determined on the basis of two questions, with asking about proficiency first. Limited English proficiency is defined for health care purposes as speaking English less than very well.
SOURCES: CDC, 2000; Office of Management and Budget, 1997b; Shin and Bruno, 2003; U.S. Census Bureau, 2002.

Figure 2. Persons Reporting Multiple Races

Figure 2.
Percentage of Major Race Groups Reporting Multiple Races: 2010
(For more information on confidentiality protection, nonsampling error, and definitions, see www.census.gov/prod/cen2010/doc/pl94-171.pdf)

Note: Specified race group refers to the alone or in-combination population.
Source: U.S. Census Bureau, 2010 Census Redistricting Data (Public Law 94-171) Summary File, Table P1.

Figure 3. Distribution of Multiple Races

Figure 3.
Percentage Distribution of People Who Reported Multiple Races: 2010
(For more information on confidentiality protection, nonsampling error, and definitions, see
www.census.gov/prod/cen2010/doc/pl94-171.pdf)

Race combination	Percentage
White; Black	20.4
White; SOR	19.3
White; Asian	18.0
White; AIAN	15.9
Black; SOR	3.5
Black; AIAN	3.0
Asian; SOR	2.6
Black; Asian	2.1
White; NHPI	1.9
Asian; NHPI	1.8
AIAN; SOR	1.3
NHPI; SOR	0.7
AIAN; Asian	0.7
Black; NHPI	0.6
AIAN; NHPI	0.1
Three or more races	8.3

Note: People reporting multiple races represented 2.9 percent of the total population. Black refers to Black or African American; AIAN refers to American Indian and Alaska Native; NHPI refers to Native Hawaiian and Other Pacific Islander; SOR refers to Some Other Race.
Source: U.S. Census Bureau, *2010 Census Redistricting Data (Public Law 94-171) Summary File*, Table P1.
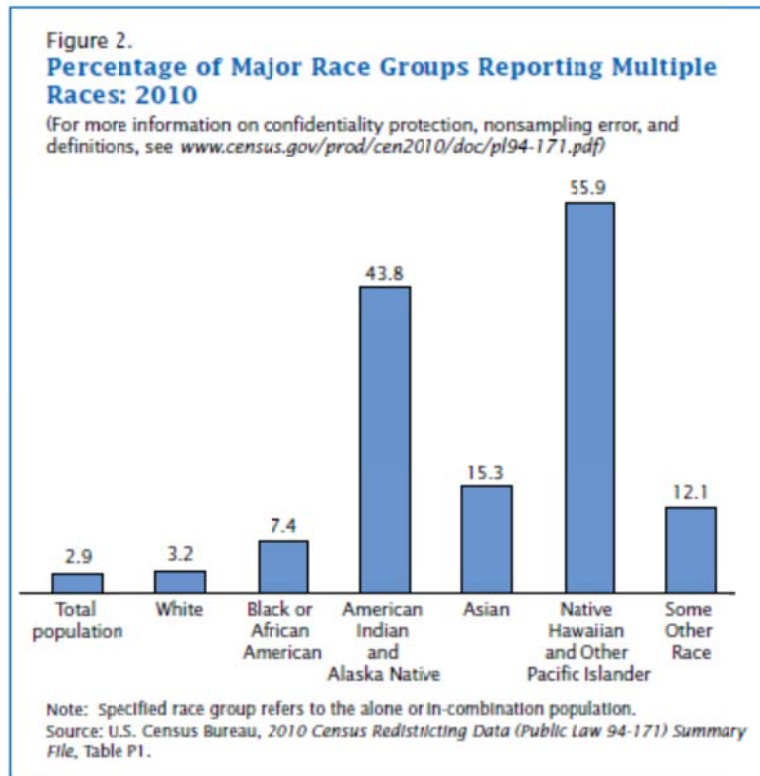
3. Disparities Measures and Indicators: What to Measure?

NQF has previously developed a set of criteria to determine whether a quality measure would qualify as "disparities sensitive." Disparities-sensitive measures are those that serve to detect not only differences in quality across institutions or in relation to certain benchmarks, but also differences in quality among populations or social groupings (race/ethnicity, language, etc.). In this chapter we will review existing NQF criteria for disparities sensitivity and provide some additional perspective on them. We also will recommend a new set of criteria and ways of categorizing measures with respect to disparities sensitivity. We present a system for categorizing and characterizing the mechanisms behind selected disparities-sensitive measures and end by discussing possible approaches to the creation of developmental (new) measures for disparities when the need exists. The algorithm for this process can be found in Figure 5.

3.a. Criteria for Disparities-Sensitive Measure Selection Among the NQF Portfolio of Endorsed Standards and Measures

The NQF portfolio of endorsed standards and measures includes more than 700 performance measures of quality of care for both ambulatory and institution-based settings,

including disease specific measures and cross-cutting measures that apply across disease areas.[*] None of these measures was designed specifically with the idea of detecting disparities in care by race/ethnicity or language. However, as a broad assessment of quality of care, it is reasonable to assume that some of these measures would be more sensitive to disparities in care than others. We envision identifying current and potential disparities sensitive measures as a three-step process, which we now describe.

3.a.i. Step 1: Assess the Portfolio of NQF Performance Measures Using Disparities-Sensitive Principles, with Special Emphasis on Quality Gap and Prevalence

Step 1a: All existing performance measures should be evaluated against the guiding principles established by the NQF Steering Committee and TAP that produced the report on consensus standards in 2008.[20] The guiding principles are:

1. Prevalence—How prevalent is the condition among minority populations?
2. Impact of the Condition—What is the impact of the condition on the health of the disparity population?
3. Impact of the Quality Process—How strong is the evidence linking improvement in the measure to improved outcomes in the disparity population?
4. Quality Gap—How large is the gap in quality between the disparity population and the group with the highest quality for that measure?
5. Ease and Feasibility of Improving the Quality Process (Actionable)—Is the measure actionable among the disparity population?

In reviewing these principles, however, two of the five listed above are particularly useful for distinguishing measures as disparities sensitive: quality gap and prevalence. The other principles are less precisely evaluated, and it is not well known whether evidence is available to apply these principles specifically to minority populations.

The more important of these two is quality gap. This criterion essentially means that if there is evidence showing a difference in the quality of care by race/ethnicity or language, it should be considered disparities sensitive. The other criterion that we consider particularly relevant is prevalence. To achieve NQF endorsement, it is assumed that a measure should demonstrate sufficient prevalence to merit consideration. There are no instances of rare diseases or conditions that relate to the approximately 700 NQF-endorsed measures. However, prevalence also is an important criterion for disparities sensitivity because measures for diseases that are more prevalent in minority communities—such as end-stage renal disease, diabetes, and congestive heart failure—may allow for the detection of disparities even when no data demonstrating disparities currently exist.

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[*]NQF measures are all evaluated with a set of standard criteria before being listed (http://www.qualityforum.org/Measuring_Performance/Submitting_Standards/Measure_Evaluation_Criteria.aspx). The criteria described in this report refer to those that might be applied to select disparities-sensitive measures.

Step 1-b: We recommend that all of the NQF measures should be compared with the literature on known areas of disparities, beginning with AHRQ's National Healthcare Disparities and Quality Report, the Institute of Medicine's *Unequal Treatment Report*,[1] and then a new review of the disparities literature since the publication of *Unequal Treatment*. All NQF measures that can be matched (at least partially if not identically) to disparities that have been documented in at least one of the sources mentioned should be considered as candidates for disparities-sensitive measures. Appendix I contains an example of a table of some measures that are compared with AHRQ's National Healthcare Disparities and Quality Report. In addition, these measures can be categorized further according to the described scheme at the end of this chapter.

3.a.ii. Step 2: Apply New Criteria for Disparities Sensitivity

It seems fairly clear that the best criterion to use to determine whether a quality measure is disparities sensitive is the existence of known disparities using the same or a similar measure. When the NQF does not have access to performance data stratified by race/ethnicity, or when known disparities do not exist, a set of additional criteria can be applied to determine potential disparities sensitive measures.[1] These include the following:

- **Care with a High Degree of Discretion:** Many of the disparities described depend on a certain degree of discretion on the part of the clinician.[47] The less there is a standard protocol that must be followed, the easier it is for a clinician to offer a procedure differently based on the patient's socio-demographic characteristics (whether or not this is consciously factored into the decision). This tends to impact the utilization of high-cost procedures, referral for specialty care, newly emerging technologies, and other "high-end" aspects of care. However, there are other areas where discretion is important. For example, pain is very subjective, and the decision to prescribe medications to control a patient's pain is full of nuance and subtle cues that could be related to stereotype—race/ethnicity, socioeconomic status, language, etc.

- **Communication-Sensitive Services:** When receiving care depends to a great extent on providers and patients communicating well, disparities are likely to occur given the challenges to communication across cultures. For example, studies have shown that many of the core hospital quality measures (such as aspirin at arrival and discharge or oxygenation assessment) reveal very similar performance between minority and majority populations, partly due to the fact that performance on these measures generally is high. On the other hand, measures that required communication with patients (such as receiving smoking cessation counseling or discharge instructions) where language or cultural barriers may come into play exhibited larger and statistically significant disparities.[48, 49]

- **Social Determinant-Dependent Measures:** Disparities often are seen in areas that depend to a large extent on patient self-management (e.g., diet, exercise, and medication adherence for diabetes or congestive heart failure management). Social determinants, such as low socioeconomic status, education level, and environment, can present barriers to health-related changes in lifestyle, which are challenging for all patients, but especially for those who are disproportionately affected by these challenges—which we know minorities are.

- **Outcome and Communication-Sensitive Process Measures:** Many process measures are relatively straightforward and less likely to be influenced by subjective factors or patient factors that can lead to disparities. For example, prescribing beta-blocker after a myocardial infarction has now achieved very high rates of success in most organizations and rarely shows disparities. This is largely because processes are standardized and patients do not hold particular beliefs or concerns about standard medications such as these. However, in a situation such as the provision of flu shots, although standard processes may be put in place, patient preferences based on beliefs or concerns about this particular intervention may make this a disparities-sensitive measure (insomuch as minority patients have specific concerns about some interventions or medications over others).

These four areas overlap significantly. For example, readmission rates depend to a large extent on both communication and lifestyle changes, as do diabetes outcomes measures. We recommend that all the current measures as well as newly proposed measures be reviewed in the context of these four disparities-sensitive criteria. While no one of these automatically qualifies a measure for disparities sensitivity, they all can provide some rough guidance when solid data on disparities do not yet exist.

3.b. Categories and Characteristics of Disparities-Sensitive Measures

In reviewing the NQF-endorsed standards for sensitivity to disparities, we identified six different types of disparities-sensitive measures. These are described below, and examples are provided. Our recommendation is that a full set of NQF-endorsed measures should be analyzed according to this system of categorization, not as a way of determining disparities sensitivity, but rather as a way of understanding the range of measures used to identify disparities.

After assigning a measure to a category, each measure should be further assessed according the following characteristics: 1) whether it is condition specific (CS) or cross-cutting (CC); 2) whether the mechanisms of the disparities are provider-based, patient-based, system-based, or related to health insurance; and 3) whether it is a measure of structure, process, or outcome (based on Donabedian's classification system).[2] Appendix II contains an additional sample table of NQF Endorsed Measures for Sensitivity to Disparities catalogued using the above three characteristics. Each measure is numbered according to the official NQF-Endorsed Standard listing (www.qualityforum.org/Measures_list.aspx).

3.b.i. Practitioner Performance Measures

These are the measures that assess practitioners' performance and their adherence to prescribed screenings and healthcare that is consistent with national, evidence-based clinical standards. Areas of performance that are assessed include screening, treatment, and follow-up. Generally, practitioner performance measures are condition specific. The following are examples of such disparities-sensitive measures and their characteristics (see Table 3):

Table 3. Practitioner Performance Measure

NQF Number	Name	Type of Measure—Condition Specific (CS) or Cross-Cutting (CC)	Root of Potential Disparity—Provider (PB), Patient (PtB), Systemic, or Health Insurance	Donabedian Category—Structural (S), Process (P), Outcome (O)
1	Asthma Assessment	CS	PB	P
2	Appropriate testing for Children with Pharyngitis	CS	PB	P
3	Bipolar Disorder: DM Assessment	CS	PB or PtB	P
4	Alcohol, Drug Treatment (Initiation, Engagement)	CS	PB or PtB	P
12	HIV Prenatal Screening	CS	PB or PtB or Systemic	O
61	BP Measurement	CS	PB or PtB or Systemic or Insurance	O
Other examples of this type of measure are: #14–112, #568, 569, #579–587, #593–637, #650–659.				

3.b.ii. Consumer Surveys that Measure the Patient Experience

Consumer surveys are disparity-sensitive tools. Generally, consumer surveys are cross-cutting and provide a type of outcome measure, according to Donabedian's classification. Within the consumer surveys, those questions dealing with communication are the most likely to be disparities sensitive. The following are examples within the universe of NQF-endorsed measures (see Table 4):

Table 4. Consumer Surveys that Measure the Patient Experience

NQF Number	Name	Type of Measure Condition— Specific (CS) or Cross- Cutting (CC)	Root of Potential Disparity— Provider (PB), Patient (PtB), Systemic, or Health Insurance	Donabedian Category— Structural (S), Process (P), Outcome (O)
5	CAHPS (B): Clinician/Group Surveys (Adult Primary Care, Pediatric Care, and Specialist Care Surveys)	CS	PB or PtB or Systemic	O
6	CAHPS (C): CAHPS Health Plan Survey v 4.0— Adult Questionnaire	CS	PB or PtB or Systemic	O
8	Experience of Care and Health Outcomes (ECHO) Survey (Behavioral Health, Managed Care Versions)	CS	PB or PtB or Systemic	O
9	CAHPS (D): Health Plan Survey v 3.0 Children with Chronic Conditions Supplement	CS	PB or PtB or Systemic	O
10	YAHCS: Young Adult Health Care Survey	CS	PB or PtB or Systemic	O
11	PHDS: Promoting Healthy Development Survey	CS	PB or PtB or Systemic	O
Other examples include: #166, #258, #517, #691–693, #726.				

3.b.iii. Hospital, Ambulatory Care Center, Home Health Nursing Home Performance Measures

These types of measures assess the performance of a particular health facility. Generally, quality standards are fairly even within systems of care, and disparities are not detected. Some institutions could be poorly performing, or they could be High-Performing Hospitals, as measured by CMS, or Patient-Centered Medical Homes, as designated by National Committee for Quality Assurance (NCQA). The level and quality of care within such facilities may compare favorably or unfavorably with their peers; however, disparities within the institution disparities may be less evident.

Some examples are below (

Table 5):

Table 5. Hospital, Ambulatory Care Center, Home Health Nurse Home Performance Measures

NQF Number	Name	Type of Measure—Condition Specific (CS) or Cross-Cutting (CC)	Root of Potential Disparity—Provider (PB), Patient (PtB), Systemic, or Health Insurance	Donabedian Category—Structural (S), Process (P), Outcome (O)
119	Risk-Adjusted Mortality for CABG	CS	PB or PtB or Systemic	O
124	Annual Procedure Volume for CABG, Valve or Combined Surgeries	CS	PB or PtB or Systemic	O
130	Deep Sternal Wounds	CS	PB or PtB or Systemic	O
Other examples of this type of measure include: #286–304, #318–324, #334–376, #450–487, #495–497 (ED Performance), #530–532 (AHRQ Composite Measures), #640–649, #694–709.				

3.b.iv. Measures of Ambulatory Care-Sensitive Conditions and Management

Community-level data that can point to population-based disparities are available. Fourteen AHRQ Prevention Quality Indicators (PQIs) were included as part of the NQF Ambulatory Care Disparities report. The AHRQ PQIs measure potentially avoidable hospitalizations for ambulatory care-sensitive conditions. The indicators rely on hospital discharge data and are intended to reflect issues of access to high-quality ambulatory care (see Table 6).[20]

Table 6. Measures of Ambulatory Care-Sensitive Conditions Management

NQF Number	Name	Type of Measure—Condition Specific (CS) or Cross-Cutting (CC)	Root of Potential Disparity—Provider (PB), Patient (PtB), Systemic, or Health Insurance	Donabedian Category—Structural (S), Process (P), Outcome (O)
272	Diabetes, short-term	CS	PB or PtB or	O

	complications (PQI 1)		Systemic	
638	Uncontrolled Diabetes Admission Rate (PQI 14)	CS	PB or PtB or Systemic	O

3.b.v. Measures Associated with Cultural Competency

A number of the NQF-endorsed measures may be associated with issues of culture, language, and health literacy. Examples of these include the Home Health measures #175–181; assessment of post-stroke communication capabilities #445–449.

All measures that deal with patient readmissions are disparities sensitive because of the crucial importance of patient communication in transitions of care. This is noted in measure #506 (30-day pneumonia readmission) and #505 (30-day MI readmission), as well as #541–547 (Medication management).

Measures of Depression assessment (#518, 710–712) and patient education (#519, 520, 136—Detailed heart failure discharge instructions) are also disparities sensitive and related to cultural competency (see Table 7).

Table 7. Measures Associated with Cultural Competency

NQF Number	Name	Type of Measure—Condition Specific (CS) or Cross-Cutting (CC)	Root of Potential Disparity—Provider (PB), Patient (PtB), Systemic, or Health Insurance	Donabedian Category—Structural (S), Process (P), Outcome (O)
176	Improvement in Management of Oral Medications	CS	PB or PtB or Systemic	O
445	Functional Communication Measure: Spoken Language Comprehension	CS	PB or PtB or Systemic	O
506	Thirty-Day All-Cause Risk Standardized Readmission Rate Following Pneumonia Hospitalization	CS	PB or PtB or Systemic	O
542	Adherence to Chronic Medication	CS	PB or PtB, Systemic or Insurance	O
518	Depression Assessment Conducted	CS	PB or PtB or Systemic	PM
520	Drug Education on All Medications Provided to Patient/Caregiver During Episode	CS	PB or PtB or Systemic	O
Home health measures #175 –181; assessment of post stroke communication capabilities				

#445–449, #506 (30 day pneumonia readmission) and #505 (30 day MI readmission) as well as #541–547 (Medication Management); measure of depression assessment (#518, #710–712) and patient education (#519, 520, 136).

3.b.vi. Patient-Centered Measures

Generally, patient-centered measures are cross-cutting. They may be structural, process, or outcome measures according to the Donabedian classification. The field of patient-reported outcomes measures is growing rapidly and likely will be a major opportunity for disparities measurement in the future. Examples of patient-centered measures are below (see Table 8):

Table 8. Patient-Centered Measures

NQF Number	Name	Type of Measure— Condition Specific (CS) or Cross-Cutting (CC)	Root of Potential Disparity—Provider (PB), Patient (PtB), Systemic, or Health Insurance	Donabedian Category— Structural (S), Process (P), Outcome (O)
717	Children School Days Missed	CS	PtB, Sytemic, Insurance	O
718	Children Obtaining Referrals	CC	PtB, Systemic, Insurance	O
719	Children Get Effective Care Coordination	CC	PB, PtB, Systemic, Insurance	O
720	Children Live in Safe Communities	CC	Structural	O
721	Safe School	CC	Structural	O

3.c. Step 3: Developing New Disparities Specific Measures

While NQF measures, HEDIS measures, and hospital core measures provide a solid foundation for measuring disparities in quality broadly speaking, they may miss out on important phenomena. In general, quality measures are not developed specifically with the idea of identifying disparities. The disparities literature includes hundreds of studies documenting disparities in screening measures, surgical procedure utilization, diabetes outcomes, transplantation, pain management, and many other areas by race, ethnicity, and other sociodemographic characteristics.[1] Most do not appear as NQF measures (or other standard quality measures) and were not intended to be quality measures. The disparities literature is wide-ranging, but some of the most important disparities are in specific disease areas or procedures where sample sizes within organizations are relatively small, such as renal transplantation rates. These would not typically be used as a measure of quality, yet we know

that African Americans are less likely to receive renal transplants while waiting longer on dialysis than their white counterparts. In this section we describe two approaches to identifying potential new disparities-sensitive quality measures: 1) disparities-specific measures that draw upon known or suspected disparities from the academic literature but for which no current performance measures exist, and 2) consideration of additional measures along the clinical pathway.

3.c.i. Disparities-Specific Measures

The term *disparities-specific measures* distinguish these as new measures that are created specifically as indicators of the existence of disparities in particular areas of care where research has shown disparities to exist. These are distinguished from *disparities-sensitive* measures, a term that includes any current quality measure in which disparities already have been identified. Disparities-specific measures would thus play the role of making healthcare organizations aware of disparities that may exist even though they may not be apparent when using standard quality indicators. These measures can be developed based on a review of the disparities literature, cross-walking this with the existing NQF measures to ensure that no current measure exists, and developing a new disparities-specific measure. For example, abundant literature exists demonstrating disparities in pain management for long bone (femur or humerus) fractures in the emergency department (minorities receiving significantly less pain medication for the same exact fracture as their white counterparts).[53] Currently, there is no off-the-shelf measure that allows organizations to determine if there are differences in pain management by race/ethnicity in patients who present to the emergency department with long bong fracture. As such, Massachusetts General Hospital went about developing a new disparities-specific measure to measure and monitor pain management routinely by race/ethnicity. This would be considered a disparities-specific measure. Other areas where disparities specific measures might be developed include cardiac catheterization rates,[51,52] amputation rates for peripheral vascular disease, referral for renal transplantation, and stage at initial diagnosis of prostate cancer.[54, 55]

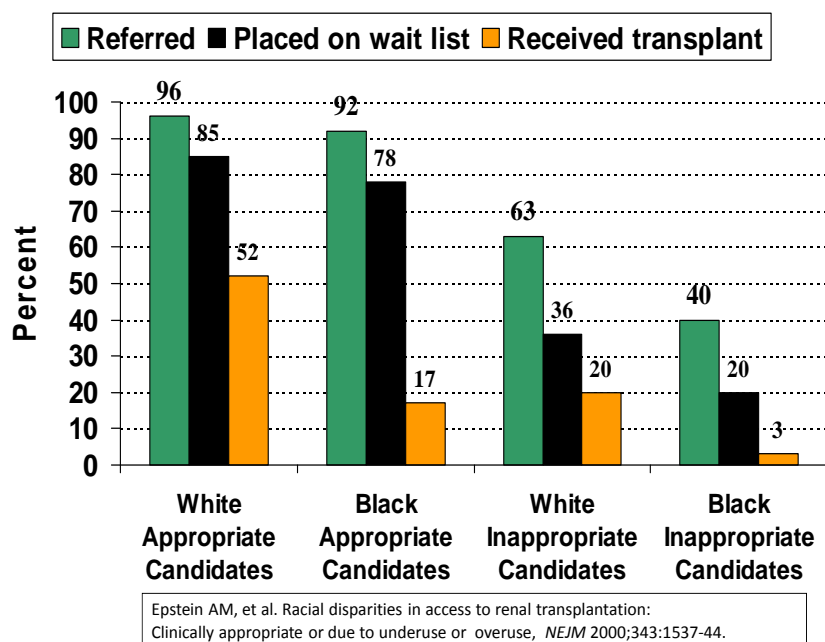### 3.c.ii. Disparities that may Occur Along the Clinical Pathway

Another option for identifying new disparities-sensitive measures is to search for processes or services that occur at various points along the clinical pathway. Optimal outcomes often depend on a series of interventions, each of which may pose barriers to disadvantaged patients. Measuring performance at only one point may miss important sources of disparities. A case in point is renal transplantation, which is particularly exasperating because disparities have been known for more than 20 years. The endpoint—a new kidney—is essentially a zero-sum game because kidneys are a limited and scarce resource. Obtaining a kidney transplant requires attaining a number of services, including initial referral to a specialist, clinical work-up, referral to the wait list, registration, matching the criteria, understanding and adhering to procedures around the offer and acceptance, and the transplantation itself. Although the problem of latent racism may exist (minorities in the past were seen as inferior candidates compared with whites[56])

in fact, differences in rates can be identified at many key steps along the clinical pathway (see Figure 4).[57]

A related concern is the possibility that focusing on disparities in utilization may inadequately describe the appropriateness of that utilization. "Differences" in procedure rates, for example, may reflect one or more of the following phenomena: 1) differences in clinical appropriateness (presenting condition); 2) underuse (defined as lower use, even when clinically appropriate or necessary); or 3) overuse (defined as more frequent use, even when the risks outweigh the benefits). Research on access to cardiac surgery demonstrates that all three phenomena may be involved in explaining differences in use rates—higher rates of clinical appropriateness among whites, greater underuse among blacks, and greater likelihood of revascularization among whites when it is not clinically appropriate.[52, 58]

The implication of these studies for quality measurement is that improving access at only one or two points along the way is unlikely to eliminate the disparities in "things that matter." For example, for renal transplantation, disparities in receipt of a transplant can occur because of failure to refer to a transplant nephrologist, failure to place the patient on the renal transplant list, or failure to receive the transplant. We recommend that disparities measures represent a complete and comprehensive view of care, not just one point along the clinical pathway.

Figure 4. Access to Renal Transplantation

Epstein AM, et al. Racial disparities in access to renal transplantation: Clinically appropriate or due to underuse or overuse, *NEJM* 2000;343:1537-44.

Source: Epstein, et al., 2000.[57]
Rates adjusted for age, region, primary cause of renal failure, education, income, overall health status, patients' preferences, distance to nearest transplantation facility

3.c.iii. Summary and Recommendations

In summary, the peer-reviewed literature may contain the seeds of new disparities-specific measure development. In 2006 a study published in the *New England Journal of Medicine* examined 439 quality indicators for 30 chronic and acute conditions and for disease prevention among randomly selected patients from 12 communities around the United States.[50] The goal was to determine where disparities by race/ethnicity existed and the magnitude of these disparities compared to overall levels of quality when benchmarked against national standards. The findings were surprising because the variation in quality-of-care scores according to this set of indicators was very small across racial/ethnic groups compared to the gaps between observed and desired quality across all groups. Initially, it was difficult to reconcile this with the abundant literature on disparities. However, when the authors confined their quality measures to those that had known disparities in the literature, they confirmed that disparities existed in their data as well. Disparities-specific measures might emerge from services that reflect provider biases against certain groups (conscious or unconscious), poor communication across cultures, mistrust, language barriers, and ineffective systems of care, among other factors.

Finally, our recommendation also includes tracking the progress of the National Priorities Partnership (NPP) and NQF's Measure Applications Partnership (MAP) because any effort in disparities measurement should be synchronized with their work whenever possible. Priorities that NPP has targeted for improvement are proven ways to eliminate harm, waste, and disparities, including action in the areas of payment, public reporting, quality improvement, and consumer engagement. MAP will provide direction and direct input to HHS on preliminarily identified performance measures available for benchmarking and improvement purposes and will advise on measures needed for specific care settings, care providers, and patient populations. These priorities and goals provide opportunities for immediate action and measurement and include measures such as preventable re-admission and equitable access to care, which can be included in disparities-sensitive measures.

Figure 5 - Measure Selection/Development Algorithm

4. Methodological Approaches to Disparities Measurement: How to Measure and Monitor

4.a. Overview

The goal of eliminating health disparities can be achieved only if indicators of interest are monitored and disparities recorded. Progress toward reducing disparities means that indicators are measured over time. This section will provide an in-depth discussion of methodological approaches to disparities measurement, including statistical and technical considerations of disparities measurement, highlighting strengths and weaknesses of the different approaches.

Measuring disparities is essentially an exercise in arithmetic, usually comparing indicators of health status or quality of care (performance) among two or more groups of interest. Indicators are usually measured in terms of rates, percentages, proportions, or means for each group in a "domain." A domain is defined as "a set of groups defined in terms of a specific characteristic of persons in a population."[60] For example, the race domain according to OMB consists of Black or African American, White, Asian, American Indian or Alaska Native, and Native Hawaiian or Other Pacific Islander. Disparities become evident when quantitative measures of health or measures of health quality (rates, percentages, etc.) differ among groups in a domain. However, what may seem straightforward in fact has a number of pitfalls. When calculating disparities several considerations must be addressed. These issues are discussed below.

4.b. Reference Points

A *reference point* is "the specific value of a rate, percent, proportion, mean, or other quantitative measure relative to which a disparity is measured."[60] Disparities frequently are measured among groups in a domain.* From a purely statistical point of view, any one of the groups in a domain could be chosen as a reference point. For example, the largest group might be selected because its rate is usually the most stable. Thus if in some localities a "minority-majority" exists, the minority population would be the reference group. Alternatively, one might select the group with the best rate or highest-quality performance because this represents a realistic attainment. In addition, choosing the group with the best performance ensures that all of the differences with the other groups will be positive and have ratios greater than 1:1.

A disadvantage of using the largest group or the best-performing group is that the reference point may change over time. Furthermore, using a method that ignores a priori evidence of social disadvantage could lead to policies that redirect resources toward more privileged populations.[61] In this white paper we follow the argument proffered by Braveman, who defines disparities as "…potentially avoidable differences in health (or in health risks that policy can influence) between groups of people who are more and less advantaged socially."[61] Therefore:

> **Recommendation: In this report, we believe that for purposes of achieving equity in healthcare that is fair and just, the chosen reference group should always be the historically advantaged group.**

4.c. Absolute versus Relative Disparities, and Favorable versus Adverse Measures

While calculations of disparities can be straightforward, comparisons of disparities among entities or over time can be sensitive to the calculations chosen, especially when the prevalence of the outcome changes. The simplest measure of disparity is the absolute or simple difference, that is, the arithmetic difference between two rates, expressed in the same units as the rates themselves:

Simple difference = rate of reference group – rate of group of interest

Another straightforward approach is to calculate the relative measure of disparity, usually expressed as the simple difference from the reference point (or group) as a percentage of the reference point:

Relative disparity = (rate of interest–reference point rate) x 100

reference point rate

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* Disparities also can be measured from a reference point that is not a group characteristic. For example, one could compare each group against the unweighted mean of all the groups in the domain or to a benchmark or goals. The goal (e.g., from Healthy People reports) has intuitive appeal because it implies that all groups could improve. However, in this paper we have chosen to concentrate on differences between groups.

For any given domain, the "direction" of the disparity will always be the same whether one chooses absolute or relative measures. In other words, if the absolute difference is greater than zero, then the relative difference will always be greater than one (1). Many analysts focus on the relative rate because it has an intuitive connection with the idea of equality.[62] However, making comparisons across time or geography or institutions can result in different interpretations, partly because a change in disparities is a "difference in differences" problem. A simple example illustrates this. In Figure 6 the percentage of blacks and whites failing to receive the indicated test decreases over time from 40 to 20, and 25 to 10, respectively. The absolute disparity improved (decreasing from 15 to 10), while the relative worsened (increasing from 1.6 to 2.0).

Figure 6. Percentage of Blacks and Whites Failing to Receive Test
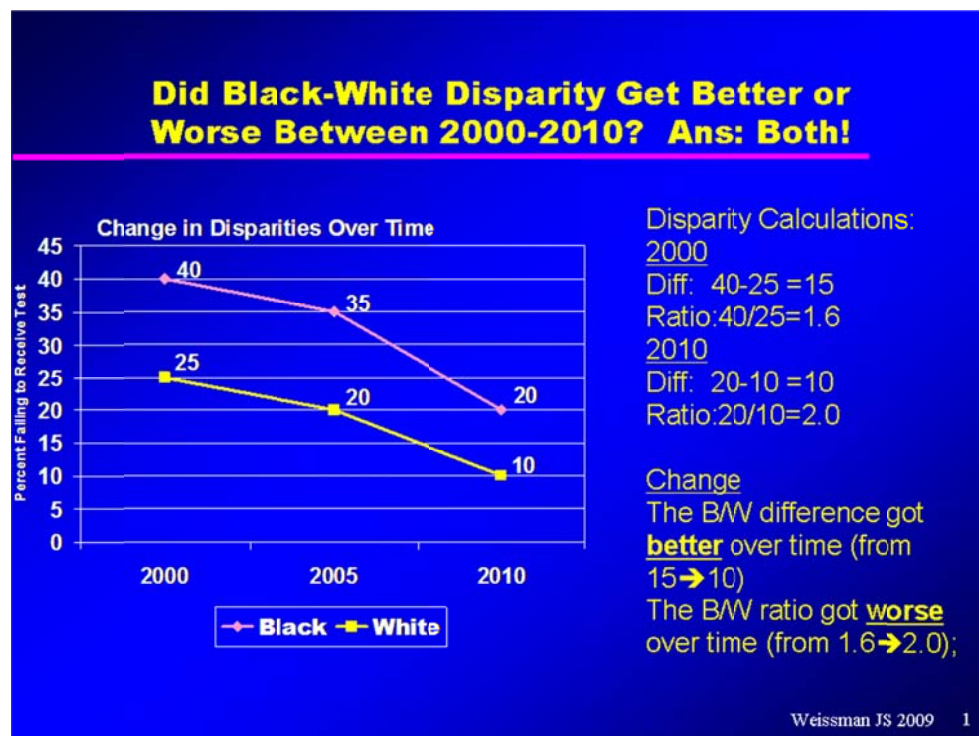
Harper, et al., provide another example (see Figure 7).[62] In this case, the relative disparity in prostate cancer mortality between whites and blacks increased, while the absolute disparity, or rate difference, declined. This occurred because blacks had worse health at the beginning, and the rate of improvement for blacks was smaller than for whites. However, the authors note that the rate for blacks declined by 24 deaths per 100,000 while the rate for whites decreased by 13 deaths per 100,000; so on an absolute basis, blacks made more progress. In a widely cited paper by Werner, et al.,[63] using the highly inflammatory title, "Racial profiling: the unintended consequences of coronary artery bypass graft report cards," the authors claimed that "The release

of CABG report cards in New York was associated with a widening of the disparity in CABG use between white versus black and Hispanic patients." However, a close inspection of the data shows that the rate more than tripled for blacks (rising from 0.9 to 3.0) while only doubling for whites.

> **Recommendation: The choice of a disparity measure can lead to different interpretations when making comparisons over time or among providers. Therefore, both absolute and relative statistics should be calculated; and if they lead to conflicting conclusions, both should be presented, allowing readers to make their own interpretation.**

Figure 7. Trends in Prostrate Cancer Among Black and White Males and Percentage Change in Black-White Ratio and Rate Difference
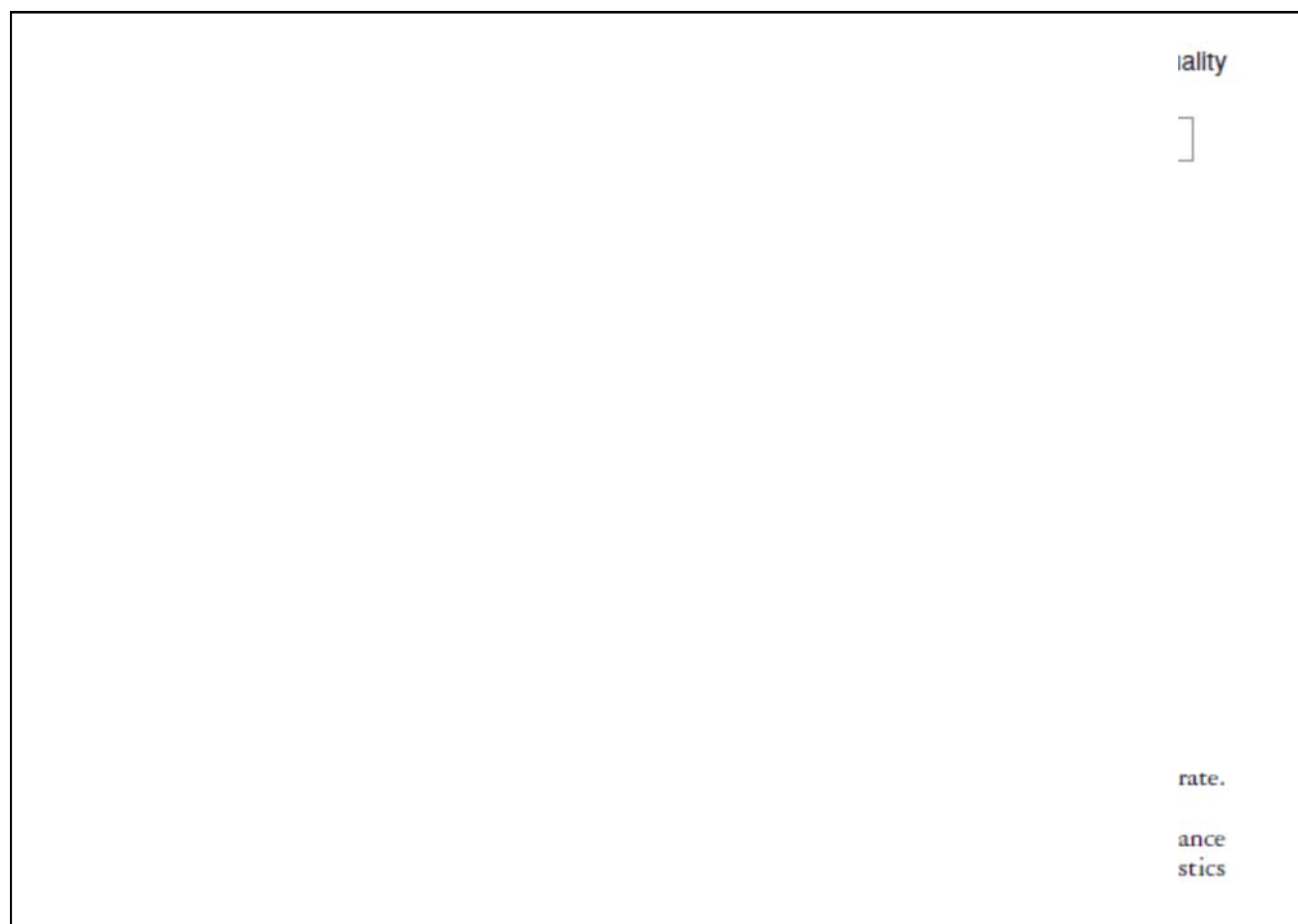
Source: Harper, et al.[62]

In addition to deciding on absolute versus relative measures, one also must consider the choice of reporting favorable or unfavorable (i.e., adverse) events. Many health indicators are based on extremely rare events, such as mortality rates. For example, a mortality rate for the dominant group of 1 percent (for a given condition in a given period of time), and 1.25 percent for the minority group, is a relatively small difference but could be represented as a 25 percent difference in mortality, i.e., (1.25-1)/1. Instead, assume now that survival is the indicator. The difference then is (99-98.75)/99 = 0.252525 percent, nearly a 100-fold difference. An article by Trivedi, et al.,[64] concluded that disparities between black and white Medicare enrollees who received preventive services declined for seven of nine HEDIS quality measures from 1997-2003. When the results were recalculated using *relative* instead of absolute disparities and *adverse events* of failing to receive indicated services instead of receiving the service, four of the reductions in absolute disparities became relative increases.[65] These discrepancies in

interpretation—using the same underlying statistics—can become important when communicating disparities to the media.[*]

> **Recommendation: As above, with respect to absolute and relative comparisons, public reporting of disparities should calculate statistics using both favorable and adverse events. If the results are notably different, both statistics should be reported, allowing the reader to judge the importance by taking the context of the report into consideration.**

4.d. Paired Comparisons versus Summary Statistics

Comparisons between two (paired) groups in a single domain are easy. But when multiple groups make up a domain, problems arise. First, making comparisons among all possible pairs of groups can be cumbersome. Second, if the groups in an ordered domain are arbitrarily defined (e.g., persons below poverty, 100 percent to 200 percent of poverty, and so on), then changing the group definition could arbitrarily change the results. Third, the sample size of one or more of the individual groups of interest may be too small to make stable estimates (see below for more detail). In these cases, it may be desirable to use a summary disparity statistic.

Healthy People 2010, for example, uses a summary measure, the index of disparity (ID), which is calculated as the average of the percentage differences from the best group rate.[66, 67] The Massachusetts Office of Medicaid found that many of the hospitals participating in its statewide pay-for-performance program had very few minority patients in their fee-for-service Medicaid program and so decided to use a summary statistic similar to the index of disparity, called the Between Group Variance (BGV), to assess disparities in the quality of hospital care.[68] The BGV provides a single measure of the consistency of care provided across all racial/ethnic groups treated in a hospital. It is derived by summing the variation from the average quality of care provided by the hospital that is received by members of different racial/ethnic groups, calculated as:

$$BGV = \Sigma \, ((n_i/d_i - N/D)^2 \, (d_i/D))$$

Where:
n_i = the number of successfully achieved opportunities for a given racial/ethnic group
d_i = the total number of eligible opportunities for a given racial/ethnic group
N = the total number of successfully achieved opportunities (for all groups)
D = the total number of eligible opportunities (for all groups)

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[*] A problem communicating with the media about disparities led to a controversy surrounding Kevin Schulman's high-profile 1999 *NEJM* article showing large odds ratios comparing whites with blacks for the likelihood of being referred for cardiac catheterization (Schulman, et al., 1999). The authors reported an odds ratio (OR) of 0.6, and the press picked up on this as blacks being 40 percent less likely to be referred. However, a letter to the editor by Frank Davidoff noted that the actual referral rates were 91 percent and 85 percent, and so in fact the black rate ratio (RR) was 93 percent that of whites, which would have appeared much less dramatic. This discrepancy occurred because of the statistical properties of ORs and RRs. In this case, had the authors reported the likelihood of *not* being referred, the OR and RR (blacks/whites) would have been nearly identical: 1.7 and 1.6, respectively.

Summary measures have several disadvantages. First, they do not indicate which groups are doing poorly and which are doing better. This may be important for public reporting and can be essential for identifying opportunities for improvement. Second, summary statistics lack "directionality" meaning that they may indicate that disparities exist even in cases where the direction of the comparison is one in which the historically disadvantaged group performs better than the other groups. Third, some summary measures are sensitive to the numbers of patients within each racial/ethnic group. For example, using the BGV, a provider with few minority patients would have a lower disparity than other providers even if it offered the same level of care to each group. In other words, hospitals with more diverse populations (more minorities) will appear to provide less equitable care (higher disparities) when assessed using the BGV.[68]

> **Recommendation: Because most summary measures of disparities lack "directionality," great care must be taken before using them to track disparities. Comparisons using the historically advantaged group as the reference point should be checked to see if a positive finding from the summary statistic reflects superior care received by the disadvantaged group. If so, the context of the report and relevant policy goals need to be explicitly considered.**

4.e. Normative Judgments about Disparity Measures

Sometimes the choice of reporting statistics is deliberate and meant to support a particular agenda. Harper, et al., make the case that the choice of disparity measures, even if they are mathematically correct, carry with them normative judgments about which aspects of disparity reductions matter most.[62] Although they cite many examples using six different case studies, one stands out for the stark contrast in values. They illustrate this point by examining a hypothetical change in smoking prevalence disparities as measured by the Index of Disparity[67] and the Mean Log Deviation. The former measure tends to weight improvements whether or not the least healthy group or the healthiest group makes progress. The latter measure values reductions in inequality among the least healthy groups. Their example shows a threefold difference in the change in inequality using the two measures. Another example of normative values influencing statistics is illustrated by the choice of a summary index of disparities selected for use by the CDC in its Healthy People 2010 report (http://www.healthypeople.gov/2010/data/midcourse/html/tables/dt/dt-01a.htm).[69] The report includes tables that list each indicator stratified by the OMB categories and indicates the size of the relative disparity from the best group rate (the percentage difference between the best group rate and each of the other group rates). The summary index is the average of these percentage differences for a characteristic. The summary index is *not* weighted by the size of the population, even though some groups, such as the American Indian or Alaska Native, are quite small. This was a conscious decision at CDC to avoid a situation in which a summary index might completely miss major disparities of a small group.[70]

Clearly, whether one believes it is important for society to reduce overall inequality or whether it is more important to reduce inequality among the least healthy groups, or among small minorities, will influence the choice of measure.

4.f Research Resources for Disparity Measurement

In addition to those highlighted above, there exist a number of absolute and relative disparity methods from which to choose, as well as summary indexes (see Table 9). The most complete review of these methods can be found in a series of monographs published by CDC and the National Cancer Institute (NCI),[60, 62, 67, 71, 71, 72] and a critique of those methods.[73] In addition, NCI publishes a statistical software program, HD*Calc, which imports data from population-based health registries (e.g., NCI's Surveillance, Epidemiology, and End Results Data [SEER], the National Health Interview Survey, National Health and Nutrition Examination Survey) and can be used to monitor and trend health disparities in cancer in the United States. It can be downloaded from the NCI website at http://seer.cancer.gov/hdcalc/. The software calculates several absolute and relative disparities measures:

Absolute Disparity: which includes Range Difference (RD), Between Group Variance (BGV), Absolute Concentration Index (ACI), and Slope Index of Inequality (SII).

Relative Disparity: which includes Range Ratio (RR), Index of Disparity (IDisp), Mean Log Deviation (MLD), Relative Concentration Index (RCI), Theil Index (T), Kunst Mackenbach Relative Index (KMI), Relative Index of Inequality (RII).

The tables and graphs that the program generates can be exported. Software development was guided by NCI's report *Methods for Measuring Cancer Disparities: A Review Using Data Relevant to Health People 2010's Cancer-Related Objectives* (Harper & Lynch, 2005).[72]

Table 9. Measures of Absolute and Relative Health Disparity

Measures of Absolute Disparity

Rate Difference = Simple arithmetic difference between two groups (usually between the less-advantaged group and the more-advantaged group).

Between-Group Variance = The sum of squared deviations from a population average. The variance that would exist in the population if each individual had the average health of their social group.

Absolute Concentration Index = Measures the extent to which health or illness is concentrated among a particular group.

Slope Index of Inequality = Absolute difference in health status between the bottom and top of the social group distribution.

Measures of Relative Disparity

Rate Ratio = Measures the relative difference in the rates of the best and worst group.

Index of Disparity = Summarizes the difference between several group rates and a reference rate and expresses the summed differences as a proportion of the reference rate.

Relative Concentration Index = Measures the extent to which health or illness is concentrated among a particular group.

Relative Index of Inequality = Measures the proportionate rather than the absolute increase or decrease in health between the highest and lowest group.

Theil Index and Mean Log = Measures of disproportionality. Summaries of the difference between the natural logarithm of shares of deviation health and shares of population.

NOTE: Although this table is on measures of health disparities rather than healthcare disparities, the same concepts can be applied to measuring disparities in healthcare performance.

SOURCE: Harper and Lynch, 2007, as cited in Institute of Medicine, *Future directions for the national healthcare quality and disparities reports.*[74]

4.g. Interaction Effects

The most common disparity comparison is made within a single domain, such as differences among racial groups or ethnicities. However, disparities may in some cases exist only for subsets of a particular racial/ethnic group. This is known in statistical terms as an *interaction effect*, defined as the situation in which the effect of one group differs depending on the characteristics (or level) of the other group. This occurred in reporting the effects of the Schulman article mentioned earlier, reporting racial and gender disparities in referral for cardiac catheterization (see Table 10).[75] The findings as reported by the media were that blacks and

women were 40 percent less likely to be referred. However, as described in a subsequent *NEJM Sounding Board*, the effect of race was modified depending on whether the patient was male or female, and vice versa.[76] In fact, the care was the same for white men, white women, and black men. Only black women were referred at lower rates (see Table 10).

> **Recommendation: When clear differences in quality exist by racial/ethnic sub-strata, further stratification of results will serve to highlight areas of the greatest potential for intervention.**

Table 10. Predictors of Referral for Cardiac Catheterization*

MODEL AND VARIABLE	ODDS RATIO (95% CI)†	P VALUE
Race and sex as separate factors		
Sex		
Male	1.0	
Female	0.6 (0.4–0.9)	0.02
Race		
White	1.0	
Black	0.6 (0.4–0.9)	0.02
Interaction of race and sex		
White male	1.0	
Black male	1.0 (0.5–2.1)	0.99
White female	1.0 (0.5–2.1)	>0.99
Black female	0.4 (0.2–0.7)	0.004

*Both models included all experimental factors as covariates, as well as the probability of coronary artery disease as estimated after the results of the stress tests were known. The first analysis included only the main effects. The second analysis explored a race–sex interaction.

†CI denotes confidence interval.

Source: Schulman, et al., 1999.[75]

4.h. *Sample Size Considerations*

The identification of disparities is often hampered by sample sizes because many racial/ethnic groups are in the minority. Thus, disparities measurement programs (and incentive programs) face a major challenge when providers or institutions have small numbers of minority patients. Pay-for-performance programs need to reliably identify providers that perform well or poorly in the area of interest.[77] For a program that is designed to identify providers with low levels of disparity, this means the disparities statistic should consistently identify the same providers as either high or low performers, if their performance were to be measured repeatedly. The smaller the numbers, the more likely it is apparent disparities will reflect chance rather than true differences.

Even national data sources may lack sufficient numbers of minorities for some purposes. For example, research using the CMS Hospital Quality Alliance data demonstrated that only one-third to one-half of U.S. hospitals had sufficient numbers of minority patients, depending on the condition of interest, to make stable enough estimates for ranking them to be eligible for incentive payments when disparities in care are being considered.[78, 79] Likewise, even national surveys with large sample sizes may be able to provide reliable estimates for smaller racial/ethnic groups. The National Health Interview Survey (NHIS) surveys more than 75,000 and yet has small numbers of Native Hawaiian or Other Pacific Islander and American Indian or Alaska Native and persons self-identifying as having more than one race (see Table 11).

Table 11. Racial Frequencies in the 2006 National Health Interview Survey

Race	Frequency	Percent
White only Black only Asian only	56,348 12,349 4,802	74.4 16.3 6.3
AIAN only NHOPI only White/black	621 111 420	0.8 0.1 0.6
White/Asian White/AIAN Other combinations	308 423 334	0.4 0.6 0.4
SOURCE: Division of Health Interview Statistics, National Center for Health Statistics. **NOTES:** AIAN is American Indian or Alaska Native. NHOPI is Native Hawaiian or other Pacific Islander. As appearing in Bilheimer 2008		

Source: Bilheimer, et al., 2008.[80]

There are a number of options to consider. Pros and cons are described in the accompanying table (see Table 12).

1. The racial/ethnic categories can be "rolled up" into broader categories containing more than one group. Commonly, researchers will use the OMB categories, or some combination, or even minority and majority.

2. Use a summary statistic such as the BGV, which considers all of the racial/ethnic groups simultaneously. This is what the Massachusetts Office of Medicaid

decided to do when confronted with small sample sizes for their Pay 4 Performance program.[68]

3. Use composite quality measures. Composite measures provide a global comparison of the quality of care by combining across indicators to produce a "composite" or "aggregate" score. Composite scores can be generated using much smaller sample sizes than those required for single indicators.

4. Oversample minority patients.

5. Combine data from two or more years.

Table 12. Pros and Cons of Options for Dealing with Insufficient Sample Sizes

Option	Pros	Cons
Rolling up	Allows analyst to choose groupings with sufficient numbers for analysis that best represent the population and the policy question	Loses data on important subgroups, potentially masking disparities
Summary statistics	Provides a single measure of disparity, allowing easy comparisons across place and time	• Lacks "directionality," potentially penalizing providers that provide superior quality to disadvantaged minorities • Hard to understand and thus are not very transparent • Choice of summary statistic may reflect value judgments, such as the importance of equity across all groups in a domain regardless of size • May have less well-understood statistical properties, such as rewarding providers serving less diverse populations even if quality is no better than others
Composites	Intuitively appealing since composites are often created around a condition of interest rather than specific processes of care that are not well understood by lay public	• Loss of transparency, since the user may not understand what factors influence their creation • Certain composites have undesirable properties, e.g., may be influenced by

		the number of measures used or by the proportion of the population eligible for each measure • Composites created across clinical condition lack meaningfulness • Composites created without proper statistical analysis may not "hold together" as a single construct
Oversample minorities	Boosts sample size of smaller sub-groups	• May add to cost of data collection • Requires knowledge of important subgroups ahead of time.
Combine data from two or more years	More stable estimate of performance	Loses sense of immediacy for quality improvement purposes

The selection of disparity measures will of necessity be context specific.

- Some applications (for example, statewide report cards) may need to rely on broad disparity indexes and composite measures to avoid overly cluttered tables. However, more detailed data tables should probably be included as appendices, and areas noted where the detailed data present might lead to different conclusions.

- Disparities reporting for internal quality purposes might focus on granular groups, even if differences are not statistically significant, and might examine differences in measures that are not yet nationally vetted.

- Programs for public reporting and incentive payments need to be highly transparent and more rigorous than for internal QI purposes, and therefore need to pay attention to stable group sizes and the use of strong evidence-based measures.

Despite limits on statistical testing with small sample sizes, it may still be useful and important to examine quality data stratified by race, ethnicity, and language. Weinick, et al.,[28] suggest four rationales:

- Stratified data can provide a first look at trends that might indicate true disparities. These instances could be explored further via anecdotes and case studies.

- Even anecdotal evidence of failure to receive high-quality care may be of interest to providers seeking to improve quality.

- In some cases there likely will never be statistical significance for certain units, such as the practice level, yet these differences could still be clinically meaningful to practitioners.

- Small groups may represent "low-hanging fruit" for quality improvement.

4.i. Risk Adjustment and Stratification

Because high-stakes performance reporting, whether as a pay-for-performance program or as public reporting, can significantly affect provider revenues, the manner in which disparities in care are examined and documented likewise has the potential to impact the resources and actions of different providers. This section considers two purposes of risk adjustment: 1) making fair comparisons among different entities (e.g., health plans, providers, health insurance exchanges) on **overall quality of care metrics**; and 2) reporting on racial/ethnic disparities in treatment, e.g., some form of an "equity" measure. The issues and rationales for risk adjustment are different for each purpose and so must be considered separately.

Risk adjustment and stratification defined. The two major approaches to framing performance by demographic characteristics are case mix adjustment and stratification. Risk adjustment and stratification are both ways of addressing the confounding influence of variables such as race/ethnicity, SES, primary language, and insurance status on health outcomes. In stratification, a given population is divided into subpopulations. For categorical variables, such as ethnicity, this yields groups such as Hispanic and Asian. Continuous variables, such as income, must be grouped into strata, e.g., less than 300 percent of the Federal Poverty Level (FPL) versus greater than 300 percent FPL. The relative risk of the outcome or variable of interest is then calculated for each substratum and can be compared among groups. Risk adjustment uses regression analyses to account for the effect of confounders.

Exception reporting. While it does not directly use demographic characteristics, exception reporting, as practiced in the United Kingdom, also may affect the way that a provider's demographic case mix influences performance.[*] In 2004 the United Kingdom implemented a pay-for-performance contract for family practitioners in which providers received additional reimbursement for meeting specific quality indicators. To decrease the pressure this generates for providers to avoid high-risk patients, providers were allowed to exclude certain patients from the calculation of their performance data, a process known as "exception reporting." The basic idea is that by excluding certain patients from their denominator populations, this design feature protects providers from being penalized for avoiding the

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[*] Doran, et al., show that practices caring for higher proportions of disadvantaged patients had only marginally higher exclusion rates. Additionally, although the performance of practices caring for large proportion of "deprived" populations had somewhat lower performance than those caring for predominantly "non-deprived" populations (4.6 percent lower than that serving the least-deprived population), this gap narrowed over just 2 years to 1.21 percent, suggesting that, even without reimbursement tied directly to reduction of disparities, the United Kingdom pay-for-performance initiative had the effect of reducing disparities in care. However, the authors note the poorest-performing practices still remained in the most deprived areas (Doran, et al., 2008), with these providers still exposed to financial liability due in part to the high-risk communities they serve.

provision of inappropriate care to patients simply to boost performance (e.g., patients with terminal illness or intolerance of standard therapy).[81] Other reasons for exclusion (e.g., new patients, patients who miss appointments, and patients refusing treatment) insulate providers from patient or practice considerations that undermine the ability to meet quality metrics. To avoid gaming or attempts to avoid addressing underlying performance issues, the rates of exclusion reporting must be monitored carefully.

4.i.i. Risk Adjusting Overall Quality Metrics for Race/Ethnicity

High-stakes incentive programs, such as pay-for-performance and public reporting, have been criticized for fostering concentration of resources among providers of care to low-risk patients or populations, thereby encouraging provider selection of these low-risk populations.[82] This both undermines access to care for vulnerable populations, such as the poor and racial and ethnic minorities, and leaves their existing providers with fewer resources to provide care and invest in quality improvement.[83] In addition, the revenue sources of these providers may be further diminished if employers, health plans, and consumers opt not to use the services of these institutions on the basis of their performance.[84] This point of view is illustrated by a recent letter from the American Hospital Association (AHA) to Donald Berwick, MD, MPP, administrator for CMS, to add variables for race and limited English proficiency to its risk-adjustment methodology as part of the Hospital Readmissions Reduction Program (HRRP).[85] AHA expressed concerns that "the HRRP may disproportionately affect hospitals serving a large number of minorities. And, by penalizing these hospitals, the HRRP will in turn disproportionately harm minority patients." Demographic case-mix adjustment, demographic stratification, and exclusion of outliers collectively mitigate these pressures. However, each approach has limitations.

Demographic case mix adjustment accounts for the generally poorer performance of racial/ethnic minorities and the poor on quality measures. In doing so, it provides some financial protection for providers of these vulnerable populations and reduces incentives for providers and health plans to avoid serving these groups. However, risk adjustment has been criticized for its low transparency and potential to institutionalize poor performance by "setting a lower bar" for providers with large numbers of minority patients. Because the performance of different groups is obscured, it does not provide any mechanism for tracking and rewarding the improvement of care for vulnerable populations who may be receiving substandard care. For example, when quality scores are adjusted by race/ethnicity case mix, it may be easier for a provider to improve its overall quality score by focusing on low-risk groups, rather than addressing the group receiving poorer-quality care.[84] In addition, adjustment by race/ethnicity may only affect performance on quality measures for a few institutions caring for large portions of racial/ethnic minorities.[86] In other words, for all but the providers of large numbers of the vulnerable, risk adjustment may fail to take advantage of the tremendous potential of quality measures to help eliminate disparities among providers of smaller portions of vulnerable communities. NQF notes that, "In order to drive improvement…National and local healthcare quality efforts and activities

should adopt a specific goal of eliminating disparities in healthcare quality."[20] By rendering opaque the performance of the poor and racial/ethnic minorities, adjustment removes incentives to eliminate disparities and may therefore act to institutionalize low-quality care.[83, 84]

In lieu of demographic case-mix adjustment, a number of consensus-building organizations and researchers, including the IOM,[1, 3] AHRQ,[23] and previous NQF reports, have advocated for racial/ethnic stratification of quality measures.[20, 84] Stratification makes the quality of care of the most vulnerable groups plain, highlighting disparities in care between groups where adjustment obscures them.[87] This helps raise awareness of disparities in care, supporting its presence on the national healthcare agenda and the development of accountability for these differences within and between institutions. In addition, the improved transparency afforded by stratification produces opportunities for providers to develop targeted interventions and allows the construction of pay-for-performance practices that provide targeted rewards to providers who give high-quality care to vulnerable groups and also to reward improvement over time in minimizing disparities in quality of care.[83, 84]

Illustrating the advantage of stratifying results by demographic variables, the IOM Subcommittee notes in its 2009 report, "Common to virtually all successful [quality improvement] projects are some fundamental steps, including the acquisition of data on race and ethnicity, the stratification of quality-of-care data by race and ethnicity, the use of race and ethnicity to identify members of a target population to whom elements of an intervention would apply, and reanalysis of stratified quality data to evaluate the impact of the activities."[23] Furthermore, during this nascent phase of measuring disparities in healthcare, stratifying results will help identify the measures that have the greatest potential to highlight disparities and therefore provide opportunities for intervention and improvement.[20]

Despite these advantages, stratification is not without pitfalls. As with adjustment, it may have limited utility for providers of smaller numbers of the poor or racial/ethnic minorities, because meaningful stratified results require that a provider/organization have a certain number of racial/ethnic minority patients.[83] In addition, data, reported by provider, can create a scenario in which the provider both appears to be responsible and is financially liable for providing low-quality care, when many of the forces leading to health disparities are beyond the scope of interventions available to individual providers, groups, and even institutions. Stratification also does not account for the impact of providing care to a very large portion of high-risk, vulnerable people on an institution's resources and operations. Such providers may still perform worse on performance measures, even for their low-risk populations. In these matters, stratification still leaves providers who serve predominantly disadvantaged communities vulnerable to financial liability that may ultimately undermine their ability to invest in quality improvement.

In summary, by increasing the transparency of healthcare disparities, stratifying performance on quality measures by racial/ethnic and demographic variables offers the advantages of an integrated approach to measurement, incentive, and intervention, although it still leaves providers financially vulnerable to forces beyond their control. The optimal approach will depend on the purpose of quality measurement and may ultimately require a combination of

approaches to provide a balance of incentives and financial protection. Work by the VA suggests that inclusion or exclusion depends on the level of control attributed to the provider. Hebert, et al., (2010) argue that models of hospital quality *should not* control for race/ethnicity for process measures that occur within the institution but *should* control for race/ethnicity when looking at outcomes such as survival, which depends more on community level resources (over which hospitals have less influence).[88] Even this reasoning may change in the future as more incentive programs such as CMS's readmission program and many of the medical home pilots based on Wagner's chronic care model encourage providers to connect with community partners.

> **Recommendation: Stratification by race/ethnicity and primary language should be performed when there are sufficient data to do so. Risk adjustment may be appropriate when performance is highly dependent on community factors beyond a provider's control.**

Although stratification appears to be the most feasible at this point in time, other strategies may be worth considering in the future. For example, P4P programs can use a blended approach where they reward improvement in addition to attainment of a benchmark or threshold. For indicators of process quality, one might consider using a measure based on treatment "intensification" (e.g., "Did the clinician appropriately intensify treatment based on the most recent BP measure").[*] Finally, it may be that we are considering risk adjustment at the incorrect leverage point. If indeed disadvantaged populations are more difficult to treat and require more resources to bring performance levels up to those of providers with more advantaged patients, then perhaps a better strategy would be to risk adjust *payments* to providers while holding them accountable for equitable performance and outcomes. Clearly such an approach would need testing before implementation.

4.i.ii. Risk Adjusting Racial/Ethnic Disparities for Socioeconomic and Other Contributory Factors

The issue addressed here is whether equity reports that stratify results by race/ethnicity and language should be adjusted (or controlled) for socioeconomic status. Socioeconomic status is one of the most important determinants of health and healthcare utilization. Low-income persons are exposed to more life stresses, live in less healthful environments, are subjected to advertisements for unhealthy products, and live in "food deserts" where healthy foods are less available.

Given that a racial/ethnic disparity exists, risk adjustment is an important research tool that can be used to identify the underlying mechanisms or contributory factors that explain the observed differences. For example, members of a Latino population may have relatively low incomes and lower rates of insurance. If health insurance and low income are also related to the

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[*] Thanks to Kevin Fiscella for making this recommendation.

performance measure, then controlling or adjusting for these variables will tend to make the significant disparities findings "go away," or at least become statistically insignificant.

The question is, "…If the discrepancies in service use between whites and minorities are 'explained' by SES or insurance, does that mean there are no racial/ethnic disparities?"[90] We believe the answer is "no." First, once one begins to control for selected socioeconomic variables, there is no logical limit to how many variables might be added to the equation, including such important mechanisms as patient preferences, availability of good public transportation, literacy levels, and so on. The more variables that are considered, the less likely the main effect of racial/ethnic grouping will remain significant. Second, one should consider the end user, in this case perhaps a minority patient trying to choose among different health plans, providers, or health insurance exchanges, based upon the equity of care provided to its members. Would providing information that says there are no disparities because they are explained by SES serve the needs of that consumer? We think not.
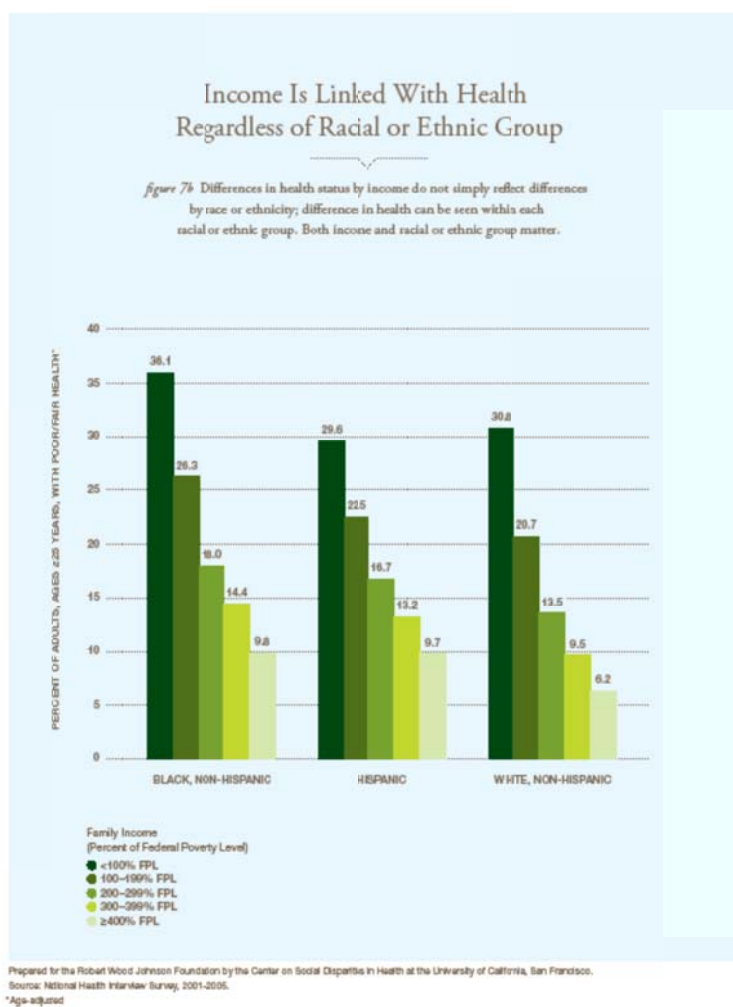
For these reasons, we recommend that stratified models should not be adjusted for SES. The basis of this belief is that differences in income and other aspects of SES are part of the social disadvantage that a racial/ethnic group might experience; controlling for SES variables therefore corresponds to an unrealistic hypothetical world in which such disadvantages have been eliminated, rather than describing the current situation of the racial/ethnic group. Disparities are still unfair, even if they can be explained by differences in socioeconomic position.

An optional strategy would be to stratify the race/ethnicity rates by a limited number of explanatory variables such as SES, insurance status, gender, age, or primary language, when there is sufficient data to do so.[74,89] By stratifying by more than one demographic characteristic simultaneously, stratification also can help focus attention on particularly vulnerable communities at the intersection of multiple risk factors, such as care of racial and ethnic minorities with low SES or racial/ethnic minorities who speak English as a second language,[91] while illustrating the independent and combined contributions of each demographic risk factors. Indeed, in the IOM report *Future Directions for the National Healthcare Quality and Disparities Reports*, the committee recommended that data be presented by race, ethnicity, SES, insurance status, and language, and that data stratified by race and ethnicity be reported simultaneously in two ways: both stratified by SES and adjusted for SES to examine further the potential mediating role of SES in quality performance.[74]

It may be possible to display the data in a manner that recognizes the contribution of both racial/ethnic and SES variables. See, for example, the bar charts in Figure 8 and Figure 9, where each bar represents an income group within a specific race/ethnicity. Such a display allows the viewer to separate racial/ethnic and SES aspects of disparity and avoids masking the "main effects" differences.
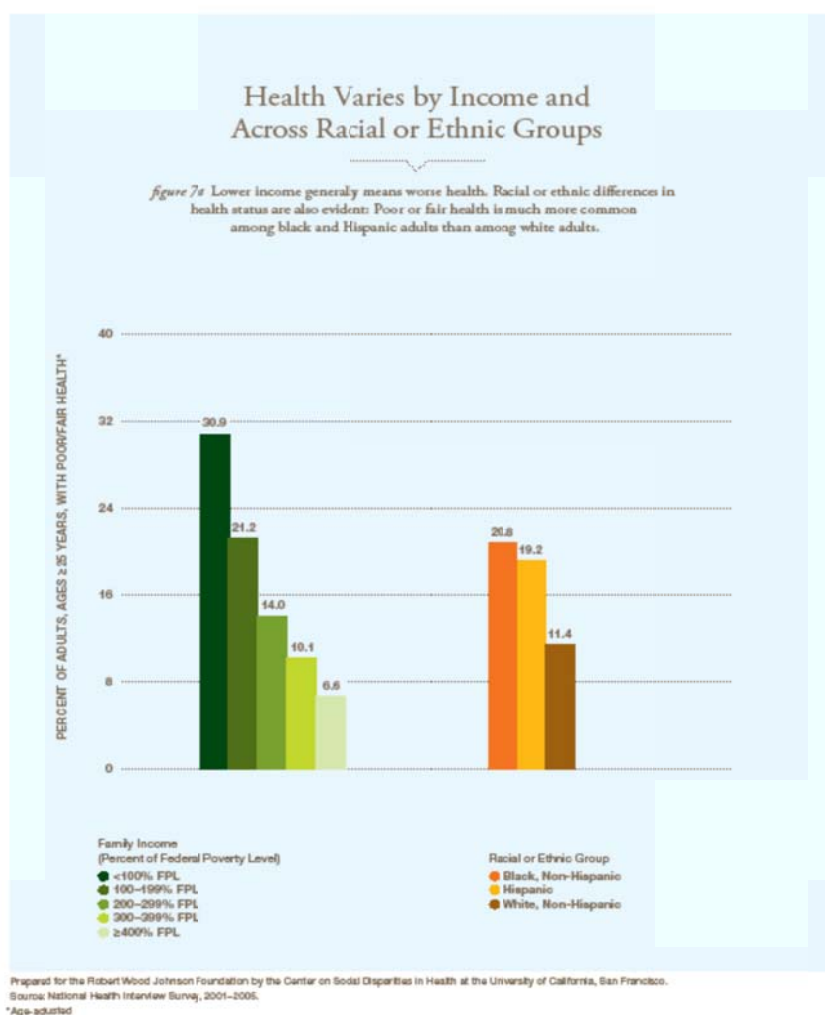
> **Recommendation: Performance reports stratified by race/ethnicity should not be risk adjusted by SES or other contributory factors, and instead could be stratified by SES if the data permit.**

Figure 8. Income and Disparities

Income Is Linked With Health
Regardless of Racial or Ethnic Group

figure 7b Differences in health status by income do not simply reflect differences by race or ethnicity; difference in health can be seen within each racial or ethnic group. Both income and racial or ethnic group matter.

Family Income
(Percent of Federal Poverty Level)
- <100% FPL
- 100–199% FPL
- 200–299% FPL
- 300–399% FPL
- ≥400% FPL

Prepared for the Robert Wood Johnson Foundation by the Center on Social Disparities in Health at the University of California, San Francisco.
Source: National Health Interview Survey, 2001–2005.
*Age-adjusted

26 / Overcoming Obstacles to Health

Source: Robert Wood Johnson Foundation, Overcoming Obstacles to Health.
Available at www.rwjf.org/files/research/obstaclestohealth.pdf. Last accessed July 2011.

Figure 9. Income and Disparities

Health Varies by Income and
Across Racial or Ethnic Groups

figure 7a Lower income generally means worse health. Racial or ethnic differences in
health status are also evident: Poor or fair health is much more common
among black and Hispanic adults than among white adults.

Family Income
(Percent of Federal Poverty Level)
● <100% FPL
● 100–199% FPL
● 200–299% FPL
● 300–399% FPL
● ≥400% FPL

Racial or Ethnic Group
● Black, Non-Hispanic
● Hispanic
● White, Non-Hispanic

Prepared for the Robert Wood Johnson Foundation by the Center on Social Disparities in Health at the University of California, San Francisco.
Source: National Health Interview Survey, 2001–2005.
*Age-adjusted

Overcoming Obstacles to Health / 25

Source: Robert Wood Johnson Foundation, Overcoming Obstacles to Health.
Available at www.rwjf.org/files/research/obstaclestohealth.pdf. Last accessed July 2011.

4.j. Disparities Between and Within Providers (Geographic Variation)

Whereas much of the literature on disparities implies differential treatment by practitioners or institutions, perhaps due to bias, racism, or lack of cultural competency, another possible explanation is that minorities tend to receive care from lower-quality providers. This may be due to where they live, where they seek care, or where they are steered to seek care. An emerging literature now suggests that aggregate (e.g., national or regional) differences in care are probably due to a mix of the two phenomena.[92, 93]

A study by Gaskin, et al., for example, found that when whites, blacks, Hispanics, and Asians were admitted for similar conditions to the same hospital, performance on AHRQ's risk-

adjusted quality and safety indicators was not different.[94] However, what is becoming increasingly clear is that care of racial minorities is concentrated among certain providers,[92] and that those providers tend to perform poorly on quality measures. Jha, et al.,[95] showed that hospitals with higher volumes of black patients were associated with having lower-quality care for acute myocardial infarction (AMI). Werner, et al.,[63] found that hospitals with high percentages of Medicaid patients (disproportionately minority) had lower performance using CMS's Hospital Compare data. In a study of hospital quality of care using the National Hospital Inpatient Quality Measures from the Hospital Quality Alliance, national disparities persisted after controlling for age, gender, source of payment, and comorbidities. Once site of care was taken into consideration, the adjusted disparities were smaller and in some cases not significantly different from zero.[49]

A similar pattern can be seen at the level of the health plan, with racial and ethnic minorities enrolled disproportionately in inferior plans. For example, Schneider, et al., found that health plans in the lowest tertile of black enrollment had breast cancer screening rates of 76 percent for whites and 74 percent for blacks, while health plans in the highest tertile of black enrollment had breast cancer screening rates of 60 percent for whites and 58 percent for blacks, with no significant difference in quality of care between blacks and whites once health plan was taken into consideration.[96] There was greater difference in quality of care between health plans than within health plans. Differences in health plan quality also accounted for more than half of the racial disparities in rates of eye exams in diabetics and use of beta-blocker post-MI. Because people tend to obtain medical care close to where they live, examinations of geographic patterns in disparities also suggest that inter-provider practice differences play an important role in generating disparities. In other words, racial and ethnic minorities may live in areas where they have less access to care or access to a generally lower quality of care. Skinner, et al., [97] found that black women and Hispanic men and women tended to live in regions where lower rates of knee arthroplasty (a surgical procedure to relieve pain and improve function of patients with disease of the knee) were observed even for whites. In some regions there was no significant difference between rates of arthroplasty between white and black women; regions where there was a significant difference were characterized by higher degrees of residential segregation. Because geographic barriers are particularly significant for people with limited resources, racial and ethnic minorities and people with low incomes have less opportunity to seek alternative providers.

What is not clear from these studies is the degree to which the quality of care is diminished by the inferior qualifications of the providers or the inferior resources available to them. Demonstrating the importance of both of these factors, Bach, et al.,[92] showed that physicians who treated predominantly black patients were less likely to be board certified than physicians who treated mostly white patients but also were more likely to report greater difficulty accessing specialty care and radiology. This latter point was demonstrated clearly in a study of revascularization (heart surgery) looking at rates of underuse, that is, failure to receive the procedure even when the benefits clearly outweighed the risks.[98] No differences were found

by race or ethnic group within hospitals, but hospitals that provided onsite revascularization had significantly higher procedure rates. In that study, which took in New York City, eight out of nine private hospitals provided onsite revascularization, whereas only one out of four municipal hospitals provided that service.

This debate over "who you are versus where you are treated" has policy significance because the answer may determine whether resources are committed to efforts to reduce prejudicial treatment by practitioners, to improve the quality of care in organizations that serve high volumes of minorities, or to implement policies that equalize access to high-quality providers. Some approaches that policymakers might consider are described in Section 5.

4.k. Summary Table

Table 13. Summary Table of Recommendations for Measuring and Monitoring Disparities

Methodological Choice	Issue	Recommendation
Reference Points	A reference point is "the specific value of a rate, percent, proportion, mean or other quantitative measure relative to which a disparity is measured."[60] Disparities are frequently measured among groups in a domain.*	In this report, we believe that for purposes of achieving equity in healthcare that is fair and just, the choice of the reference group should always be the historically advantaged group.
Absolute versus Relative Disparities	Absolute and relative changes in disparities can yield different conclusions about whether or not gaps are closing.	The choice of a disparity measure can lead to different interpretations when making comparisons over time or among providers. Therefore, both absolute and relative statistics should be calculated; and if they lead to conflicting conclusions, both should be presented, allowing the readers to make their own interpretations.
Favorable versus Adverse Measures	Measuring rates of adverse and positive events can yield different conclusions about whether or not gaps are closing.	As above with respect to absolute and relative comparisons, public reporting of disparities should calculate statistics using both favorable and adverse events. If the results are notably different, both statistics should be reported, allowing the readers to judge the importance by taking the context of the report into consideration.

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* Disparities also can be measured from a reference point that is not a group characteristic. For example, one could compare each group against the unweighted mean of all the groups in the domain or to a benchmark or goals. The goal (e.g., from Healthy People reports) has intuitive appeal because it implies that all groups could improve. However, in this paper we have chosen to concentrate on differences between groups.

Paired Comparisons versus Summary Statistics	Comparisons among multiple groups can be difficult because they can be cumbersome, changing the group definition could arbitrarily change the results, or the sample size of one or more of the individual groups of interest may be too small. Summary statistics can address these issues but obscure important information.	Because most summary measures of disparities lack "directionality," great care must be taken before using them to track disparities. Comparisons using the historically advantaged group as the reference point should be checked to see if a positive finding from the summary statistic reflects superior care received by the disadvantaged group. If so, the context of the report and relevant policy goals need to be explicitly considered.
Interaction Effects	Interaction effect is defined as the situation in which the effect of one group differs depending on the characteristics (or level) of the other group.	When clear differences in quality exist by racial/ethnic substrata, further stratification of results will serve to highlight areas of the greatest potential for intervention.
Risk Adjustment and Stratification	Case mix adjustment and stratification are ways to avoid punitive effects of pay-for-performance affecting providers with disproportionately large poor and vulnerable populations.	Stratification by race/ethnicity and primary language should be performed when there are sufficient data to do so. Risk adjustment may be appropriate when performance is highly dependent on community factors beyond a provider's control.
Consideration of Socioeconomic and Other Demographic Variables	Should displays stratified by race/ethnicity be adjusted for income or other SES variables?	Performance reports stratified by race/ethnicity should not be risk adjusted by SES or other contributory factors, and instead should be further stratified if the data permit.

5. Priorities and Options for Quality Improvement and Public Reporting of Healthcare Disparities

5.a. What Should be Achieved from Disparities Measurement?

The purpose of this report is to provide guidance to an NQF Steering Committee charged with selecting and evaluating disparity-sensitive quality measures, to describe methodological issues with disparities measurement, and to identify cross-cutting measurement gaps in disparities and cultural competency. Performance measurement has become one of the fundamental strategies for monitoring the quality of care that health plans and medical groups deliver. To date, quality measurement has not been used on a large scale to assess whether that quality is provided equitably. Therefore, the ability to measure and compare performance for subpopulations of patients both within and across providers is key to improving clinical care and

should serve to counter social biases and perhaps financial incentives to under-provide care to select populations. Disparities measurement should achieve the following policy goals (adapted from RAND 2011):[99]

- monitor progress toward disparities reduction;

- inform consumers and purchasers to enable selection of providers based on the provision of equitable care;

- stimulate competition among providers to provide the highest quality of care to disadvantaged populations;

- stimulate innovation in methods for providing culturally sensitive care to all populations, regardless of race/ethnicity or English proficiency; and

- promote the "values" of the health system.

5.b. What Should Be Avoided? Challenges in Program Design and the Potential for Unintended Consequences

Disparities and quality measurement can lead to unanticipated and adverse consequences in a variety of ways, especially given how these measures may be used for payment reform.[20] Pay-for-performance (P4P) programs, for example, have been increasingly used to motivate quality improvement and decrease costs of healthcare. P4P programs work by ranking providers (or setting performance targets) and then awarding incentives based on achievement. The idea is that payers need to counteract the occasionally perverse incentives of the fee-for-service system, which many feel over-produces certain services while under-producing value. While evidence is still accumulating about whether P4P improves care,[100] questions have been raised as to whether this payment strategy might reduce—or exacerbate—disparities (see Figure 10).

- Minority patients tend to have poorer outcomes than majority patients.[17] Providers may be motivated to "cherry-pick" patients they perceive as most likely to improve their quality scores (or may take the converse action of "lemon-dropping"). This could lead to reduced access for minorities.[83, 101-103]

- Hospitals that serve large numbers of minority patients could be disadvantaged in high-stakes incentive programs. Research suggests that P4P mostly rewards well-resourced providers—"the rich get richer" phenomenon.[104] If hospitals serving many minorities have lower quality than other hospitals,[95] then excluding these under-resourced hospitals from receiving incentive payments could worsen care for their

populations.[105, 106] For example, the Affordable Care Act directs CMS to reduce payments to hospitals with excessively high readmission rates starting in 2014. Although the details of who will be penalized are not yet finalized, a substantial number of hospitals are likely to experience reductions in payments due to their high readmission rates. Minority patients are doubly disadvantaged in this regard. Black patients have higher readmission rates than whites, and patients from high-minority hospitals have higher readmission rates than those from other institutions.[17]

- "Teaching to the test" refers to focusing on what is measured rather than what is most important for improving patient outcomes. This may result in the inappropriate provision of services to patients (e.g., antibiotics for patients before pneumonia diagnosis is confirmed).[107]

- "Shifting unsustainable resources"—Another possible consequence of teaching to the test is that real improvements may be achieved in the short term, but only through a level of resource commitment that in certain facilities cannot be sustained. As a result there is a tendency for resource commitment and performance to drop back to the pre-incentive baseline after the incentive is gone. It also is essential to choose the metrics wisely because there always will be a shift of resources to improve incentivized performance that will come at the expense of other potentially worthy initiatives.

- "Gaming the system"—If not carefully designed, healthcare providers faced with third-party quality measures may change what they do in a way that yields better *measured* quality but no real improvement in quality of care. For example, at Kaiser Permanente, the performance improvement department found that certain minority physicians were leaving high-minority services areas to avoid a disproportionate number of minority patients, who tended to rate physicians lower compared with majority patients.[108]

- "Color-blind" quality improvement programs could fail to reduce disparities if minority patients do not benefit from them to the same degree as majority patients. One study simulated the effects of P4P using the national Hospital Quality Alliance data for all U.S. non-federal acute hospitals and found that traditional "color-blind" programs would have only small effects on disparities, and recommended that hospitals be judged directly on quality gaps between minority and majority patients.[78]

- Patients differ in their ability to take advantage of public reporting. Patients with LEP or poor literacy skills may be unable to benefit from publicly reported information.[83]

- National or regional disparities may be due to differences in which minority patients receive their care rather than differences among race/ethnicities within provider

settings. P4P programs be definition focus on within-provider disparities and thus may miss important opportunities.

- Disparities in care may reflect overuse among privileged populations rather than underuse among minority populations. Reducing the disparity in such a situation would not improve the overall quality of care.

Despite the concerns raised above, there is a remarkable lack of evidence to guide the design of incentive programs to reduce disparities. A systematic review of the P4P literature conducted in 2007 found only one empirical article out of 536 that examined both performance incentives and racial disparities.[101] However, to date no large-scale P4P program has fully implemented this approach, although Massachusetts began such an initiative for its Medicaid fee-for-service program as mandated by the state's 2006 health reform law. A recent study of that program [68] found that its implementation was hampered because of relatively small disparities among the measures used, lack of buy-in from the provider community around structural measures, and the concentration of minorities in only a few hospitals. In the final section in this paper, we explore alternative policy options that address these design challenges.

Figure 10. Possible Unintended Effects of QI Programs

Three Possible Scenarios Illustrating the Effects That Quality Improvement Programs Have on Disparities Over Time
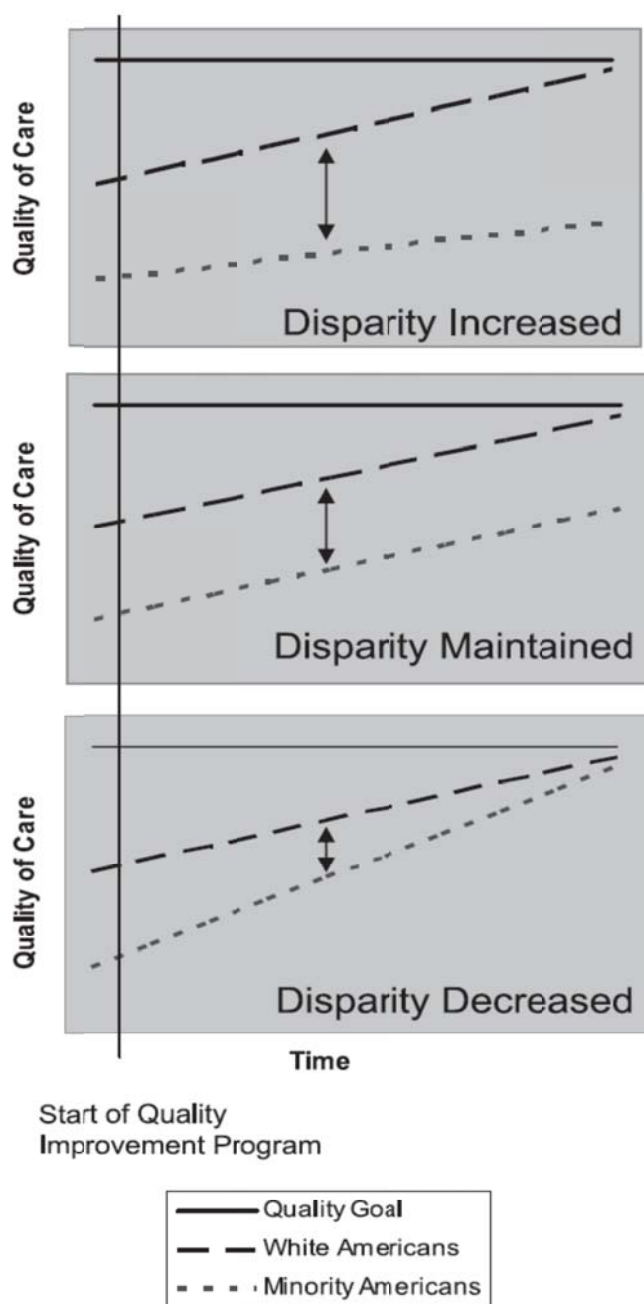
Source: Green, et al., 2010.

5.c. *What Measures Should Be Selected?*

We recommend the following to create a set of measures that organizations can use to identify and track disparities in healthcare.

Step 1: Assess the portfolio of NQF performance measures using disparities-sensitive principles, with special emphasis on quality gap and prevalence.

> Recommendation: We recommend that all existing performance measures should be evaluated against the guiding principles established by the NQF Steering Committee and TAP that produced the report on consensus standards in 2008.[20] The guiding principles are: 1) prevalence, 2) impact of the condition, 3) impact of the quality process, 4) quality gap, and 5) ease and feasibility of improving the quality process.

> Recommendation: We recommend that all of the NQF measures should be cross-walked with the literature on known areas of disparities, beginning with AHRQ's National Healthcare Disparities and Quality Report, the Institute of Medicine's *Unequal Treatment Report*,[1] and then a new review of the disparities literature since the publication of *Unequal Treatment*. All NQF measures that can be matched (at least partially if not identically) to disparities that have been documented in at least one of the sources mentioned should be considered as candidates for disparities-sensitive measures.

> Recommendation: We recommend the use of the 35 NQF-endorsed ambulatory practitioner- and group-level performance measures that are sensitive to disparities.

Step 2: Apply new criteria for disparities sensitivity.

> Recommendation: When NQF does not have access to performance data stratified by race/ethnicity, or when known disparities do not exist, a set of additional criteria can be applied to determine potential disparities sensitive measures.[1] These include: *care with a high degree of discretion*, *communication-sensitive services, social determinant-dependent measures,* and *outcomes rather than process measures.*

> Recommendation: In reviewing the NQF-endorsed standards for sensitivity to disparities, we identified six different types of disparities sensitive measures: 1) practitioner performance measures; 2) consumer surveys that measure the patient experience; 3) hospital, ambulatory care center, home health nursing home performance measures; 4) measures of ambulatory care-sensitive conditions and management; 5) measures associated with cultural competency; and 6) patient-centered measures. After assigning a measure to a category, each measure should be assessed further according to a set of characteristics that include whether: 1) a measure is condition specific (CC) or cross-cutting (CS); 2) whether it is considered structure, process or outcome; and 3) whether the roots of the disparities are provider based, patient based, system based, or related to

health insurance. Our recommendation is that a full set of NQF-endorsed measures should be analyzed according to this system of categorization, not as a way of determining disparities sensitivity, but rather as a way of understanding the range of measures used to identify disparities.

Step 3: Developing new disparities-specific measures.

Recommendation: We recommend developing disparities-specific measures for areas of care in which research has shown disparities exist but for which no current quality measure exits. These are distinguished from disparities-sensitive measures, a term that includes any current quality measure in which disparities have already been identified. These measures can be developed based on a review of the disparities literature, cross-walking this with the existing NQF measures to ensure that no current measure exists, and developing a new disparities-specific measure.

Recommendation: Another option for identifying new disparities-sensitive measures is to search for processes or services that occur at various points along the clinical pathway. We recommend that disparities measures represent a complete and comprehensive view of care, not just one point along the clinical pathway.

Recommendation: Finally, our recommendation includes tracking the progress of the National Priorities Partnership (NPP) and the Measure Applications Partnership (MAP) because any effort in disparities measurement should be synchronized with their work whenever possible. Priorities NPP has targeted for improvement are proven ways to eliminate harm, waste, and disparities, including action in the areas of payment, public reporting, quality improvement, and consumer engagement. MAP will provide direction direct input to HHS on preliminarily identifying performance measures available for benchmarking and improvement purposes, including advice on measures needed for specific care settings, care providers, and patient populations. These priorities and goals provide opportunities for immediate action and measurement and include measures such as preventable re-admission and equitable access to care, which can be included in disparities-sensitive measures.

5.d. Current Practices and Real-World Lessons

A limited number of healthcare organizations nationally are routinely monitoring quality by race and ethnicity, and thus few lessons are available from the field. Here is a brief overview of research and examples from the field, as well as current practices and key lessons:

5.d.i. Federal and State Government

Although CMS obtains self-reported data on race or ethnic background from Social Security Administration records, beneficiaries who enrolled before 1980 were recorded only as "black," "white," or "other."[109] Thus, CMS recently imputed data on race or ethnic background

for all Medicare beneficiaries, allowing researchers to begin to examine disparities in more detail.[110]

At the state level, Massachusetts mandated the collection of race/ethnicity data in hospitals and health plans as part of the disparities reduction legislation in the nationally recognized healthcare reform initiative that the state passed in 2007.[111]

Massachusetts is also one of only a few in the country to require self-reported race/ethnicity by health plans; but due to pressure from stakeholders, the state set a floor that requires reporting on only 5 percent of membership by 2012.[37] Thus, the majority of race/ethnicity fields in the submitted claims are empty.

The Massachusetts Health Disparities Council has devoted considerable effort to preparing a Health Disparities Report Card that will help policymakers, payers, providers, and consumer advocates focus on key disparities. The Report Card Working Group (RCWG), convened in February 2009, was tasked with developing a Massachusetts Report Card. The report card is intended to provide the Health Disparities Council with current health outcome data by race and ethnicity, highlight emerging trends, and inform policy recommendations.

Through a deliberative process, consensus was reached to have the Report Card emphasize how rates of asthma, diabetes, obesity, heart disease and stroke, and infant mortality vary by race and ethnicity. Social determinants, such as education and income, and environmental factors also will be included to provide insight on possible remedies outside of strictly medical interventions. Communities with poor health indicators also will be compared to communities with good health indicators. The RCWG met approximately monthly. The meetings resulted in the RCWG presenting an outline of tasks for developing the report card, which included:

- identifying a subset of all useful indicators from which high-priority indicators will be selected for publication in the report card;

- selecting initial indicators to work on for initial inclusion on the report card;

- selecting criteria for justifying inclusion;

- looking at policies that address specific issues identified by the group for initial inclusion on the report card;

- creating a scoring system for describing how Massachusetts is performing in areas identified as part of the report card; and

- producing a summary report card.

In addition, the following criteria were established and considerations presented by the RCWG in consultation with the HDC for including indicators on the MA report card:

- availability of information;

- size of the disparity;

- amenability to intervention;

- presence of policies that would impact the disparity;

- provision of justification for inclusion; and

- consideration of grouping disparities that may be amenable to a common set of interventions.

Finally, the RCWG imbedded the Report Card within the Massachusetts Framework for the Elimination of Racial and Ethnic Health Disparities by recommending that the framework be used to evaluate how each indicator selected by the RCWG is impacted by each sector identified in the framework.

Key Lessons:

- Mandating the collection of data on patient race, ethnicity, language, and highest level of education is a successful way of building the foundation for monitoring quality by race and ethnicity.

- Hospitals can effectively collect these patient demographics, and some hospitals in the state have distinguished themselves by producing disparities dashboards and reports.

- State efforts to mandate race, ethnicity, and language proficiency by health plans have been limited by a "floor" of membership collection.

- The creation of statewide Health Disparities Report Cards hold promise as a very general health disparities measurement tool but will not allow real comparisons of quality of care, as its primary focus is simply stratifying health outcomes by race/ethnicity and looking at social determinants that might contribute to health disparities.

5.d.ii. Health Plans

AHIP conducted two surveys of member and nonmember health plans—one in 2003 and the other in the 2006—to determine whether information about its members' race/ethnicity was being collected. In 2003, from the 137 health plans (of 300) surveyed, 53.5 percent of enrollees were in plans that collected race/ethnicity data; and in 2006, from the 156 health plans (of 260) surveyed, 67 percent of enrollees were in plans that collected such data.[33] This information was obtained from the enrollees, usually during their enrollment in the plan or in special programs. Some plans collected this information indirectly through geo-coding and surname analysis of their members.[112] The earliest examination of health plan collection of race/ethnicity data was the "Minority Health Report Card Project," a collaborative effort of researchers and initially 8, but later 13, health plans (commercial, Medicaid, and Medicare).[113] The demonstration created report cards, and the researchers recommended that race/ethnicity data be collected and used to measure the quality (i.e., Healthcare Effectiveness Data and Information Set [HEDIS], Consumer Assessment of Health Plans Survey [CAHPS]) of health plans and also for external reporting and internal quality purposes. The National Health Plan Collaborative—established in December 2004, supported by the Robert Wood Johnson Foundation and the Agency for Healthcare Research and Quality, and coordinated by AHIP—is a project that brings together 11 major health insurance companies, in partnership with organizations from the public and private sectors, to identify ways to improve the quality of healthcare for racially and ethnically diverse populations.

The National Health Plan Collaborative has used both direct and indirect methods to identify at-risk populations and then design and implement disparity-reduction programs, such as initiatives for increasing the rates of retinal examinations for Hispanics with diabetes.

Ultimately, health plans do not routinely report quality measures by race/ethnicity. There are a few notable exceptions:

- Aetna began collecting race/ethnicity from its members in 2003 in a voluntary, optional fashion. Most recently, they have completed their first Disparities Dashboard, which stratifies HEDIS measures by race, ethnicity, language, and region. They plan to do this routinely and are in the process of developing interventions to identify disparities in diabetes management in Texas.

- Neighborhood Health Plan (NHP) in Boston, MA, has been stratifying its HEDIS® quality measures by race/ethnicity, and in 2007 partnered with Federally Qualified Health Centers to collect race and ethnicity data on membership to conduct disparities analyses. NHP identified disparities in comprehensive diabetes management in Latinos and breast cancer screening in African Americans and developed interventions to target disparities in both those areas.

- Kaiser Permanente has begun stratifying some quality measures by race/ethnicity and are in the early stages of work in this area.

- WellPoint uses imputed racial and ethnic data to identify disparity "hot spots" and inform outreach to members of disadvantaged populations.

Key Lessons:

- Routine collection of race/ethnicity data among health plans remains a challenge for future efforts to monitor quality by race/ethnicity primarily because it is difficult for them to collect these data.

- Currently health plans are using different techniques for race/ethnicity data collection to address this challenge, ranging from self-report to indirect estimation (geo-coding and surname analysis).

- Local, smaller plans are in a better position to monitor quality routinely by race/ethnicity because they may have better access to these data (particularly Medicaid plans).

5.d.iii. Hospitals

In the past few years, two major studies examined whether hospitals routinely collect race/ethnicity data about their patients. In 2004, of 272 hospitals surveyed (from a sample of one thousand members of the American Hospital Association), 82 percent collected data on their patients' race and ethnicity, and 67 percent collected information on their patients' primary language, but the data were not collected in a systematic or standard manner. For example, the categories of race/ethnicity and the collection methods were different (such as patients' self-reports versus clerks assigning race/ethnicity to patients based only on appearance). In addition, the data often were not shared, even among different departments within the same hospital.[114] In 2006, of 501 hospitals (of 1,100) that were similarly surveyed, 78.4 percent collected race information, 50 percent collected data on patient ethnicity, and 50 percent collected data on primary language.[19] Most importantly, fewer than one in five of the hospitals that collected race/ethnicity information routinely used it to assess disparities in quality of care, health care outcomes, or patient satisfaction.

Similarly, researchers recently investigated public hospitals to find out whether current public reporting efforts could include data by race or ethnicity.[115] In particular, they looked at the feasibility of using the Hospital Quality Alliance framework to collect quality measures by

race/ethnicity and to gauge these measures' usefulness for supporting hospitals' quality improvement activities designed to reduce disparities.[115] The Hospital Quality Alliance is a public-private collaboration (AHA, CMS, the Federation of American Hospitals, and the Association of American Medical Colleges) to improve the quality of care provided by the nation's hospitals by measuring and publicly reporting the management of patients with congestive heart failure, acute myocardial infarction, and community-acquired pneumonia.[116] A useful lesson from this work was that race/ethnicity data could be used to measure quality to identify those disparities that could be addressed by quality improvement initiatives.

Similar to health plans, hospitals do not routinely use race and ethnicity date to monitor quality and equity, with a few notable exceptions:

- Massachusetts General Hospital (MGH) created an annual Disparities Dashboard in 2007. This is distributed to leaders throughout the organization and identifies the hospital's patient population by race/ethnicity and stratifies the National Hospital Quality Measures (congestive heart failure, acute myocardial infarction, and pneumonia), HEDIS outpatient measures, H-CAHPS patient satisfaction measures, all-cause admissions, ambulatory care-sensitive admissions, congestive heart failure readmissions, and several disparities specific measures (pain management for long bone fractures [femur or humerus] in the emergency room), by race/ethnicity and language. MGH also began public reporting its disparities and equity measures in 2009. This can be found at http://qualityandsafety.massgeneral.org/measures/equitable.aspx?id=4.

- Baylor Health Care System (BHCS), in Dallas-Ft. Worth, began health equity reporting in 2007. This included stratification of the National Hospital Quality Measures, ambulatory care measures (i.e., mammography screening), and other care process measures by various sociodemographic characteristics. The first among these targets was surgical infection prophylaxis (SIP). Initial analyses showed variations in surgical infection prevention measures, particularly by payer status where statistically significant differences were identified between commercially insured and self-pay (i.e., uninsured) patients. The Office of Health Equity worked with high- and low-performing hospital facilities within BHCS to identify root causes of the observed differences and best practices that could be implemented to improve equity in SIP performance across the system.

- Barnes Jewish Hospital, in St. Louis, MO, is currently collecting race, ethnicity, and language demographics at admission points throughout the organization. In February 2010, along with partners from Washington University School of Medicine, they implemented a pilot readmission project to reduce the readmission rate for patients with certain chronic diagnoses. Barnes-Jewish Hospital is working to develop a

strategic plan to use patient demographics to evaluate patient health outcomes and to address health disparities by creating a database that will allow them to track patient admissions, diagnosis, Drug Related Groups, inpatient, outpatient, emergency department services, etc. The database also will include patient demographics including race, ethnicity, language, religion, and geography.

Key Lessons:

- It is possible to create routine disparities measurement and monitoring tools (such as disparities dashboards or disparities reports). These are facilitated by standardized patient race/ethnicity data collection.

- Initially, healthcare organizations might begin by stratifying measures that are already collected, then graduate on to particular measures of interest.

- Depending on the diversity of a healthcare organization's population, small minority sample size for particular conditions/procedures might limit statistically significant comparisons between racial/ethnic groups, requiring more gross, white/non-white comparisons.

- To address concerns among healthcare leaders about publicly reporting disparities, an appropriate communication strategy is essential, as well as a commitment to action, transparency, and accountability when disparities are found.

5.e. Policy and Dissemination Considerations

Disparities measurement undoubtedly is an area that will grow in the years to come. To date, regulating bodies and federal and state legislative efforts are fostering the collection of race, ethnicity, and language proficiency data as a precursor to measurement efforts that will allow us to monitor quality and equity of care across the nation. As more robust efforts focusing on disparities measurement evolve, there are a series of policy and dissemination considerations that must be taken into account, both for external reporting to regulatory bodies, as well as public reporting:

- Standardization of disparities measures will be essential to allow meaningful conclusions and comparisons to be made about quality of care and care gaps. These measures also should be easily understandable and actionable.

- Initial efforts in disparities measurement should capitalize on the stratification of measures that are already available and used for quality reporting.

- While race, ethnicity, and language proficiency data evolve, basic and current OMB categories should be used for measurement and comparison and adapted over time to meet caregiver and local needs.

- Section 4 of this paper highlights the key issues and provides guidance and recommendations that can help address the key decisions that need to be made about:

  o When is a difference in quality a disparity and what should be the burden of evidence (percentage difference versus statistical significance)?

  o What is the correct level of aggregation for comparison purposes? Individual provider? Hospital? Health plan? Geographic area? How will disparities measurement be used? Will it be used simply to monitor quality and equity internally for healthcare organizations as a basis for quality improvement, or will it be used for benchmarking against yet undefined standards?

- Regarding public reporting of disparities measurement:

- How should public reporting be used?

  o For payment and reimbursement purposes? For consumer choice? There is a concern that certain organizations might be penalized for caring for more vulnerable and needy minority populations.

  o To motivate providers to improve performance? Public reporting alone can provide a powerful incentive for improvement, but attention to the analytic and reporting recommendations above is essential to avoid dismissal or mistrust of the results. [117]

- How should this information be packaged, given the inherent sensitivity about disparities, and the potential public perception that they may emerge from intentional actions?

- Current efforts in the field demonstrate the importance of carefully explaining what disparities are, their root causes, and the need to immediately link any disparities that are identified with quality improvement efforts (even if as simple as further exploring the problem).

Above, we discussed some of the challenges and potential for unintended consequences that could ensue from programs seeking to motivate disparities reduction. While this paper was intended to focus on methodological issues in disparities measure selection and measurement and not on the design of incentive programs, this topic deserves some consideration. Therefore, we

list below a number of approaches that can be used to address those challenges. Each of these should be considered as either alternatives to, or more likely supplements to be used in combination with, standard incentive program design features. Among these are:

- Using payment for improvement (versus payment to achieve quality benchmarks or thresholds). The CMS Value-Based Payment program for example uses a mix of achievement (median), benchmark (90th percentile) and improvement thresholds.[107]

- Paying for performance based on lower racial/ethnic disparities (versus paying for higher-quality performance applied generally to all patients).

- Conducting special studies that monitor for potential unintended consequences, such as increased difficulty accessing care, or adverse financial impacts on safety net providers.[118]

- Paying for performance focused on improving quality of care for minority populations.

- Exception reporting (as used in the United Kingdom).

- Quality improvement efforts targeting safety net providers and high-minority providers (and directing supplemental resources to those providers including the sharing of best practices).

- Assessing structural characteristics of providers until more evidence-based process and outcome measures are developed.

- One option that has not appeared in the literature to our knowledge is the idea of risk-adjusting *payments to providers* rather than risk adjusting performance measures. Such an approach recognizes the greater resource needs of providers to reach populations with multiple social disadvantages. Once these resources are available, it then may be more reasonable to hold all providers to the same quality performance standards applied to everyone without risk adjustment.

The information provided in this commissioned paper is intended to provide the appropriate background, evidence, and context for these key issues and considerations. As with any policy decision, there is no one right answer, or one-size-fits-all solution. An incremental approach to disparities measurement that involves key stakeholders in the process, and that builds on the foundation of work to date and key lessons from the field, will ultimately provide the foundation for identifying disparities and achieving equity.

Appendix I. NQF Measures Cross-Walked with AHRQ's National Healthcare Disparities and Quality Report

I. TREATMENT OF DEPRESSION						
NQF#	NQF Endorsed Measure	Description of NQF Endorsed Measure	AHRQ Disparities Measure	Description of AHRQ Disparities Measure	Is there a Known Disparity for this Measure?	Quality of Match between NQF and AHRQ Measure
105	New Episode of Depression: (a) Optimal Practitioner Contacts for Medication Management, (b) Effective Acute Phase Treatment, (c) Effective Continuation Phase Treatment	a. Percentage of patients who were diagnosed with a new episode of depression and treated with antidepressant medication, and who had at least three follow-up contacts with a practitioner during the 84-day (12-week) Acute Treatment Phase. b Percentage of patients who were diagnosed with a new episode of depression, were treated with antidepressant medication and remained on an antidepressant drug during the entire 84-day Acute Treatment Phase. c. Percentage of patients who were diagnosed with a new episode of depression and treated with antidepressant medication and who remained on an antidepressant drug for at least 180 days.	Adults with a major depressive episode (MDE) in the last 12 months who received treatment for depression in the last 12 months.	National Denominator: Persons age 18 or older with a major depressive episode in the past year. National Numerator: Subset of the denominator who received treatment or counseling in the past year.	Disparity found for Asians,[119] blacks,[119, 120] and Hispanics.[119, 120]	Medium

Appendix I. NQF Measures Cross-Walked with AHRQ's National Healthcare Disparities and Quality Report

II. CARDIOVASCULAR DISEASE						
NQF#	NQF Endorsed Measure	Description of NQF Endorsed Measure	AHRQ Disparities Measure	Description of AHRQ Disparities Measure	Is there a Known Disparity for this Measure?	Quality of Match between NQF and AHRQ Measure
137	ACEI or ARB for left ventricular systolic dysfunction- Acute Myocardial Infarction (AMI) Patients	Percentage of acute myocardial infarction (AMI) patients with left ventricular systolic dysfunction (LVSD) who are prescribed an ACEI or ARB at hospital discharge. For purposes of this measure, LVSD is defined as chart documentation of a left ventricular ejection fraction (LVEF) less than 40% or a narrative description of left ventricular systolic (LVS) function consistent with moderate or severe systolic dysfunction.	Hospital patients with heart attack and left ventricular systolic dysfunction who were prescribed angiotensin-converting enzyme (ACE) inhibitors or angiotensin receptor blockers (ARB) at discharge.	National Denominator: Discharged hospital patients with a principal diagnosis of acute myocardial infarction (AMI), and documented left ventricular ejection fraction, and without contraindication for ACE inhibitors or angiotensin receptor blockers. National Numerator: Subset of the denominator prescribed an ACE inhibitor or ARB at hospital discharge.	Disparity found for Hispanics[120, 121] but not blacks[10]	High
730	Acute Myocardial Infarction (AMI) Mortality Rate	Number of deaths per 100 discharges with a principal diagnosis code of acute myocardial infarction.	Deaths per 1,000 adult hospital admissions with acute myocardial infarction (AMI).	National Denominator: All hospital inpatient discharges among persons age 18 and older. Excluded from the denominator are patients transferring to another short-term hospital. National Numerator: Subset of the denominator who died.	Disparity found for Asians.[120] Blacks have lower mortality rate after AMI; this effect is augmented by adjustment for within-hospital effects.[122]	Medium

Appendix I. NQF Measures Cross-Walked with AHRQ's National Healthcare Disparities and Quality Report

III. MANAGEMENT OF ASTHMA						
NQF#	NQF Endorsed Measure	Description of NQF Endorsed Measure	AHRQ Title	Description of AHRQ Disparities Measure	Is there a Known Disparity for this Measure?	Quality of Match between NQF and AHRQ Measure
47	Asthma: pharmacologic therapy	Percentage of all patients with mild, moderate, or severe persistent asthma who were prescribed either the preferred long-term control medication (inhaled corticosteroid) or an acceptable alternative treatment	People with asthma who were taking prescription medication to control asthma during the past 12 months.	National Denominator: U.S. civilian noninstitutionalized population who currently have active asthma. National Numerator: Subset of denominator who are taking daily or almost daily preventive medicine.	Disparity found for Asians,[120] Mexicans,[120] and Hispanics.[120] Corticosteroid metered dose inhalers were taken up more slowly by minorities than by whites.[123]	Medium
728	Asthma Admission Rate (pediatric)	Admission rate for asthma in children ages 2-17, per 100,000 population (area level rate)	Hospital admissions for asthma per 100,000 population by age group.	National Denominator: As appropriate to each measure, the U.S. population of children ages 2-17 and adults age 18 and over or age 65 and over, excluding patients with cystic fibrosis or anomalies of the respiratory system and transfers from other institutions. National Numerator: Subset of denominator with a principal hospital admission diagnosis of asthma.	In the late 1990s, black children were more than three times more likely than whites to have been hospitalized for asthma.[124] A 2009 study found that white patients admitted for acute asthma are less likely than minority patients to have been admitted for asthma in the past.[125]	Medium

Appendix II. Sample Analysis of NQF-Endorsed Measures for Sensitivity to Disparities

NQF#	Title	NQF-Designated Ambulatory Care Sensitive (Yes/No)	Disparities Sensitive: (Yes/No)	Measure Specification: Condition Specific or Cross-Cutting	Donabedian Category: Structure/Process/Outcome	Root(s) of Potential Disparities: Provider/ Patient/ System/ Insurance
1	Asthma assessment					
2	Appropriate testing for children with pharyngitis					
3	Bipolar Disorder: Assessment for diabetes					
4	Initiation and Engagement of Alcohol and Other Drug Dependence Treatment: a. Initiation, b. Engagement					
5	CAHPS Clinician/Group Surveys - (Adult Primary Care, Pediatric Care, and Specialist Care Surveys)					

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