GENDER DIFFERENCES ACROSS RACIAL AND ETHNIC GROUPS IN THE QUALITY OF CARE FOR DIABETES

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High-quality care for diabetes is based on proper prevention, coordination of care among a multidisciplinary team of health care professionals, enhanced patient–provider relationships, and patient self-management skills. This paper discusses gender differences across racial and ethnic groups in the quality of care for type 2 diabetes according to 10 measures defined by the National Healthcare Quality Report and the National Healthcare Disparities Report. These measures include 5 process measures and one composite measure derived from the Medical Expenditure Panel Survey and 4 outcome measures derived from the Healthcare Cost and Utilization Project. National rates for 2 process measures—measurement of HbA1c (women 89.70% versus men 90.10%) and lipid profile (women 92.9% versus men 95.3%)—are high, but only 28.9% of women and 33.9% of men with diabetes received all 5 recommended process measures (HbA1c, lipid profile, eye exam, foot exam, and influenza immunization). Screening rates for retinal and foot exams and influenza immunization should be improved for all, but the need is particularly urgent for Hispanics and non-Hispanic blacks. Women and men have similar rates of hospital admissions for uncontrolled diabetes, but rates for lower extremity amputations were higher for men, particularly non-Hispanic blacks and Hispanics. Avoidable hospitalizations for diabetes decreased as income increased across racial/ethnic groups, but other factors (e.g., quality of primary care, age, relationship with providers, patients’ self-management skills) may influence such rates. Moreover, any improvements in the diabetes outcomes measures may lag many years behind any measurable improvements in quality of care. Well-designed interventions that reallocate resources for diabetes self-care should be developed to ensure that gender differences are addressed across racial/ethnic groups. Because much of this care involves the management of risk factors, self-management education should be tailored to the lifestyles and beliefs specific to gender and racial/ethnic groups.

Introduction

Diabetes is the sixth leading cause of death in the United States, with mortality rates for adults with diabetes being twice that of the general population (American Diabetes Association, 2003a, 2003b). In 2005, 20.8 million people had diabetes with 14.6 million people diagnosed and 6.2 million undiagnosed (Centers for Disease Control and Prevention [CDC], 2005). Diabetes affects 9.7 million women and 10.9 million men age 20 and over. Prevalence for the various racial/ethnic groups is: non-Hispanic whites (13.1 million), non-Hispanic blacks (3.2 million), Hispanic/Latino Americans (2.5 million), and American Indians/Alaska Natives (117,994). Prevalence is also high among people with lower educational levels. Diabetes prevalence in the general population is projected to increase by 44% by 2020: 107% for Hispanics and 56% for older adults (American Diabetes Association, 2002, 2003b). Diabetes-related mortality rates are higher among blacks, Native Americans, and Hispanics...
Diabetes is associated with a range of other illnesses and is a major risk factor for cardiovascular disease. People with diabetes are at increased risk for stroke, ischemic heart disease, peripheral vascular disease, and neuropathy (American Diabetes Association, 2002, 2003b). Blacks have higher rates of serious complications from diabetes, including higher rates of end-stage renal disease and lower extremity amputation (CDC, 1999; Guadagnoli, Ayanian, Gibbons, McNeil, & LoGerfo, 1995; Gornick et al., 1996).

Diabetes is a public health and economic concern. The total cost of the disease in the United States for 2002 was estimated at $132 billion, of which $91.8 billion was attributed to direct medical costs and $40 billion to indirect costs owing to disability, work loss, and premature mortality (American Diabetes Association, 2003b).

Diabetes is a preventable disease that can be effectively managed to delay or avoid its complications (CDC, 2004; Heisler, Vijan, Anderson, Ubel, Bernstein, & Hofer, 2003; Hill-Briggs, Cooper, Loman, Brancati, & Cooper, 2003). To identify gaps in care and avoid unnecessary expense, monitoring the ongoing quality of health care in patients with diabetes is crucial. Despite evidence currently available on the best practices in diabetes care, there is still wide variation in diagnostic evaluation, use of preventive services, and the quality and extent of disease management (American Diabetes Association, 2003b; Diabetes Prevention Program Research Group, 2002; Dallo & Weller, 2003).

The purpose of this study is to investigate whether gender differences across racial/ethnic groups exist in the quality of care received by people who suffer from type 2 diabetes. The quality of care for diabetes is evaluated according to 10 process and outcomes measures as defined by the National Healthcare Quality Report (NHQR) and the National Healthcare Disparities Report (NHDR) (Agency for Healthcare Research and Quality [AHRQ], 2004a, 2004b, 2005a, 2005b). The paper’s unique contribution is that it goes beyond the scope of the national reports by performing additional data analysis by gender within racial/ethnic groups. Our findings provide the basis for future development of gender- and/or race/ethnicity-specific strategies to help close the gaps in diabetes care.

### Methods

#### Data sources

**Medical Expenditure Panel Survey.** The Medical Expenditure Panel Survey (MEPS) collects data through computer-assisted, in-person interviews of a nationally representative sample of the noninstitutionalized civilian population using a stratified multistage probability design. This analysis uses data from the MEPS Household Component as well as the Diabetes Care Survey supplement of the MEPS, which is a paper-and-pencil questionnaire administered to household respondents who answered “yes” when asked whether

<table>
<thead>
<tr>
<th>Measure</th>
<th>Description</th>
<th>Data Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hemoglobin A1c (HbA1c) measurement</td>
<td>Percent of adults with diabetes who had a hemoglobin A1c measurement at least once in the past year</td>
<td>MEPS</td>
</tr>
<tr>
<td>Lipid profile measurement</td>
<td>Percent of patients with diabetes who had a lipid profile in the past 2 years</td>
<td>MEPS</td>
</tr>
<tr>
<td>Eye exam</td>
<td>Percent of adults with diabetes who had a retinal eye exam in the past year</td>
<td>MEPS</td>
</tr>
<tr>
<td>Foot exam</td>
<td>Percent of adults with diabetes who had a foot exam in the past year</td>
<td>MEPS</td>
</tr>
<tr>
<td>Influenza immunization</td>
<td>Percent of adults with diabetes who had an influenza immunization in the past year</td>
<td>MEPS</td>
</tr>
<tr>
<td>Composite measure of all 5 services</td>
<td>Percent of adults who received all 5 services for diabetes in appropriate time frame</td>
<td>MEPS</td>
</tr>
<tr>
<td>Uncontrolled diabetes</td>
<td>Hospital admissions for uncontrolled diabetes per 100,000 population</td>
<td>HCUP SID</td>
</tr>
<tr>
<td>Short-term complications</td>
<td>Hospital admissions for short-term complications of diabetes per 100,000 population</td>
<td>HCUP SID</td>
</tr>
<tr>
<td>Long-term complications</td>
<td>Hospital admissions for long-term complications of diabetes per 100,000 population</td>
<td>HCUP SID</td>
</tr>
<tr>
<td>Lower extremity amputations</td>
<td>Hospital admissions for lower extremity amputations in patients with diabetes per 100,000 population</td>
<td>HCUP SID</td>
</tr>
</tbody>
</table>

**Abbreviations:** MEPS, Medical Expenditure Panel Survey, 2000–01; HCUP SID, Healthcare Cost and Utilization Project, State Inpatient Database, 2001.
they were ever told by a doctor or other health professional that they had diabetes (AHRQ, 2004c).

Each year, MEPS collects data from a new sample of households. For this article, data from 2000 and 2001 were pooled to create a larger sample size to assess subgroup populations. The total sample size for the 2 years was 2,365 adults with diabetes. Adjustments were made for pooled variance to calculate standard errors. Data for this report were suppressed if cell size was <100 or the relative standard error was >30% of the estimate (AHRQ, 2004c). Because the MEPS data are self-reported, certain factors such as recall bias and social desirability in answering questions may limit the accuracy of the data.

Healthcare cost and utilization project. The Healthcare Cost and Utilization Project (HCUP) is a family of health care databases and products developed

### Table 2. Preventive measures for diabetes by gender across race/ethnicity: MEPS 2000–01

<table>
<thead>
<tr>
<th>Measure*</th>
<th>Total (%)</th>
<th>Non-Hispanic white (%)</th>
<th>Non-Hispanic black (%)</th>
<th>Hispanic (%)</th>
<th>p-value NHW to NHB</th>
<th>p-value NHW to Hispanic</th>
<th>W</th>
<th>M</th>
<th>p-value W</th>
<th>M</th>
<th>p-value W</th>
<th>M</th>
<th>p-value W</th>
<th>M</th>
<th>p-value W</th>
<th>M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent of adults with diabetes who had a hemoglobin A1c measurement at least once in the past year</td>
<td>89.70</td>
<td>90.10</td>
<td>.822</td>
<td>91.00</td>
<td>91.50</td>
<td>.814</td>
<td>88.90</td>
<td>85.30</td>
<td>.471</td>
<td>83.90</td>
<td>84.60</td>
<td>.888</td>
<td>0.490</td>
<td>0.168</td>
<td>.037</td>
<td>0.102</td>
</tr>
<tr>
<td>Percent of patients with diabetes who had a lipid profile in past 2 years</td>
<td>92.90</td>
<td>95.30</td>
<td>.035</td>
<td>92.30</td>
<td>96.30</td>
<td>.011</td>
<td>96.80</td>
<td>91.50</td>
<td>.077</td>
<td>89.70</td>
<td>92.10</td>
<td>.408</td>
<td>.023</td>
<td>0.081</td>
<td>0.292</td>
<td>0.055</td>
</tr>
<tr>
<td>Percent of adults with diabetes who had a retinal eye examination in past year</td>
<td>66.60</td>
<td>69.80</td>
<td>.158</td>
<td>67.40</td>
<td>73.10</td>
<td>.049</td>
<td>68.70</td>
<td>63.20</td>
<td>.338</td>
<td>58.00</td>
<td>57.40</td>
<td>.910</td>
<td>0.762</td>
<td>0.039</td>
<td>0.013</td>
<td>0.001</td>
</tr>
<tr>
<td>Percent of adults with diabetes who had a foot examination in past year</td>
<td>63.70</td>
<td>69.10</td>
<td>.021</td>
<td>64.20</td>
<td>71.30</td>
<td>.026</td>
<td>62.30</td>
<td>67.50</td>
<td>.295</td>
<td>63.30</td>
<td>60.90</td>
<td>.639</td>
<td>0.620</td>
<td>0.398</td>
<td>0.818</td>
<td>0.023</td>
</tr>
<tr>
<td>Percent of adults with diabetes who had an influenza immunization in past year</td>
<td>55.10</td>
<td>56.30</td>
<td>.655</td>
<td>57.90</td>
<td>61.40</td>
<td>.271</td>
<td>47.10</td>
<td>42.50</td>
<td>.439</td>
<td>54.60</td>
<td>41.00</td>
<td>.013</td>
<td>.019</td>
<td>0.000</td>
<td>0.466</td>
<td>0.000</td>
</tr>
<tr>
<td>Percent of adults with diabetes who received all five recommended diabetes services in appropriate time frame</td>
<td>28.90</td>
<td>33.90</td>
<td>.094</td>
<td>30.60</td>
<td>37.40</td>
<td>.065</td>
<td>24.20</td>
<td>26.30</td>
<td>.701</td>
<td>26.70</td>
<td>20.50</td>
<td>.274</td>
<td>0.137</td>
<td>0.026</td>
<td>0.425</td>
<td>0.000</td>
</tr>
</tbody>
</table>

Bolded p value indicates a statistically significant difference between women and men or between racial/ethnic groups (p ≤ .05). NHW, non-Hispanic whites; NHB, non-Hispanic blacks; W, women; M, men. Source: Agency for Healthcare Research and Quality. Center for Financing. Access and Cost Trends. Medical Expenditure Panel Survey combining 2000 and 2001 data. *Denominator for summary measure excludes missing values.
A file designed to provide national estimates on disparities was developed using a sample of community hospitals from the 2001 SID data for 22 states that participate in HCUP and collect data on race and ethnicity. In total, these states accounted for 65% of all hospital discharges in the United States in 2001. Hospitals were excluded from the sampling frame if the coding of patient race was suspect. Weights were developed to provide national estimates of disparities. Data were suppressed if the count in the denominator of the rates was \(<70\) cases to ensure that relative standard errors were \(<30\%\) (Coffey, Barrett, et al., 2004).

**NHQR and NHDR measure sets**

This paper uses 10 diabetes measures based on the NHQR and NHDR (Table 1). There are 5 process measures of services, a composite measure for receipt of all 5 such services, and 4 outcome measures of diabetes-related hospital admissions. The 5 process measures and the composite measure use MEPS and the 4 outcome measures use HCUP data. The process measures are part of the best standard of care for diabetes and are used to monitor disease progress, help to control the disease, and avoid or delay hospitalizations due to short- and long-term complications.

**Statistical analysis**

Comparisons were made on data stratified by gender across racial/ethnic groups. Two-tailed \(t\)-tests were used to assess significance. Although \(p\)-values were considered statistically significant at an alpha level of .05, additional criteria were imposed on the comparisons to identify “important differences,” because the large sample sizes yielded highly statistically significant results even for small differences. Relative differences \(>10\%\) were defined as statistically important. Statistically important differences are indicated in the tables.

Because racial and ethnic minorities are disproportionately likely to be of lower socioeconomic status, health care disparities among racial and ethnic minorities are often highly correlated with disparities that fall along socioeconomic lines. To begin to disaggregate racial, ethnic, and socioeconomic effects, multivariate models were developed for MEPS data. These logistic regression models included age, gender, race/ethnicity, household income, education, insurance, and location of residence.

HCUP uses the median household income of a patient’s community as a proxy for socioeconomic status, created by linking the patient’s zip code on the SID with income information obtained from Claritas, a statistical package that provides intercensal estimates and projections. Data include age- and gender-adjusted rates per 100,000 population stratified by area income using Zip code-level counts by age, gender,
race, and ethnicity from Claritas (Coffey, Barrett, et al., 2004).

All analyses accounted for the complex survey design of the 2 databases. MEPS analyses used SUDAAN, and HCUP analyses used the SAS PROC SURVEYMEANS function.

Results

Results are presented by gender for the following racial/ethnic groups: non-Hispanic whites, non-Hispanic blacks, and Hispanics. Gender analysis across other racial/ethnic groups (e.g., Asians, Pacific Islanders, and Native Americans/Alaska Natives) was not possible because data were found to be of nonreliable statistical significance (sample size inadequate). These populations were, therefore, excluded from the study.

Preventive measures

Table 2 displays information on differences in preventive measures for diabetes care for the total population of women and men across racial/ethnic groups.

Differences by gender. The percentage of adults receiving secondary preventive services for diabetes differed by gender for lipid profiles and foot exams. Among non-Hispanic whites, women were less likely to have a lipid profile or receive retinal eye and foot exams. Although such gender differences were not observed among non-Hispanic blacks or Hispanics, Hispanic men were less likely than Hispanic women to receive an influenza immunization.

Differences by race/ethnicity. Overall, the receipt of the composite measure of all 5 recommended diabetes services was comparable among all subgroups of

### Table 4. Avoidable diabetes-related hospitalizations by gender across race/ethnicity: HCUP, 2001

<table>
<thead>
<tr>
<th>Measure</th>
<th>Population by gender and race/ethnicity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total (per 100,000 population)</td>
</tr>
<tr>
<td>Hospital admissions for uncontrolled diabetes per 100,000 population</td>
<td>W  M</td>
</tr>
<tr>
<td></td>
<td>25  27</td>
</tr>
<tr>
<td>Hospital admissions for short-term complications of diabetes per 100,000 population</td>
<td>W  M</td>
</tr>
<tr>
<td></td>
<td>53  57</td>
</tr>
<tr>
<td>Hospital admissions for long-term complications of diabetes per 100,000 population</td>
<td>W  M</td>
</tr>
<tr>
<td></td>
<td>106 136</td>
</tr>
<tr>
<td>Hospital admissions for lower extremity amputations in patients with diabetes per 100,000 population</td>
<td>W  M</td>
</tr>
<tr>
<td></td>
<td>28  55</td>
</tr>
</tbody>
</table>

W, women; M, men; NHW, non-Hispanic whites; NHB, non-Hispanic blacks.
Rates reported by gender have been age-adjusted.
Bolded values indicate the difference is important with a $p$-value $\leq .05$ and a relative difference $>10\%$, comparing women to men within each racial/ethnic group.
†The difference is important with a $p$-value $\leq .05$ and a relative difference $>10\%$ comparing whites to blacks or whites to hispanics by gender.
women. However, compared to non-Hispanic white women, non-Hispanic black women received fewer lipid profiles and influenza immunizations, and Hispanic women received fewer HbA1c measurements and retinal eye exams. Compared to non-Hispanic white men, non-Hispanic black and Hispanic men were less likely to have eye exams, be immunized against influenza, and receive all 5 of the recommended diabetes services. Hispanic men also received fewer foot exams than non-Hispanic white men.

Logistic regression analysis. Table 3 shows results of the logistic regression models. These showed that socioeconomic status is an important determinant of diabetes care. People with low incomes were less likely to have eye exams, be immunized against influenza, and receive all 5 of the recommended diabetes services. Hispanic men also received fewer foot exams than non-Hispanic white men.

Differences by racial/ethnic groups. Non-Hispanic black and Hispanic women and men had higher rates than their white counterparts for all but 1 measure of diabetes complications and hospitalizations. The exception was hospitalizations for short-term complications. Moreover, men and women differed significantly overall and across all 3 racial/ethnic groups in the rate of hospitalization for lower extremity amputation, with men being much more likely to receive the procedure.

Avoidable hospitalizations Table 4 displays information on avoidable diabetes-related hospitalizations per 100,000 population for women and men across racial/ethnic groups.

Differences by gender. Overall, no gender differences in hospital admissions for uncontrolled diabetes were observed, but non-Hispanic white men were 43% more likely than non-Hispanic white women to be hospitalized for long-term complications and non-Hispanic black men were nearly 41% more likely than non-Hispanic black women to be hospitalized for short-term complications. Moreover, men and women differed significantly overall and across all 3 racial/ethnic groups in the rate of hospitalization for lower extremity amputation, with men being much more likely to receive the procedure.
whites, the risk of hospitalization for uncontrolled diabetes was 2.5 times greater for Hispanics and 5 times greater for non-Hispanic blacks.

Discussion

Diabetes is a complex chronic disease requiring comprehensive quality care. Studies have shown that when appropriate care is provided, lower diabetes-related stress and fewer emergency room and doctor’s office visits are reported (CDC, 2004; Heisler et al., 2003; Hill-Briggs et al., 2003). Although research on the management of diabetes has not concentrated on men or women specifically (Shojania, McDonald, Wachter & Owens, 2004), the disparities in quality of care between genders and across racial and ethnic groups provide us with an opportunity to specifically target populations to improve diabetes management. Providing preventive services is crucial to identify and manage people whose diabetes is uncontrolled with test results outside the normal limits. In addition, test results provide health care professionals and patients who are not doing well with the opportunity to improve their relationship and work together toward controlling the disease. Keeping diabetes under control is essential for delaying or reducing the progression of microvascular complications.

Despite the high rates of HbA1c and lipid profile measurements for both women and men, there is still room for improvement. Similarly, the percentages of retinal eye and foot exams and influenza immunizations should be increased for both women and men across all racial/ethnic groups. One major concern is the low percentages of women and men with diabetes who reported receiving all 5 recommended services for the disease in the appropriate time frame (28.9% for women and 33.9% for men).

MEPS data show a significant increase in retinal eye exams for high school graduates with diabetes from 2000 (61%) to 2001 (70%), but gaps in retinal eye exams continue to exist for low-income people with diabetes. The disparities observed in relation to influenza immunization also have been reported in previous studies and have been associated with a variety of factors. For example, in a Medicare population of patients with diabetes, black patients with less than a high school education had fewer influenza vaccinations and HbA1c measurements (Chin, Zhang, & Merrell, 1998) than those with none education; in another study, receipt of an annual influenza immunization was independently associated with race but related to better glycemic control (de Rekeneire et al., 2003).

Overall, rates of hospital admissions for uncontrolled diabetes have significantly decreased since 1994 from 40.7 per 100,000 population to the current rates of 25 for women and 27 for men per 100,000 population. The highest hospitalization rates are linked to long-term complications of diabetes, particularly the high rates for non-Hispanic blacks and Hispanics. Another challenge involves reducing the number of hospitalizations for lower extremity amputations. Amputation rates for men were notably high for non-Hispanic blacks (134 per 100,000 population) and Hispanics (84 per 100,000 population); among women, they were 5 times higher for non-Hispanic blacks and 2 times higher for Hispanics than for whites. If the quality of health services for diabetes improves, it may still take several years to detect improvements in the rates of long-term diabetes complications including amputations.

Generally, people with lower incomes and less education have worse health status and experience worse health care than those with higher incomes and more education (Pamuk, Makuc, Heack, Reuben, & Lockner, 1998). We found that avoidable hospitalizations for diabetes complications decreased as income

Table 5. Continued

<table>
<thead>
<tr>
<th>Non-Hispanic Black (per 100,000 population)</th>
<th>Hispanic (per 100,000 population)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Income Level</strong></td>
<td><strong>Average decrease (%)</strong></td>
</tr>
<tr>
<td>&lt;$25,000</td>
<td>$25,000–$34,999</td>
</tr>
<tr>
<td>131.00</td>
<td>110.00</td>
</tr>
<tr>
<td>244.00</td>
<td>181.00</td>
</tr>
<tr>
<td>410.00</td>
<td>366.00</td>
</tr>
<tr>
<td>131.00</td>
<td>134.00</td>
</tr>
</tbody>
</table>
increased across racial/ethnic groups. Low socioeconomic status seems to be clearly related to the gender and racial/ethnic differences in hospitalization rates. However, factors such as quality of primary care, age, relationship with providers, and patients’ self-management skills also play a role. In fact, within the complexity of factors affecting the management of diabetes, numerous other patient-associated factors (e.g., job benefits, child care, transportation) may lead to missing scheduled medical appointments and consequent variability in the number of services patients receive. These factors reduce the continuity and effectiveness of health care delivery, cause lapses in the appropriate monitoring of health status, increase the chances of developing poor disease outcomes, and elevate the cost of health services (Karter et al., 2004).

Problems in reliable evaluation of the effects of income, education, and insurance on gender and racial/ethnic groups constitute a major weakness in this study and were a major challenge during the development of the NHQR/NHDR (Arispe, Holmes, & Moy, 2005). First, because numerous factors can affect the outcomes for the measures used here, solid interpretation of the relationships between such outcomes and the quality of diabetes care has proven to be quite difficult (Moy, Arispe, Holmes, & Andrews, 2005). Second, data on specific racial, ethnic, and socioeconomic groups frequently are not collected or are insufficient for generating consistent and credible estimates (Moy et al., 2005). Enhanced data collection, therefore, is crucial to better data analysis and interpretation and supports the development of strategies targeting the elimination of disparities in diabetes care.

Learning about the gaps in the delivery of diabetes secondary preventive services is very important but has limited value if the next step (i.e., management of individuals who do not have their diabetes under control) is not properly addressed. The diabetes outcome measures discussed in this paper are likely to be very distant outcomes from simple physician’s office testing such as foot exams, lipid profiles, and HbA1c measurement. These tests are often completed in the same office visit. Differences in rates of completion of these health services may affect both clinician and patient education.

Because of the link between care and outcomes and the existence of high-quality evidence on the effectiveness of prevention and treatment of diabetes, the disease is a prototypical model for self-management of chronic diseases. Therefore, high-quality care for diabetes should encompass an enhanced patient–provider relationship to help improve patients’ self-management skills. Effective patient–provider communication, particularly when associated with agreement on management goals and strategies, has been shown to contribute to higher patient self-efficacy and self-management skills (Heisler et al., 2003). Several other studies also have shown that patient education improves self-monitoring of glycemic levels and control (Cowie & Harris, 1997; Harris, Eastman, Cowie, Flegal, & Eberhardt, 1999). More recently, coverage of diabetes blood glucose monitors by health maintenance organizations resulted in more patients self-monitoring their blood glucose, increased regularity in the use of anti-diabetes medications, and ultimately reduced blood glucose levels (Soumerai et al., 2004).

In addition, the disparities observed here require action toward the development of well-designed interventions that reallocate resources for diabetes self-care while ensuring that gender differences are addressed across racial/ethnic groups. Because much of this care involves the management of risk factors, self-management education should be tailored to the lifestyles and beliefs specific to gender and racial/ethnic groups.

One effort undertaken by AHRQ in disseminating information about diabetes that can help with the development of targeted well-designed quality improvement strategies to eliminate disparities is a resource guide and workbook for state-level action to improve diabetes care. The guide and workbook, companions to the NHQR and NHDR, use data compiled in the reports and walk users through data procedures, examining the finer points of data collection and analysis and also presenting broader case studies of state-level efforts. The model emphasizes data collection as the first step toward quality improvement and makes suggestions for implementation (Coffey, Matthews, & McDermott, 2004; Kass, 2004). It provides state leaders with the opportunity to monitor their progress in the quality of diabetes care and to exchange experiences about their successes and failures.

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gon Association of Hospitals & Health Systems; Pennsylvania Health Care Cost Containment Council; Rhode Island Department of Health; South Carolina State Budget & Control Board; Tennessee Hospital Association; Texas Health Care Information Council; Utah Department of Health; Vermont Association of Hospitals and Health Systems; Virginia Health Information; Washington State Department of Health; West Virginia Health Care Authority; Wisconsin Department of Health & Family Services.

References

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