

Addressing diabetes racial and ethnic disparities: lessons learned from quality improvement collaboratives

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Practice Points

- In the USA, although the quality of healthcare is slowly improving, disparities in diabetes prevalence, healthcare quality and health outcomes persist for racial/ethnic minorities. Some of these disparities are due to healthcare system issues such as limited access to medical care and insurance, financial barriers and language barriers.
- The disproportionate burden of diabetes and its complications among racial/ethnic minorities may lead to strained healthcare resources where such patients receive their medical care.
- Diabetes quality improvement (QI) initiatives, such as QI collaboratives (QICs) could be useful to address health system level issues that exacerbate diabetes health disparities. However, few QICs have specifically focused on reducing diabetes disparities; instead they have primarily implemented strategies to improve the health of all patients regardless of race/ethnicity. To date, this strategy has produced mixed and limited results on disparities, suggesting the need for culturally tailored QI approaches.
- QI collaboratives have improved diabetes processes (e.g., measurements of HbA1c and LDL cholesterol), but clinical measures (e.g., diabetes control) have been slower to improve, demonstrating the complexity of care among racial/ethnic minorities where nonhealthcare factors (e.g., poverty, access to safe recreation, access to fruits and vegetables) may significantly impact health.
- Having accurate and complete data about patients' race/ethnicity is crucial in understanding, monitoring and addressing health disparities, yet these data are often incomplete within health systems, and creates an additional barrier for QI collaboratives to effectively address diabetes health disparities.

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SUMMARY A review of national data confirms that while the quality of healthcare in the USA is slowly improving, disparities in diabetes prevalence, processes of care and outcomes for racial/ethnic minorities are not. Many quality measures can be addressed through system level interventions, referred to as quality improvement (QI), and QI collaboratives have been found to effectively improve processes of care for chronic conditions, including diabetes. However, the impact of QI collaboratives on the reduction of health disparities has been mixed. Lessons learned from previous QI collaboratives including the complexity of impacting clinical outcomes, the need for expert support for skills outside of QI methodology, limiting impact of poor data, and the need to develop disparities quality measures, can be used to inform future QI collaborative approaches to reduce diabetes racial/ethnic minority health disparities.

Diabetes patients require lifestyle change and medication counseling, knowledge, self efficacy, timely coordinated medical care and support outside of the healthcare system. Unmet needs increase patients' risk of complications (e.g., end-stage renal disease and blindness) [1], hospitalizations and death [2–4]. Such poor outcomes disproportionately affect racial/ethnic minorities, including African–Americans, Hispanics and American–Indians [5]. The causes of racial/ethnic disparities in diabetes outcomes are multifactorial, and include patient factors (e.g., lifestyle behaviors), physician factors (e.g., delays in medication intensification), health system factors (e.g., differential access to health insurance) and community factors (e.g., disparate access to healthy food and safe recreation) [5].

Because racial/ethnic minorities often receive care at lower quality institutions, interventions designed to improve care within healthcare systems may be a particularly effective tool to reduce diabetes health disparities [6–8]. Such system level initiatives are often referred to as quality improvement (QI). QI has been utilized within healthcare systems for the past 20 years, and it is increasingly recognized as a key strategy to improve patient health outcomes [9,10]. QI collaboratives, which bring together multiple sites to share experiences, are one effective QI strategy [11]. They foster group-level learning and sharing of best practices across healthcare sites [12].

The Institute of Medicine (IOM) report *Crossing the Quality Chasm* (2001) called for QI to promote care that is safe, effective, patient-centered, timely, efficient and equitable [13]. Two of these domains, patient-centeredness and equity, have the highest potential to impact health disparities, but are rarely targeted by healthcare organizations [14]. In fact, few QI initiatives have specifically focused on reducing disparities; instead broad strategies to improve

the health of all patients have been utilized [15]. To date, this approach has produced mixed and limited results on disparities, suggesting the need for culturally tailored approaches [16–20]. Thus, while QI has been successful at improving health systems [101], its full potential to simultaneously reduce health disparities has not yet been realized.

This article explores the potential for QI collaboratives to address diabetes health disparities by providing:

- A review of diabetes health disparities and related health system factors (e.g., QI targets);
- A review of lessons learned from QI collaboratives and recommendations of how they can be modified to effectively address diabetes disparities.

Since clinical recommendations are similar for Types 1 and 2 diabetes, our recommendations apply to both.

Racial/ethnic diabetes related health disparities

In 2010, for the first time the annual National Healthcare Quality Report and the National Healthcare Disparities Report were summarized together to highlight the core relationship between achieving system-level change and reducing health disparities [101]. The reports' overall findings remain the same: national healthcare quality continues to improve, but disparities in access to care and healthcare quality persist. Across several health measures, fewer than 20% of disparities faced by African–Americans, American–Indians and Alaska natives, and Hispanics showed evidence of narrowing [101]. In the following sections, diabetes disparities in the three key listed areas are highlighted and discussed within the context of healthcare delivery:

- Diabetes prevalence;
- Health system factors;
- Health outcomes.

■ Diabetes prevalence

There are approximately 23.6 million Americans with diabetes, 5.7 million of whom are unaware of their diagnosis [102]. The prevalence of diabetes remains higher for racial/ethnic minorities, and is estimated at 13.2% for non-Hispanic blacks, 11.9% for Hispanics and 7.1% for non-Hispanic whites [103]. Although diabetes incidence reflects lifestyle and environmental challenges more than healthcare quality, increasing utilization and changing reimbursement models may incentivize health centers to promote prevention among prediabetes patients. Since racial/ethnic minority populations disproportionately represent new diabetes cases, QI approaches need to be culturally and geographically appropriate, taking into consideration language needs, cultural norms and community resources.

■ Health system factors: access to care & processes of care

'Healthcare access' measures a patient's ability to receive timely coordinated care, and includes factors such as health insurance, establishing a medical home, and access to timely prescriptions. A total of 40% of access measures in the 2010 National Healthcare Quality Report showed worsened access for patients, with racial/ethnic minorities being disproportionately affected [104,105]. For example, African-Americans and Hispanics, compared with whites, had less consistent access to a primary care provider, ability to maintain a consistent source of ongoing care and the ability to receive timely urgent care [105]. Hispanics were the least able to obtain health insurance, a disparity unimproved with time [105]. Because community health centers provide care to a growing population of uninsured patients, financial downstream effects of not addressing access issues (e.g., lower staff salaries and less infrastructure) may impact staff turnover, hours of operation and workload, and subsequently, the implementation of other QI projects [21].

Healthcare quality is often measured by the types and quantity of services provided (i.e., 'processes of care'). The American Diabetes Association (ADA) established guidelines for diabetes process measures that include HbA1c testing, annual dilated eye examinations, and

annual foot examinations. Although the delivery of diabetes services in the USA is increasing, rates remain low across all populations, particularly racial/ethnic minorities [22]. For example, an estimated 36% of Hispanic adults received all three recommended diabetes services (HbA1c testing, eye exam and foot exam) compared with 42% of non-Hispanic white adults [106]. Among minorities, some diabetes care measures are actually worsening. The percentage of African-Americans receiving all three recommended diabetes care measures declined from 42.8% in 2002 to 31.7% in 2007 [106]. The decline of racial/ethnic minorities receiving foot and eye exams may be a reflection of poor access to subspecialty services and/or poor coordination of care [8]. Health center QI efforts could focus on strengthening relationships with public hospitals or coordinating screening efforts among subspecialists to ensure that patients meet guideline recommendations.

One particularly challenging diabetes care measure is the provision of lifestyle counseling (e.g., nutrition and physical activity). Hispanic individuals with diabetes are less likely to receive counseling than non-Hispanic black and white individuals [106]. Lower rates may be related to language barriers, as non-English speaking patients are less likely to receive exercise counseling (49.5%) and nutrition counseling (43.4%) compared with English speaking patients (60.3 and 52.4%, respectively) [106]. Time is often the limiting factor for lifestyle counseling. Some health systems have successfully addressed this problem by implementing group visits (shared medical appointments), which allow for extended time with a provider in a group setting, and also foster peer support, which may be particularly effective among racial/ethnic minorities [23,24].

■ Diabetes outcomes

Diabetes is the 7th leading cause of death in the USA [25]. The non-Hispanic black population has the highest diabetes-related mortality rate (32.4%) compared with all other racial/ethnic groups (non-Hispanic whites [24.9%], American-Indians/Alaska natives [24.4%], Hispanics [14.1%] and Asians/Pacific Islanders [11.8%]) [107]. Diabetes is also one of the leading causes of hospitalizations, and racial/ethnic minorities are hospitalized more frequently than whites [108], with African-Americans being 1.5 times as likely as to be hospitalized as white individuals, and at younger ages [26,109].

Two relevant measures (Prevention Quality Indicators) were developed by the Agency for Healthcare Research and Quality to estimate avoidable diabetes hospitalizations: hospitalization for short-term diabetes complications and hospitalization for lower extremity amputation (LEA) [110]. Between 2004 and 2007, the overall rates of hospitalizations for short-term complications (e.g., hyperosmolar non-ketotic coma and hypoglycemia) increased from 55.2 to 59.9 per 100,000 [102]. Rates for African-Americans remained consistently higher than other racial/ethnic groups [106]. Although the overall rate of diabetes-related LEA decreased in the USA (5.6 per 1000 to 3.5 per 1,000), racial disparities persist. For example, LEA admission rates for African-Americans is approximately twice that of whites [106].

Control of glycemia, blood pressure and dyslipidemia can reduce complications from diabetes [27,28]. The ADA and the National Cholesterol Education Program established relevant clinical targets for these measures, yet a substantial proportion of diabetes patients, racial/ethnic minorities in particular, do not meet them. Between 2005 and 2008, only 54.1% of persons with diabetes met the ADA's HbA1c target of <7%; 56.3% of non-Hispanic whites met this goal, and only 43.9% of Mexican-Americans did so [102,106]. This outcome is often a reflection of both medication adherence and lifestyle changes. To achieve meaningful changes in diabetes control, the most successful QI interventions include both care management and behavior counseling [29]. Unlike behavior-dependent HbA1c measures, cholesterol can often be controlled with medication alone. Despite national improvement in cholesterol control, racial/ethnic disparities have widened [106]. In 2008, 69.3% of non-Hispanic whites with diabetes met the National Cholesterol Education Program cholesterol target (total cholesterol <200 mg/dl), while only 56.5% of Mexican-Americans did so [106]. An issue to address through QI is clinical inertia, or the failure to intensify medication therapy appropriately among race/ethnic minority patients [30].

Lessons learned from quality improvement collaboratives: impact on diabetes disparities

This article demonstrates there is still much progress to be made. Minorities are more frequently diagnosed with diabetes, have less access to consistent and comprehensive care, worse disease

control, and suffer from higher rates of complications and hospitalizations. Fortunately, this article also highlights many system-level areas to target for improvement.

System-level initiatives, or QI, use real-time data regarding healthcare delivery (i.e., process measures) and patient health outcomes to redesign health systems. Although each system has unique challenges, when brought together in a QI collaborative, significant results are achievable. QI collaboratives typically consist of expert facilitators, multiple healthcare sites with QI teams of diverse professionals, learning sessions for skills building, and peer learning through shared experiences [12].

The Health Disparities Collaborative, launched by the Bureau of Primary Health Care in 1998, aimed to reduce diabetes disparities and improve the quality of care in 20 federally funded health centers [31]. Sites formed QI teams that met regularly with the support of leadership, created diabetes registries and implemented projects using the Model for Improvement [31]. Diabetes interventions varied across sites and included community collaboration, self-management tools and goal tracking, cluster clinics, diabetes flow sheets, and linking laboratory results to registry information for follow-up. Patients receiving care at the Health Disparities Collaborative clinics had higher odds of receiving diabetes care measures after the first year in comparison to the prior baseline year in several areas, including HbA1c measurement (odds ratio [OR]: 2.1; 95% CI: 1.6–2.8), eye examination referral (OR: 1.6; 95% CI: 1.1–2.3) and dietary counseling (OR: 1.42; 95% CI: 1.03–1.96) [31].

Although few other collaboratives have focused specifically on reducing health disparities, there is a push in the USA to transform health centers into patient centered medical homes (PCMHs). The goal of a medical home is to provide accessible, continuous, patient-oriented, team-based, and comprehensive care utilizing partnerships with the patient's family and community [32]. Although many QI collaboratives have been formed to develop PCMHs, and there is early evidence that they can improve health outcomes, there is no published literature evaluating the impact of PCMH projects on health disparities [33].

The Robert Wood Johnson Foundation is currently leading the Aligning Forces for Quality (AF4Q) initiative, consisting of 17 communities across the country. A primary AF4Q goal is to improve healthcare quality while ensuring that 'all residents in a community enjoy the benefits

of high-quality care' [34,111]. While many AF4Q sites are utilizing QI collaboratives [111], no data regarding their efficacy have been reported yet. However, this initiative holds promise for discerning critical components of QI implementation to reduce health disparities.

The following lessons were gleaned from reports of QI collaboratives that focused on diabetes and/or other chronic diseases both domestically and abroad.

■ General quality improvement initiatives may not be sufficient to reduce health disparities without targeted efforts

Although QI collaboratives have been successful at improving diabetes care and outcomes, few have had explicit goals of reducing disparities [35]. Those with such goals have used generalized QI approaches within healthcare settings that disproportionately service minorities (e.g., community health centers) rather than tailoring the QI interventions to specifically address the cultural barriers and needs of the population. The largest QI collaborative to address health disparities, the Health Disparities Collaborative, improved the quality of care at intervention community health center sites, but did not decrease disparities in healthcare quality, despite efforts that targeted patient-centered and equitable care [36]. Even in health systems with equal access to care, health disparities may not be eliminated with generalized QI projects alone. For example, transformation efforts taking place at the Veterans Health Affairs (VHA) have resulted in improved quality of care for diabetes overall, but disparities persist in health outcomes (e.g., control of glucose, blood pressure, glucose and cholesterol) between black and white patients [37]. Moreover, prior research supplementing VHA utilization data with Medicare claims data found that among African-Americans and Hispanics, disparities in health care re-emerged or worsened when compared with VHA-only data. A disproportionate utilization of non-VHA health care by non-Hispanic whites accounted for the worsening trends in health disparities [38].

Similarly, a collaborative across a multi-specialty group practice utilizing EMR decision support reminders had variable impact on diabetes disparities [20]. While cholesterol testing and control improved among all racial/ethnic groups (and reduced disparities), African-Americans were less likely than whites to receive prescriptions for HMG-CoA reductase inhibitors

(i.e., statins), which suggests unresolved inequities in care delivery [20]. Rates of HbA1c control remained low (31%) for all patients, and the black-white disparity persisted [20].

Thus, there is evidence that generalized QI initiatives may not be particularly effective at reducing disparities when applied broadly within the population. Tailoring interventions to meet the unique needs (e.g., language barriers) and cultural norms of the population may be needed to enhance the effectiveness of QI projects in addressing diabetes disparities [29].

■ Improving healthcare delivery may be easier than improving health outcomes & reducing health disparities

While improving healthcare quality is important, its primary role is as a mediator of health outcomes. While the Health Disparities Collaborative found statistically significant improvements in process measures after one year (e.g., HbA1c measurement) [31], clinical outcomes (e.g., HbA1c levels) took longer to improve and did so to a smaller extent than process measures [39,40]. Similarly, a diabetes QI collaborative facilitated by the Dutch Institute of Healthcare Improvement (with 37 general practices and 13 outpatient clinics) found significant improvements in care measures (e.g., counseling regarding foot care), but only modest improvements in health outcomes (e.g., blood pressure and cholesterol; no improvements were found in diabetes control) [41].

This demonstrates the complexity and inherent challenges in improving health outcomes, particularly among racial/ethnic minorities where nonhealthcare factors (e.g., poverty, access to safe recreation and healthy food) disproportionately impact health. These findings also argue for the need to develop better process measures that are tightly linked, or well correlated, to outcome measures because growing evidence suggests that measuring testing rates (e.g., HbA1c or LDL testing) does not correlate well with diabetes health outcomes [18,20,42]. This may be owing to the multiple intermediate processes that must occur in order for a test to affect health outcomes. Physicians must receive the test result, communicate findings to patients, and recommend changes in the treatment regimen; patients must share the goal of improved disease control and be willing and able to adhere to changes in their treatment. Process measures such as appropriate medication intensification may correlate better with diabetes health outcomes [43,44].

■ **Collaborative structure should provide support for diverse skills needed for complex change**

Typically QI collaboratives involve multiple healthcare sites working together on an identified topic (e.g., diabetes), each with its own QI team of clinical and administrative staff. Teams attend periodic 'learning sessions' facilitated by experts who assist with identifying measurable goals and sharing best practices [12]. Skills taught at the learning sessions primarily focus on planning and implementing small system changes [12]. However, by focusing on these skills alone, critical needs for implementation success may be missed. For example, experiences from one team participating in a multisite heart failure collaborative identified additional skills important for success, including leadership engagement, communication and team cohesion [45]. Similarly, feedback from team leaders participating in the Health Disparities Collaborative reported difficulty coping with competing priorities, engaging providers, promoting adherence to the program, and the need for more technical support (patient registry system) [31]. This feedback identifies critical areas that can easily be addressed in a learning session setting. Modules could be added to include communication strategies, how to engage administrative leadership and busy providers, team dynamics and basic information technology skills. In addition, addressing disparities in healthcare is a sensitive issue, particularly when conducting a root-cause analysis, cultural competency training or reporting data revealing inequitable care [46,47]. Guidance for how to handle emotionally charged situations with leadership, QI team members, and physicians could help to support QI collaboratives targeting health disparities.

■ **Lack of standardized race/ethnicity reporting creates data limitations and stalls improvement progress**

Accurate and complete data regarding patients' race/ethnicity and language is crucial for understanding, monitoring and addressing health disparities. Yet these data are often incomplete within health systems and creates an additional barrier for QI efforts. For example, the National Health Plan Collaborative to Reduce Disparities and Improve Quality spent the first 2 years troubleshooting incomplete and inconsistent race/ethnicity data [48]. Although this collaborative consisted of major health plans with

leverage for health center data reporting, the lack of race/ethnicity information escaped attention until the focus turned to reducing disparities. Integration of multiple, incomplete data sources is also an issue. The Centers for Medicare and Medicaid Services (CMS) has supported several QI collaboratives to address health inequities, which noted a number of 'Medicaid-specific data issues' including invalid member contact information, frequent cycling of enrollment and lack of documentation for services outside of the Medicaid reimbursement system [49,112]. Without standardization across payors, gaps in data will persist. A major lesson learned from CMS was the need for states and health plans to strengthen and standardize efforts to collect information on the race/ethnicity of enrollees [113]. In addition, there have been calls for the federal government to leverage its position as a purchaser and regulator to demand standardization of data collection [50].

Conclusion & future perspective

Despite decades of effort to improve health quality and outcomes for people with diabetes, little progress has been made to reduce disparities. Targeting racial/ethnic disparities along with quality of care will be increasingly important in the setting of healthcare reform and rising costs. Quality improvement collaboratives have engaged community health centers, primary sources of care for racial/ethnic minority patients with diabetes. Several major collaborative efforts achieved improvements in process measures of care but improved outcomes remain elusive. Despite challenges, healthcare providers, policymakers, health plans and patients should continue to pursue collaborative efforts to improve care and reduce disparities for all patients with diabetes.

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