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Sustaining Quality Improvement in Community Health Centers: Perceptions of Leaders and Staff

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Abstract

The Health Disparities Collaboratives (HDC) are the largest national quality improvement (QI) initiative in community health centers. This paper identifies the incentives and assistance personnel believe are necessary to sustain QI. In 2004, 1006 survey respondents (response rate 67%) at 165 centers cited lack of resources, time, and staff burnout as common barriers. Release time was the most desired personal incentive. The highest funding priorities were direct patient care services (44% ranked #1), data entry (34%), and staff time for QI (26%). Participants also needed help with patient self-management (73%), information systems (77%), and getting providers to follow guidelines (64%).

Keywords

quality improvement; quality of care; disparities; community health center; vulnerable populations

Quality improvement (QI) efforts can improve health care in the short-term (Chien et al., 2007), but little is known about how to sustain improvements over time. Most QI studies track changes in outcomes over relatively brief 1-2 year periods (Chien et al., 2007), but few examine

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longterm outcomes or how to institutionalize organizational changes and maintain or increase improvements.

The Health Resources and Services Administration's (HRSA) Health Disparities Collaboratives (HDC) are an important model program for examining factors that are vital for maintaining care improvements over time for vulnerable patients (Health Resources and Services Administration's Bureau of Primary Health Care, 2008; Health Resources and Services Administrator, 2006). Begun in 1998, the HDC are a national effort to improve the quality of care for chronic diseases in community health centers. These safety net clinics serve vulnerable patients and improve access to care and outcomes (Shi & Stevens, 2007). As of December 2007, 915 HCs have participated in the HDC [personal communication: Charles Daly, Health Resources and Services Administration, December 10, 2007]. Almost all of the participating organizations are federally-qualified health centers. The HDC bring together health centers to learn and implement techniques of rapid quality improvement, chronic care management, and best practices (Wagner et al., 2001). The initiative reflects growing awareness that quality improvement interventions are integral to reducing racial and ethnic disparities in care (Chin & Chien, 2006).

Studies of the HDC with one-year follow-up have demonstrated improvements in processes of care for patients with diabetes and asthma (Landon et al., 2007; Chin et al., 2004). At the four-year follow-up period among patients with diabetes, clinical outcomes such as glucose and cholesterol control also improved (Chin et al., 2007). In addition, the HDC intervention has been generally very well-received by staff (Chin et al., 2004). While these early successes are promising, the impact of the HDC on the long-term health of patients will be significant only if current improvements are maintained or enlarged because of the natural history of many chronic diseases.

The need to maintain or enlarge improvements in care raises important questions regarding the sustainability of QI programs. In particular, little is known about what is required to sustain a QI collaborative at the organizational level (Ovretveit et al., 2002; Daniel et al., 2004; Mills & Weeks, 2004; Wilson et al., 2003). Some of the challenges of the HDC are probably common in other settings such as time burdens associated with data collection during initial HDC implementation (Chin et al., 2004). Other difficulties, including staff turnover, may be more severe in health centers (Chin et al., 2004). Enthusiasm for QI may be high when an intervention begins, but may wither once health care organizations confront the daily work and expense associated with the effort. While there are anecdotal reports of difficulties with sustaining QI activities, there are currently little data on important questions such as how much time the different tasks of quality improvement require, how much time devoted to the HDC is uncompensated, and whether participants are still enthusiastic several years after undertaking the initiative. In addition, it is unclear whether there is an economic business case for quality for outpatient facilities given that QI requires upfront personnel time and health centers may not receive the downstream financial benefits from prevented hospitalizations (Leatherman et al., 2003; Huang et al., 2008; Huang et al., 2007). What is required to maintain and enlarge the gains in quality of care, and how can an ongoing QI process be nurtured? The answers to these questions may provide insight into how to best design financial and non-financial incentives to encourage participation in QI efforts such as the HDC.

The HDC can provide useful lessons to the many health care organizations enacting or considering similar QI efforts, but it is important to be aware of key differences between community health centers and private practices. Overall, health centers have more poorly reimbursing payor mixes with 40% uninsured (National Association of Community Health Centers, 2006). In addition, private insurance for health center patients covers only 57% of health center costs, primarily because low-income people's private insurance plans typically

have very limited coverage and high cost-sharing (National Association of Community Health Centers, 2005). Thus, health centers will gain relatively less revenue from quality improvement interventions that lead to the provision of more services compared with private practices. While the question of how to sustain QI will ultimately require multiple studies in different contexts, the HDC are a particularly important case example for those seeking to improve care for vulnerable populations in resource-constrained settings.

To explore sustainability of quality improvement, the study team queried a sample of leaders and staff from health centers participating in the HDC. Investigators had two major goals. First, they determined health center staff's perceptions of current resource, manpower, and leadership barriers to improving care in the HDC to identify potential targets. Second, investigators identified what types of incentives and assistance participants perceived as important to sustain gains in quality of care and facilitate the improvement process.

Methods

Health Disparities Collaboratives

The HDC have been described in detail elsewhere (Chin et al., 2004; Chin et al., 2007). In brief, a HDC QI team at each center, typically composed of nurses, physicians, administrators, and non-provider staff, drives the process locally with the support of senior leadership. Groups of approximately 15-20 health centers originally met on a regional or national basis 2-4 times during the first year to learn techniques of rapid quality improvement (Langley et al., 1996), understand the MacColl Chronic Care Model (Wagner et al., 1996), and share best practices. Rapid quality improvement employs the Model for Improvement created by Associates in Learning (Langley et al., 1996). In this model, the HDC QI team utilizes the Plan-Do-Study-Act paradigm to pick a QI problem, plan an intervention, do it, study it in a small number of patients rapidly, and act to revise the intervention based upon the initial results. The MacColl Chronic Care Model aims to improve outcomes of activated, empowered patients who work with a prepared, proactive provider team by targeting patient self-management, decision support for providers, delivery system redesign, community outreach, information systems, and leadership and health system organization (Wagner et al., 1996). The sharing of best practices among health centers occurred at the regional and national learning sessions.

Regional cluster coordinators offered support services to the participants such as help with information technology and coaching with quality improvement efforts. After the initial year of implementation, health centers met regionally approximately once per year, and submitted quarterly clinical and senior leadership reports to the coordinators. HRSA strongly encourages every health center nationally to participate in the HDC. HRSA has subsequently shifted quality improvement resources from a regional structure to State Primary Care Associations. Currently, training approaches vary from state to state.

Conceptual Model

The study was guided by principal agent theory (Robinson, 2001). This framework analyzes how the principal (e.g. – an individual, organization, or policymaking entity) can encourage and reward an agent's (ie - another entity's) actions. Investigators targeted two principal-agent pairs: community health center leadership – health center personnel and HRSA's Bureau of Primary Health Care (part of federal government that oversees the nation's health centers) – community health center. The practical question was what types of incentives and assistance from the principals (Bureau of Primary Health Care and community health center leadership) participants perceived as important to improve their health center's ability to improve quality of care and outcomes in the HDC (Clark & Wilson, 1961). Incentives were conceptualized as

financial and non-financial rewards intended to influence individual's behavior. Assistance was considered to be help that would facilitate improved quality of care and patient outcomes.

Development of the Self Administered Questionnaire

In 2003 the study team developed the "Self Administered Questionnaire for the Evaluation of the Health Disparities Collaborative" with individualized versions for the health center's chief executive officer / executive director, medical director, HDC team leader, HDC team members, and staff who were not part of the HDC team. To facilitate the development of the survey, investigators performed 40 qualitative interviews of these 5 types of respondents at 8 diverse health centers that were participating in the HDC. The 8 centers were a purposeful sample designed to represent small, medium, and large centers, and urban and rural centers. Transcripts were audiotaped and two investigators reviewed each transcript using grounded theory to identify themes including several relevant for sustaining QI included barriers to improvement and what help health centers desired (Clark & Wilson, 1961). The investigators were unable to find pre-existing survey instruments appropriate for the specific study questions in the health center setting, and thus this pilot work and input from members of the study team who worked in health centers were critical.

The survey covered barriers to improving care as well as desired incentives and assistance for sustaining QI. Domains included perceptions of costs; support from staff and leadership; staff morale and burnout; time devoted to entering data, using registry data to determine patient needs, and leading QI interventions; use of QI tools; attitudes towards different types of incentives; and preferred targeting of funding from health center leadership and the Bureau of Primary Health Care. Time dedicated to the HDC included paid protected time dedicated to activity (release time) and extra work (work theoretically during employee's regular hours beyond protected time dedicated to activity).

Most of the question response options were in five gradated categories (e.g. – "Strongly disagree.... Strongly agree"). Regarding requested funding from the Bureau of Primary Health Care, respondents were asked to rank "Training in quality improvement techniques", "Information system technical support", "Data entry activities", "Staff time spent on quality improvement", and "Direct patient care" from 1 to 4 in importance with the option of writing in additional categories. These categories were the primary ones discerned in the qualitative interviews.

Implementation of the Self Administered Questionnaire

Investigators invited all 173 health centers in the Midwest and West Central regions (21 states) that had been in the HDC at least one year as of 2003 to participate in the survey. One-hundred sixty-five (95%) health centers agreed to participate. In 2004, investigators mailed surveys to each health center's chief executive officer, medical director, HDC team leader, all HDC team members, and up to three staff members (clinical and non-clinical) who were not part of the HDC team, randomly selected from personnel lists. The study team surveyed these diverse types of respondents since they might have different perceptions of what is needed to sustain QI. After the initial survey mailing, investigators sent out 2 additional waves of the survey to non-respondents and employed telephone and mail follow-up to increase response rates. The University of Chicago and National Opinion Research Center Institutional Review Boards approved the study.

Analysis

Investigators evaluated variation in perceptions of the HDC and attitudes toward incentives for participation by respondent type, using Generalized Estimating Equations (GEE) logistic regression to incorporate correlation due to nesting of respondents within health centers

(Strauss & Corbin, 1990). Investigators further assessed whether responses to selected survey items (sufficient funding, sufficient personnel, sharing of workload, burnout, need for additional money and release time) were related to whether anyone at the health center had paid protected time for collaborative activities, again using GEE logistic regression. Likert-scale responses to survey items were dichotomized for logistic analyses based on the pooled distribution of the variable – typically, as agreement vs. other response options, where agreement encompasses both ‘agree’ and ‘strongly agree’. Analyses were performed in SAS v.9.1 and Stata 9.2.

Results

Respondents

Investigators received 1006 surveys from 153 health centers, for an overall survey response rate of 67% with 88% representation of centers that were invited to participate (Table 1). Nurses and physicians comprised 27% and 16% of respondents, respectively. Twenty-five (2.5%) respondents were nurse practitioners and 47 (4.7%) were physician assistants. Forty-seven percent of the centers were rural. The median number of patient visits per health center per year was 35,000. On average, each health center had participated 2.5 years in the HDC, and 2.7 sites per health center were involved. The most common disease foci for the official Collaboratives were diabetes (78%), cardiovascular disease (31%), and depression (18%). Fifty-five percent of health centers had participated in more than one HDC disease initiative.

Barriers – Time, Funding, Personnel, Staff Morale

Team leaders spent nearly 11 hours per week (27% of their time) working strictly on Collaborative activities, team members nearly 8 hours (19% of their time), chief executive officers nearly 3 hours (6% of their time), and physicians nearly 5 hours (10% of their time). Ninety-one percent of health centers designated personnel to spend at least some of their time on data entry, 80% for using registry data to determine patient needs, and 85% for leading quality improvement interventions. Most centers had someone with paid protected time for each of those activities, but approximately 20% of centers did not for each respective task. Those latter centers had persons spending extra, unpaid time completing the tasks, typically less than 20 hours per month. In contrast, only 24% of centers that had one person with paid protected time had persons spending extra, unpaid time on the activity.

A substantial proportion of respondents reported that lack of resources was a significant barrier to the HDC in 2003. Approximately half disagreed that there was sufficient funding and personnel to run the Collaboratives (Table 2). While 44% of respondents agreed that Collaborative workload was shared fairly, a sizable minority of 35% disagreed or strongly disagreed. Similarly, while 33% of respondents agreed that team member burnout was occurring, 31% disagreed. Most respondents noted that staff morale and finances either remained unchanged or improved, but significant minorities noted decreases in morale (18%) and health center finances (20%) due to the HDC.

Incentives and Assistance: Principal = Community Health Center Leadership, Agent = Health Center Personnel

Team members, team leaders, medical directors, and chief executive officers agreed that more release time (60%) and additional money (39%) would help increase their ability to achieve Collaborative goals (Table 3). Improving the quality of care, professional development, personal recognition, and personal satisfaction were other important motivators for involvement in the Collaboratives, while relatively few respondents were motivated by career promotion opportunities (10%) or fear of negative consequences (18%).

Participants reported needing an average of 12 hours of release time per month to work on the Collaboratives, but only 22% of respondents actually received any. Half of the respondents thought that receiving no release time was acceptable. Only 3% received extra money for their Collaborative work from their health center. Among the respondents who were either team leaders or team members, physicians requested, on average, \$825 per month extra beyond their salary for their Collaborative work, and non-physicians requested \$444 per month extra. For the nonmonetary incentives, many respondents noted that they had received “none or a little bit” of personal recognition (62%), career promotion opportunities (82%), and skill/education development (55%).

When asked about areas where assistance from health center leadership was most needed, medical directors, team leaders, and team members thought that funding for direct patient care services was most important (45%), with significant support also for training in quality improvement techniques, data entry, assistance for getting buy-in from providers, creating an environment where the Collaboratives are high priority, and staff time for quality improvement. Respondents agreed that they needed additional support or resources to help patients with self-management (73%), improve information systems (77%), and get providers to follow practice guidelines (64%).

Incentives and Assistance: Principal = Bureau of Primary Health Care, Agent = Community Health Center

Chief executive officers and team leaders most frequently selected direct patient care services (44%) as an area where Bureau of Primary Health Care funding was most needed to improve the Collaboratives (Table 4), followed by funding for data entry (34%) and staff time spent on quality improvement (26%).

Variation by respondent type and by paid protected time

Perceptions of the HDC and attitudes toward incentives differed according to respondent type, most notably in the areas of finance and motivation. Chief executive officers, medical directors and team leaders were more likely to disagree that funding was sufficient to run the Collaboratives as compared to team members and non-team staff (71%, 59%, 64% vs. 46%, 29%, $p<0.0001$). Chief executive officers were also less likely than team members and non-team staff to respond that center finances had improved as a result of the Collaboratives (12% vs. 21%, 33%, $p<0.0001$). Team leaders and team members were more likely than chief executive officers and non-team staff to report that the workload was not shared fairly (47%, 38% vs. 24%, 23%, $p<0.0001$).

Forty-one percent of centers that responded had no paid protected time for at least one of the following activities: data entry, use of registry data for patient needs, and leading quality improvement interventions. Centers with paid protected time for data entry, and use of registry data for patient needs, were less likely to report burnout compared to those centers without paid protected time (61% vs. 83%, $p=.01$ and 56% vs. 84%, $p<.01$, respectively).

Discussion

The HDC have been proven to improve quality of care and outcomes (Landon et al., 2007; Chin et al., 2004; Chin et al., 2007), but health center leaders and staff identify several factors that must be addressed if quality improvement is to be sustained or enlarged. The critical factors cluster in three areas: 1) Time and resources to perform quality improvement work; 2) Additional tools and techniques for improving quality; and 3) Financial reimbursement implications of providing higher quality care. The first two factors likely apply to both

community health centers and private practices. Financial reimbursement issues will vary somewhat between those two settings because of different payor mixes.

Time and resources to perform quality improvement

Quality improvement interventions must be planned and implemented, and require the ability to track patients with registries and other data systems. Thus, leaders and staff identified release time and personnel for data entry and patient registry management as key needs. For many of the participants, the HDC QI effort is currently work superimposed on their regular duties. While this additional workload may be possible in the short-term, the long-term viability is questionable because of the danger of staff burnout, particularly in the 40% of health centers that are not funding at least one of the three core tasks of data entry, patient registry management, and leadership of quality improvement efforts. Additional time and personnel could come from reallocation of resources by health center leadership or infusion of new funding from external sources such as HRSA.

More seamless data systems that automatically capture and track key clinical information would make the QI process more efficient and potentially less costly, especially if implemented in a manner that interfaces easily with the way providers work (Bates et al., 2003). The challenge is that these systems typically require significant initial financial and social investment, and thus 26% of health centers report electronic health record capacity and only 13% meet requirements for a minimal set of functionalities (Shields et al., 2007). Many health centers started with paper records and gradually the Bureau of Primary Health Care introduced a series of electronic databases that have improved tracking, but which still require manual data entry to function.

Resources are important for quality improvement, but health center leaders can also provide several other relatively low cost items that were valued by many respondents, but received infrequently. These incentives include personal recognition and professional development opportunities.

Additional tools and techniques for improving quality

Health centers asked for help with implementing patient self-management programs and obtaining provider buy-in for quality improvement efforts. Many quality improvement initiatives such as the HDC are a process as opposed to a specific implementable program. In the case of the HDC, the MacColl Chronic Care Model provides target domains for QI work, and the rapid cycle QI methodology gives a general process for improvement. However, each health center's creativity and expertise could be buttressed with model programs to consider and adapt, especially for particularly difficult tasks such as encouraging patient behavioral change (Glasgow et al., 2002). Model programs could come from the sharing of best practices in the regional and national learning sessions, or perhaps centralized by HRSA and the network of regional cluster coordinators. The request for help with provider buy-in to the quality improvement effort suggests that specific tools of leadership training and organizational change are also critical elements for sustained success. Facilitating provider buy-in is a critical responsibility of health center leadership.

Financial reimbursement implications of providing higher quality care

Quality improvement efforts can be especially challenging for health care providers who have a poorly reimbursing payor mix or many capitated patients (Cheung et al., 2008). Better quality of care for chronic diseases based upon evidence-based guidelines often means more diagnostic testing and therapeutic services for patients. Over 40% of health center patients are uninsured (National Association of Community Health Centers, 2006). Ironically, quality improvement initiatives may cost organizations whose core mission is caring for the underserved,

considering both the fixed and variable costs of quality improvement infrastructure and the costs of providing care to uninsured or underinsured patients. The HDC currently do not have a regular stream of funding to pay for all of the health centers' costs of QI (Huang et al., 2008), and much of the potential cost-savings and value of the QI effort occur downstream and accrue to others such as payors who benefit from improved outpatient care that prevents costly hospitalizations (Huang et al., 2007). Without reforms in reimbursement to encourage and reward QI efforts, it is questionable whether the efforts will be sustainable. Financially, quality improvement efforts are more likely to be sustainable in private practices that care for fewer uninsured and underinsured patients.

This study has several limitations. Investigators studied only community health centers, so the findings may not apply to other settings. Investigators measured perceptions and self-reports of activities, but these are the most appropriate or feasible ways to measure most of the pertinent domains. Also, non-response bias is possible even though the 67% response rate from individuals and 88% participation rate from eligible centers are excellent for surveys of health care providers (Asch et al., 1997). Nonetheless, this study is the first the investigators are aware of to explore the critical incentives and assistance health care organizations need to improve and sustain quality improvement collaboratives for vulnerable populations.

The HDC have demonstrated that the QI collaborative approach can improve the care of underserved populations and reduce disparities in care (Landon et al., 2007; Chin et al., 2004; Chin et al., 2007). If these quality improvement efforts are to be sustained over time, health center leaders and staff note that several factors should be addressed, including creating relatively low-cost recognition and career advancement opportunities for staff (Graber et al., 2008), developing targeted interventions for difficult challenges such as changing patient behavior, and reforming the health care financing systems to reward quality improvement, especially for poorly reimbursing patients. Institutionalization of effective quality improvement initiatives for vulnerable patients and general populations will require creative approaches to developing these incentives and assistance.

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References

- Asch DA, Jedrzewski MK, Christakis NA. Response rates to mail surveys published in medical journals. *J Clin Epidemiol* 1997;50(10):1129–1136. [PubMed: 9368521]
- Bates DW, Kuperman GJ, Wang S, Gandhi T, Kittler A, Volk L, Spurr C, Khorasani R, Tanasijevic M, Middleton B. Ten commandments for effective clinical decision support: making the practice of evidence-based medicine a reality. *J Am Med Inform Assoc* 2003;10(6):523–30. [PubMed: 12925543]
- Cheung K, Moiduddin A, Chin MH, Drum ML, Brown SES, Graber JE, Heuer L, Quinn MT, Schaefer CT, Walters AE, Huang ES. The perceived financial impact of quality improvement efforts in community health centers. *J Amb Care Manage* 2008;31(2):111–119.
- Chien AT, Walters AE, Chin MH. Community health center quality improvement: a systematic review and future directions for research. *Progress in Community Health Partnerships: Research, Education, and Action* 2007;1(1):105–116.

- Chin MH, Chien AT. Reducing racial and ethnic disparities in health care is an integral part of quality improvement scholarship. *Qual Safety Health Care* 2006;15(2):79–80.
- Chin MH, Cook S, Drum ML, Jin L, Guillen M, Humikowski CA, Koppert J, Harrison JF, Lippold S, Schaefer CT. Improving diabetes care in midwest community health centers with the health disparities collaborative. *Diabetes Care* 2004;27(8):2–8. [PubMed: 14693957]
- Chin MH, Drum ML, Guillen M, Rimington A, Levie JR, Kirchhoff AC, Quinn MT, Schaefer CT. Improving and sustaining diabetes care in community health centers with the Health Disparities Collaboratives. *Med Care* 2007;45(12):1135–1143. [PubMed: 18007163]
- Clark PB, Wilson JQ. Incentive systems: A theory of organizations. *Adm Sci Q* 1961;6:129–166.
- Daniel DM, Norman C, Davis C, Lee H, Hindmarsh MF, McCulloch DK, Wagner EH, Sugarman JR. Case studies from two collaboratives on diabetes in Washington state. *Jt Comm J Qual Saf* 2004;30(2):103–8. 57. [PubMed: 14986341]
- Glasgow RE, Funnell MM, Bonomi AE, Davis G, Beckham V, Wagner EH. Self-management aspects of the improving chronic illness care breakthrough series: implementation with diabetes and heart failure teams. *Ann Behav Med* 2002;24(2):80–87. [PubMed: 12054323]
- Graber JE, Huang ES, Drum ML, Chin MH, Walters AE, Schaefer CT, Heuer LA, Tang H, Quinn MT. Predicting changes in staff morale and burnout at community health centers participating in the Health Disparities Collaboratives. *Health Serv Res*. 200810.1111/j.1475-6773.2007.00828.xOnlineEarly Articles
- Health Resources and Services Administration Administrator. HRSA's Commitment: Expand, Accelerate to Improve Health Outcomes and to Eliminate Health Disparities. May 16;2006
- Health Resources and Services Administration's Bureau of Primary Health Care. Background of the Health Disparities Collaborative. [May 28]. 2008 Available at: <http://www.healthdisparities.net/hdc/html/about.background.aspx>
- Huang ES, Brown SES, Zhang JX, Kirchhoff AC, Schaefer CT, Casalino LP, Chin MH. The cost consequences of improving diabetes care: the community health center experience. *Jt Comm J Qual Saf* 2008;34(3):138–146.
- Huang ES, Zhang Q, Brown SES, Drum M, Meltzer DO, Chin MH. The cost-effectiveness of improving diabetes care in U.S. federally-qualified community health centers. *Health Serv Res* 2007;42(6 Pt 1): 2174–2193. [PubMed: 17995559]
- Landon BE, Hicks LS, O'Malley AJ, Lieu TA, Keegan T, McNeil BJ, Guadagnoli E. Improving chronic disease management at community health centers. *N Engl J Med* 2007;356(9):921–934. [PubMed: 17329699]
- Langley, G.; Nolan, TW.; Nolan, CL.; Provost, LP. *The Improvement Guide: A Practical Approach to Enhancing Organizational Performance*. San Francisco: Jossey-Bass; 1996.
- Leatherman SD, Berwick D, Iles D, Lewin LS, Davidoff F, Nolan T, Bisognano M. The business case for quality: case studies and an analysis. *Health Aff (Millwood)* 2003;22(2):17–30. [PubMed: 12674405]
- Liang KY, Zeger SL. Longitudinal data analysis using generalized linear models. *Biometrika* 1986;74:13–22.
- Lin MK, Marsteller JA, Shortell SM, Mendel P, Pearson M, Rosen M, Wu SY. Motivation to change chronic illness care: results from a national evaluation of quality improvement collaboratives. *Health Care Manage Rev* 2005;30(2):139–56. [PubMed: 15923916]
- Mills PD, Weeks WB. Characteristics of successful quality improvement teams: lessons from five collaborative projects in the VHA. *Jt Comm J Qual Saf* 2004;30(3):152–62. [PubMed: 15032072]
- National Association of Community Health Centers. *The Safety Net on the Edge*. Washington, D.C.: National Association of Community Health Centers; 2005 [July 10, 2008]. Available from <http://www.nachc.com/research-reports.cfm>
- National Association of Community Health Centers. *A Sketch of Community Health Centers: Chart Book* 2006. 2006 [May 30, 2008]. <http://www.nachc.org>
- Ovretveit J, Bate P, Cleary S, Cretin S, Gustafson D, McKinnes K, McLeod H, Molfenter T, Plsek P, Robert G, Shortell S, Wilson T. Quality collaboratives: lessons from research. *Qual Saf Health Care* 2002;11(4):345–51. [PubMed: 12468695]

- Robinson JC. Theory and practice in the design of physician payment incentives. *Milbank Q* 2001;79:149–177. [PubMed: 11439463]
- Shi L, Stevens GD. The role of community health centers in delivering primary care to the underserved: experiences of the uninsured and Medicaid insured. *J Ambul Care Manage* 2007;30:159–70. [PubMed: 17495685]
- Shields AE, Shin P, Leu MG, Levy DE, Betancourt RM, Hawkins D, Proser M. Adoption of health information technology in community health centers: results of a national survey. *Health Affairs* 2007;26:1373–1383. [PubMed: 17848448]
- Strauss, A.; Corbin, J. Basics of qualitative research: grounded theory procedures and techniques. Newbury Park, CA: Sage Publications; 1990.
- Wagner EH, Austin BT, Von Korff M. Organizing care for patients with chronic illness. *Milbank Q* 1996;74(4):511–44. [PubMed: 8941260]
- Wagner EH, Glasgow RE, Davis C, Bonomi AE, Provost L, McCulloch D, Carver P, Sixta C. Quality improvement in chronic illness care: a collaborative approach. *Jt Comm J Qual Improv* 2001;27(2): 63–80. [PubMed: 11221012]
- Wilson T, Berwick DM, Cleary PD. What do collaborative improvement projects do? Experience from seven countries. *Jt Comm J Qual Saf* 2003;29(2):85–93. [PubMed: 12616923]

Table 1
Health Center Respondent Characteristics (n = 1006)

Age, years (SD)	43.6 (10.8)
Female, %	76
Ethnicity/Race, %	
White, non-Hispanic	69
African-American	15
Hispanic	15
Time Employed at Community Health Center, years (SD)	6.9 (6.6)
Time in Health Disparities Collaboratives Role, years (SD)	2.3 (1.3)
Role in Health Disparities Collaboratives at Community Health Center, %	
Chief Executive Officer / Executive Director	10
Medical Director	9
Team Leader	12
Team Member	50
Health Center Staff (Non-Team)	19

Table 2
Perceptions of the Health Disparities Collaboratives (%)

	n	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
There is sufficient funding for our center to run the Collaborative.	974	13	36	27	20	4
There are sufficient personnel for our center to run the Collaborative.	976	14	37	19	27	4
Our center personnel share the workload related to Collaborative activities fairly.	982	7	28	22	38	6
Team members have become burnt out because of their Collaborative duties.	984	5	28	36	26	5
Collaborative Team meetings are difficult to schedule	790 ^a	6	29	25	29	11
<i>During 2003, to what degree did the Collaborative worsen or improve the following at your center...</i>	n	Greatly worsened	Somewhat worsened	No change	Somewhat improved	Greatly improved
Staff morale	979	3	15	39	36	7
Finances	940	3	17	59	18	3

^a Asked to Team Leader, Chief Executive Officer, Team Member, and Medical Director only (N=815)

Table 3

Personal Incentives (%)

	n	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
I am involved in the Collaborative because of the career promotion opportunities it offers.	785 ^a	23	38	30	8	2
I am involved in the Collaborative because of the professional development activities it offers.	785 ^a	9	17	27	38	8
Additional personal recognition for my work on the Collaborative would influence my motivation.	787 ^a	6	18	30	35	11
Additional money beyond base salary for my work on the Collaborative would increase my ability to achieve Collaborative goals.	787 ^a	7	24	30	28	11
Additional release time for my work on the Collaborative would increase my ability to achieve Collaborative goals.	687 ^b	4	12	24	41	19
I personally feel that my contribution to the Collaborative is important to improving quality of care at my health center.	787 ^a	0	1	9	49	41
Personal satisfaction motivated me to be involved with the Collaborative at my health center.	981	2	7	28	47	17
Fear of negative consequences for poor performance makes me work harder on the Collaborative.	784 ^a	20	32	30	15	3

^a Asked to Team Leader, Chief Executive Officer, Medical Director, and Team Member only (N=815)

^b Asked to Team Leader, Medical Director, and Team Member only (N=714)

Table 4

Preferred Targeting of Funding and Assistance from Bureau of Primary Health Care and Health Center Leadership for Success of Health Disparities Collaboratives

	Where Bureau of Primary Health Care funding is most needed (%)^c	n^a	Where assistance from Health Center leadership is most needed (%)^c	n^b
Direct Patient Care Services	44	152	45	490
Data Entry Activities / Funding for Data Entry	34	169	39	493
Staff Time Spent on Quality Improvement	26	170	33	509
Training in Quality Improvement Techniques	20	138	27	462
Information System Technical Support	18	160	31	428
Assistance in Getting "Buy-In" from Providers			38	416
Environment where Collaborative is Given High Priority			34	390
Funding for Regional/National Collaborative Meetings			24	311

^a Asked to Chief Executive Officers and Team Leaders only (N=219)

^b Asked to Medical Directors, Team Leaders and Team Members only (N=714)

^c Reflects percentage of respondents that ranked the selection as "1". Several respondents used "1" to rank more than one selection.