

By Tanjala S. Purnell, Elizabeth A. Calhoun, Sherita H. Golden, Jacqueline R. Halladay, Jessica L. Krok-Schoen, Bradley M. Appelhans, and Lisa A. Cooper

DOI: 10.1377/hlthaff.2016.0158
HEALTH AFFAIRS 35,
NO. 8 (2016): 1410–1415
©2016 Project HOPE—
The People-to-People Health
Foundation, Inc.

Achieving Health Equity: Closing The Gaps In Health Care Disparities, Interventions, And Research

Tanjala S. Purnell is an assistant professor in the Department of Surgery and training director of the Johns Hopkins Center to Eliminate Cardiovascular Health Disparities, both at the Johns Hopkins University School of Medicine, in Baltimore, Maryland.

Elizabeth A. Calhoun is a professor in the Department of Public Health Policy and Management at the University of Arizona, in Tucson. At the time this research was conducted, she was codirector of the Center for Population Health and Health Disparities at the University of Illinois at Chicago.

Sherita H. Golden is the Hugh P. McCormick Family Professor in the Department of Medicine at the Johns Hopkins University School of Medicine and a core faculty member in the Johns Hopkins Center to Eliminate Cardiovascular Health Disparities.

Jacqueline R. Halladay is an associate professor in the Department of Family Medicine and the Center to Reduce Cardiovascular Disparities, School of Medicine, at the University of North Carolina at Chapel Hill.

Jessica L. Krok-Schoen is a research specialist in the Comprehensive Cancer Center and the Center for Population Health and Health Disparities at the Ohio State University, in Columbus.

ABSTRACT In the United States, racial/ethnic minority, rural, and low-income populations continue to experience suboptimal access to and quality of health care despite decades of recognition of health disparities and policy mandates to eliminate them. Many health care interventions that were designed to achieve health equity fall short because of gaps in knowledge and translation. We discuss these gaps and highlight innovative interventions that help address them, focusing on cardiovascular disease and cancer. We also provide recommendations for advancing the field of health equity and informing the implementation and evaluation of policies that target health disparities through improved access to care and quality of care.

The need to eliminate disparities in health and health care has long been recognized. Nonetheless, populations such as racial/ethnic minority groups, rural residents, and adults with low incomes continue to experience suboptimal access to and quality of health care.^{1–7} Disparities in health and health care are especially pronounced in cardiovascular disease and cancer, which are the leading causes of death in the United States.^{1–7} In cardiovascular disease, for instance, compared to non-Hispanic whites, African Americans and Hispanics have a higher prevalence of hypertension and poorer blood pressure control, which contributes to greater morbidity and mortality.^{1,3} Similarly, low-income adults are more likely to have at least one cardiovascular disease risk factor, compared to adults with higher incomes, and rural residents have poorer access to care and a greater burden of risk factors, compared to nonrural residents.^{5,6} (For an additional discussion of racial/ethnic disparities in cancer and cardiovascular disease in these populations, see online Appendix Exhibit 1.)⁸

Several interventions have been developed to

address disparities in access to and quality of health care.^{4,9–12} However, there have been only modest improvements in reducing persistent disparities in cardiovascular disease and cancer care at the national level.^{1,3,6} If effective interventions are to be designed, targeted, and implemented, it is critical to understand the complex, multilevel factors that influence the presence of these disparities.

In this article we discuss important components of research and interventions to address health care disparities that many existing efforts do not address. We also offer examples of programs developed by the Centers for Population Health and Health Disparities—a network of research centers sponsored by the National Institutes of Health—that do address many of these missing components. Using a model adapted from the work of Edwin Fisher and colleagues,¹³ we contextualize multilevel influences on health disparities, their intervention targets, and the key stakeholders and outcomes that are affected by the interventions. We also provide key lessons, drawn from the literature and from a qualitative survey of the Centers for Population Health and Health Disparities Access to Care and Quality of

Healthcare Services Consortium members, to inform future interventions and policies aimed at disparities.

Interventions Targeting Disparities

Complex factors influence disparities in access to and quality of services.^{12,14-20} These include individual patient factors (level 1); family, friends, and social support factors (level 2); provider and organizational factors (level 3); and policy and community factors (level 4) (Exhibit 1).

As Electra Paskett and colleagues explore in this issue of *Health Affairs*, interventions that address factors at multiple levels of the model may be more effective than those that target only one level.²¹ For example, an intervention to reduce coronary heart disease disparities could include self-management training for patients with low health literacy, a decision support tool for clinicians, and a partnership between a health care system and a community-based organization to train community health workers to help patients address complex psychosocial and financial barriers.

Critical Gaps In Knowledge And Translation

Many interventions have been developed in recent decades to address disparities in cardiovascular disease and cancer care.^{4,9,12} While some of these interventions have been effective at reducing disparities for certain underserved groups, they reflect important gaps in research and translation. Drawing on previous systematic reviews^{4,9,12} and the work of the Access to Care and Quality of Healthcare Services Consortium, we highlight fifteen critical knowledge and translation gaps (organized by the four levels in our model) that many health care disparities interventions do not address (see Appendix Exhibit 2). We organize them by their target intervention levels, which align with the four levels in our model (see Appendix Exhibit 2).⁸ Understanding these gaps could guide the development of needed interventions and policies to achieve health equity.

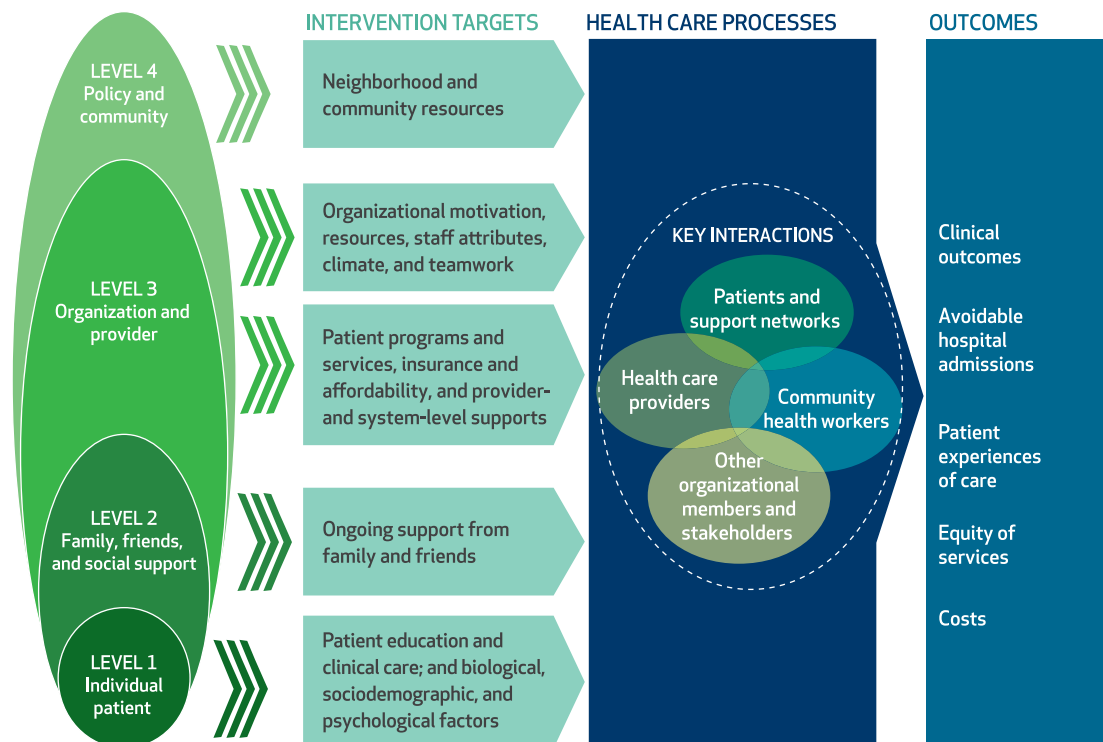
ALL MODEL LEVELS Four critical gaps exist across all four levels of the model (Exhibit 1). There is a need for interventions that incorporate the engagement of patients and of stakeholders more broadly in developing, testing, and disseminating interventions. It is not known

Bradley M. Appelhans is an associate professor in the Department of Preventive Medicine and the Center for Urban Health Equity at Rush University, in Chicago.

Lisa A. Cooper (lisa.cooper@jhmi.edu) is the James F. Fries Professor in the Department of Medicine and director of the Johns Hopkins Center to Eliminate Cardiovascular Health Disparities, both at the Johns Hopkins University School of Medicine.

EXHIBIT 1

Factors that influence disparities in access to care and quality of health care services, by level



SOURCE Authors' analysis of findings from systematic reviews (see Notes 4, 9-12 in text).

whether multilevel interventions are more effective than those that target only single-level factors; research can test for this—for example, comparing an intervention that targets patient education, provider communication skills, and health system staffing and an intervention that targets patient education alone. In addition, there is a need to compare the effectiveness of universal approaches that target all patients versus approaches that address specific barriers or target underserved populations; research can test for this as well. Finally, disparities interventions and research must describe and address challenges to program implementation and sustainability and to the translation of research into real-world practice.

SPECIFIC LEVELS At the levels of policy and community (level 4) and organization and provider (level 3), there is one critical gap: Interventions should do more to enhance linkages between health care systems and the communities they serve.

At level 3 (organization and provider) alone, there are five critical gaps. First is the need for interventions and research to address, for a particular condition or set of conditions, the entire spectrum of health care—from prevention and primary care to specialty care, hospitalization, and postdischarge treatment. Also at this level, interventions with the following four aims are needed: to demonstrate whether and how team-based care can be used to improve access to and coordination of care for underserved groups, to determine how to optimize the use of data sources and health information technology, to improve health professionals' communication skills and cultural competence (reducing the impact of biases against underserved groups), and to increase the focus of health care organization leaders on equity as an essential element in quality improvement.

At level 2, family, friends, and social support, there is one critical gap: Efforts are needed to better address cultural differences in family decision making and make use of social network dynamics in intervention approaches.

At level 1, individual patient, there are four critical gaps. More interventions are needed that are designed to reduce disparities between groups and not just improve outcomes in a particular group; that include less well-studied populations such as American Indians or Alaska Natives, rural residents, refugees, and immigrants; that improve medication access, treatment adherence, and patient empowerment; and that measure the durability of intervention effects over longer periods of time.

Addressing These Gaps and Advancing Health Equity

The Centers for Population Health and Health Disparities, established in 2003, have developed several interventions to reduce disparities in access to and quality of services for cardiovascular disease and cancer. These interventions address many of the critical knowledge and translation gaps we identified above.

REDUCING DISPARITIES IN CARDIOVASCULAR DISEASE CARE Five interventions addressed critical gaps in health care research on cardiovascular disease.^{22–26} We summarize the key components of these interventions in Appendix Exhibit 3⁸ and highlight two of them below.

The Heart Healthy Lenoir Project²⁵ was a health system–level intervention to reduce geographic and racial/ethnic disparities in blood pressure control among patients of rural primary care practices in Lenoir County, North Carolina. The intervention involved broad stakeholder engagement and a community-based participatory research approach. It included the integration of a community health coach and home blood pressure monitoring training for patients and on-site coaching or facilitation to help practices build their capacity to implement evidence-based quality improvement methods. Practices were taught how to abstract and respond to race-specific data on blood pressure control within electronic health records (EHRs), implement standardized hypertension visit protocols, devise and use blood pressure medication algorithms to help patients with persistently uncontrolled hypertension get their blood pressure under control, and engage all clinic staff members in health disparities education. The intervention engaged and retained study participants, with greater retention of African Americans than whites and with significant blood pressure reductions in both African Americans and whites.²⁵

Project ReD CHiP (Reducing Disparities and Controlling Hypertension in Primary Care) was a pragmatic study aimed at developing and testing the real-world effectiveness of a multimethod intervention to improve health system quality within a nonrandomized trial.²⁶ The intervention was grounded in implementation science and engaged community and health system stakeholders in its design and execution. It targeted patients, providers, clinical staff members, and the health care system to improve hypertension care and reduce racial disparities in blood pressure control in a large clinical practice network in Maryland.

Project ReD CHiP implemented a new protocol, which is being sustained by the practices, to increase the accuracy of blood pressure measure-

ments taken by front-line clinical staff members. It also delivered care management to patients by adding pharmacists and dietitians to primary care teams. Despite challenges with reaching a high proportion of the target population, the care management program led to significantly greater reductions in blood pressure in patients who completed all aspects of the program relative to those who did not participate or did not complete all aspects. In addition, racial disparities in systolic blood pressure were no longer present at the end of the study.²⁷

Finally, the project introduced an audit and feedback process in which race-specific data on blood pressure control from the EHR was used to generate a computer-based dashboard. Updated monthly, the dashboard was intended to improve providers' awareness of disparities in hypertension control among their own patients and to inform clinic-level quality improvement strategies to help providers attain national benchmarks and address hypertension disparities.

REDUCING DISPARITIES IN CANCER CARE Five additional interventions addressed critical gaps in cancer health care research.^{28–32} We summarize key components of these interventions in Appendix Exhibit 3⁸ and highlight two interventions below.

Fortaleza Latina, an intervention conducted in western Washington State, showed that a culturally tailored intervention involving *promotoras*—community members who received specialized training to deliver health education in the community—could improve rates of mammography screening among Latinas who received care at federally qualified health centers.²⁹ The intervention also showed that *promotoras* can successfully undertake motivational interviewing. Fortaleza Latina was developed as a partnership among research institutions, a community-based primary care clinic organization, and a cancer treatment center.

Another intervention, Project CLIQ (Community Linked to Quit), integrated the following services into the primary health care delivered to smokers: tobacco counseling and proactive outreach to patients, using interactive voice response automated calls; motivational counseling from tobacco treatment specialists; free nicotine replacement therapy; and access to community-based resources.³² Patients' EHRs were used to identify current smokers who were black, white, or Hispanic and who lived in census tracts with low median household income, and to create a database for outreach phone calls by the interactive voice response system. That system sent an automated e-mail message to a tobacco treatment specialist when a patient re-

quested contact. The intervention proved to be a more effective strategy than usual care to improve smoking cessation among low-income and minority adults.³²

Informing Future Interventions

In our qualitative survey of the Access to Care and Quality of Healthcare Services Consortium members, we also identified a number of key lessons that could inform the development of future interventions to eliminate disparities. Patients and families prefer a health care delivery approach that takes into account the whole person over a disease-specific approach. Many patients and families also desire programs that connect them with resources within their local communities, such as fresh food markets, smoking cessation classes, and free support groups. Thus, programs that leverage existing community strengths and build partnerships between health systems and community-based organizations will likely improve the acceptability, successful implementation, and long-term effectiveness of interventions.

Engaging organizational leaders, front-line providers, and other staff members continuously in the planning, design, and implementation of interventions is also important and enhances interventions' uptake, effectiveness, and sustainability. Researchers and policy makers should seek funding and other resources to engage and empower patient and community stakeholders in interventions, to improve the interventions' sustainability and potential for dissemination. Funders typically do not provide this type of support or provide enough funding to develop and sustain the necessary amount of engagement. Because support for promising interventions often ends when research funding ends, new streams of funding are needed to adapt and sustain effective interventions. Sponsorship from payers, health systems, public entities, and private-sector groups is vital to the translation of effective interventions into practice and to the scaling up of these interventions across populations and settings.

We also learned that universal policies, such as health insurance reform in Massachusetts, are important but not sufficient to eliminate disparities.^{33,34} When universal policies are combined with approaches that target at-risk populations, however, results in the form of reduced disparities can be dramatic.

For instance, the Delaware Cancer Treatment Program,³⁵ created in 2004 through legislation, provides universal screening and treatment of colorectal cancer—including patient navigation for screening, as well as care coordination and

case management—for all residents of the state. The program also uses a targeted approach, by providing insurance coverage for these services for uninsured and poor residents. The program has eliminated disparities in screening and disease incidence rates, decreased the percentage of African Americans with regional and distant disease from 79 percent to 40 percent, and nearly eliminated mortality disparities.³⁵

The Affordable Care Act (ACA) has led to the most significant changes to the US health care system since Medicare and Medicaid were created in 1965.^{36,37} Although focused primarily on improving the health of the overall population, the law required that data collection standards be established for the categories of race, ethnicity, sex, primary language, and disability status, and that these data be collected and reported in national population health surveys. The law also required a report to Congress on approaches for collecting and evaluating data on health care disparities in Medicaid and the Children's Health Insurance Program (CHIP).³⁸ Other ACA provisions present providers and health plans with opportunities to adopt and tailor effective disparities interventions, target at-risk groups, and bring interventions to scale to advance health equity.

To inform future disparities interventions and policies, it will be necessary to conduct natural experiments on health care reform and other state and national policies to monitor their impact on disparities over time, by comparing states with different degrees of adoption to document the impact of these policies on the health of underserved populations. In addition, demonstration projects are needed to identify ways to provide incentives for targeted approaches at the provider or organization level and incorporate

those approaches into performance measures. Lastly, payment model reforms must be monitored for potential unintended consequences, such as disenfranchising targeted populations or unfairly penalizing safety-net providers. The reforms should incorporate strategies such as case-mix adjustment of performance metrics and adjusted payments for safety-net providers who serve a more complex population without private insurance, compared to providers who serve privately insured populations with better access to routine care.

Conclusion

There is still a great deal of work to be done to improve access to and quality of care to achieve health equity. Past interventions designed to reduce health care disparities have had important shortcomings, but recent interventions show promise in addressing fundamental knowledge and translation gaps. Practical and scalable multilevel interventions, guided by transdisciplinary research collaborations and broad stakeholder engagement, may be the most effective approach and lead to more sustainable community- and system-level changes than single-target interventions that do not engage stakeholders from several sectors of society. Additionally, programs that couple universal population-level strategies with targeted approaches for at-risk groups will add tremendous value to current efforts to advance health care equity. Collaborations among researchers, providers, and policy makers to overcome implementation challenges, monitor the effects of policies on underserved populations, and advocate for funding are also critical to achieving health equity. ■

The authors thank the Centers for Population Health and Health Disparities Access to Care and Quality of

Healthcare Services Consortium members and funders. A complete list of consortium members and funders

appears in the Appendix (see Note 8 in text).

NOTES

- 1 Agency for Healthcare Research and Quality. National Healthcare Quality and Disparities Reports [home page on the Internet]. Rockville (MD): AHRQ; [last reviewed 2016 Jun; cited 2016 Jun 27]. Available from: <http://www.ahrq.gov/research/findings/nhqrd/index.html>
- 2 Bradley CJ, Given CW, Roberts C. Race, socioeconomic status, and breast cancer treatment and survival. *J Natl Cancer Inst.* 2002;94(7):490–6.
- 3 Centers for Disease Control and Prevention. Racial/ethnic disparities in the awareness, treatment, and

control of hypertension—United States, 2003–2010. *MMWR Morb Mortal Wkly Rep.* 2013;62(18):351–5.

- 4 Clarke AR, Goddu AP, Nocon RS, Stock NW, Chyr LC, Akuoko JA, et al. Thirty years of disparities intervention research: what are we doing to close racial and ethnic gaps in health care? *Med Care.* 2013;51(11):1020–6.
- 5 Crosby RA, Wendel ML, Vanderpool RC, Casey BR, editors. *Rural populations and health: determinants, disparities, and solutions.* San Francisco (CA): Jossey-Bass; 2012.
- 6 National Center for Health Statistics.

Health, United States, 2011: with special feature on socioeconomic status and health [Internet]. Hyattsville (MD): NCHS; 2012 May [cited 2016 Jun 27]. Available from: <http://www.cdc.gov/nchs/data/abus/abus11.pdf>

- 7 Vargas Bustamante A, Chen J, Rodriguez HP, Rizzo JA, Ortega AN. Use of preventive care services among Latino subgroups. *Am J Prev Med.* 2010;38(6):610–9.
- 8 To access the Appendix, click on the Appendix link in the box to the right of the article online.
- 9 Davis AM, Vinci LM, Okwuosa TM,

- Chase AR, Huang ES. Cardiovascular health disparities: a systematic review of health care interventions. *Med Care Res Rev*. 2007; 64(5, Suppl):29S-100S.
- 10 Glick SB, Clarke AR, Blanchard A, Whitaker AK. Cervical cancer screening, diagnosis, and treatment interventions for racial and ethnic minorities: a systematic review. *J Gen Intern Med*. 2012;27(8):1016-32.
- 11 Gorin SS, Badr H, Krebs P, Prabhu Das I. Multilevel interventions and racial/ethnic health disparities. *J Natl Cancer Inst Monogr*. 2012; 2012(44):100-11.
- 12 Mueller M, Purnell TS, Mensah GA, Cooper LA. Reducing racial and ethnic disparities in hypertension prevention and control: what will it take to translate research into practice and policy? *Am J Hypertens*. 2015;28(6):699-716.
- 13 Sallis JF, Owen N, Fisher EB. Ecological models of health behavior. In: Glanz K, Rimer BK, Viswanath K, editors. *Health behavior and health education: theory, research, and practice*. 4th ed. San Francisco (CA): Jossey-Bass; 2008. p. 477.
- 14 Aboumatar HJ, Carson KA, Beach MC, Roter DL, Cooper LA. The impact of health literacy on desire for participation in healthcare, medical visit communication, and patient reported outcomes among patients with hypertension. *J Gen Intern Med*. 2013;28(11):1469-76.
- 15 Kan AW, Hussain T, Carson KA, Purnell TS, Yeh HC, Albert M, et al. The contribution of age and weight to blood pressure levels among blacks and whites receiving care in community-based primary care practices. *Prev Chronic Dis*. 2015; 12:E161.
- 16 McAlearney AS, Oliveri JM, Post DM, Song PH, Jacobs E, Waibel J, et al. Trust and distrust among Appalachian women regarding cervical cancer screening: a qualitative study. *Patient Educ Couns*. 2012;86(1): 120-6.
- 17 Probst JC, Bellinger JD, Walsemann KM, Hardin J, Glover SH. Higher risk of death in rural blacks and whites than urbanites is related to lower incomes, education, and health coverage. *Health Aff (Millwood)*. 2011;30(10):1872-9.
- 18 Saban KL, Mathews HL, DeVon HA, Janusek IW. Epigenetics and social context: implications for disparity in cardiovascular disease. *Aging Dis*. 2014;5(5):346-55.
- 19 Schneider EC, Zaslavsky AM, Epstein AM. Racial disparities in the quality of care for enrollees in Medicare managed care. *JAMA*. 2002;287(10):1288-94.
- 20 Williams MV, Baker DW, Parker RM, Nurss JR. Relationship of functional health literacy to patients' knowledge of their chronic disease. A study of patients with hypertension and diabetes. *Arch Intern Med*. 1998; 158(2):166-72.
- 21 Paskett E, Thompson B, Ammerman AS, Ortega AN, Marsteller J, Richardson D. Multilevel interventions to address health disparities show promise in improving population health. *Health Aff (Millwood)*. 2016;35(8):1430-35.
- 22 Ephraim PL, Hill-Briggs F, Roter DL, Bone LR, Wolff JL, Lewis-Boyer L, et al. Improving urban African Americans' blood pressure control through multi-level interventions in the Achieving Blood Pressure Control Together (ACT) study: a randomized clinical trial. *Contemp Clin Trials*. 2014;38(2):370-82.
- 23 Rothschild SK, Emery-Tiburcio EE, Mack LJ, Wang Y, Avery EF, Golden RL, Powell LH. BRIGHTEN Heart: design and baseline characteristics of a randomized controlled trial for minority older adults with depression and cardiometabolic syndrome. *Contemp Clin Trials*. 2016;48:99-109.
- 24 Mangla A, Doukky R, Powell LH, Avery E, Richardson D, Calvin JE. Congestive heart failure adherence redesign trial: a pilot study. *BMJ Open*. 2014;4(12):e006542.
- 25 Halladay JR, Donahue KE, Hinderliter AL, Cummings DM, Cene CW, Miller CL, et al. The Heart Healthy Lenoir Project—an intervention to reduce disparities in hypertension control: study protocol. *BMC Health Serv Res*. 2013;13:441.
- 26 Cooper LA, Marsteller JA, Noronha GJ, Flynn SJ, Carson KA, Boonyasai RT, et al. A multi-level system quality improvement intervention to reduce racial disparities in hypertension care and control: study protocol. *Implement Sci*. 2013;8:60.
- 27 Hussain T, Franz W, Brown E, Kan A, Okoye M, Dietz K, et al. The role of care management as a population health intervention to address disparities and control hypertension: a quasi-experimental observational study. *Ethnicity and Disease*. Forthcoming 2016.
- 28 Anderson EE, Tejeda S, Childers K, Stolley MR, Warnecke RB, Hoskins KF. Breast cancer risk assessment among low-income women of color in primary care: a pilot study. *J Oncol Pract*. 2015;11(4):e460-7.
- 29 Coronado GD, Jimenez R, Martinez-Gutierrez J, McLerran D, Ornelas I, Patrick D, et al. Multi-level intervention to increase participation in mammography screening: ¡Fortaleza Latina! study design. *Contemp Clin Trials*. 2014;38(2):350-4.
- 30 Katz ML, Paskett ED. The process of engaging members from two underserved populations in the development of interventions to promote the uptake of the HPV vaccine. *Health Promot Pract*. 2015;16(3): 443-53.
- 31 Molina Y, Kim S, Berrios N, Calhoun EA. Medical mistrust and patient satisfaction with mammography: the mediating effects of perceived self-efficacy among navigated African American women. *Health Expect*. 2015;18(6):2941-50.
- 32 Haas JS, Linder JA, Park ER, Gonzalez I, Rigotti NA, Klinger EV, et al. Proactive tobacco cessation outreach to smokers of low socioeconomic status: a randomized clinical trial. *JAMA Intern Med*. 2015;175(2):218-26.
- 33 Albert MA, Ayanian JZ, Silbaugh TS, Lovett A, Resnic F, Jacobs A, et al. Early results of Massachusetts healthcare reform on racial, ethnic, and socioeconomic disparities in cardiovascular care. *Circulation*. 2014;129(24):2528-38.
- 34 Zhu J, Brawarsky P, Lipsitz S, Huskamp H, Haas JS. Massachusetts health reform and disparities in coverage, access and health status. *J Gen Intern Med*. 2010;25(12):1356-62.
- 35 Grubbs SS, Polite BN, Carney J Jr, Bowser W, Rogers J, Katurakes N, et al. Eliminating racial disparities in colorectal cancer in the real world: it took a village. *J Clin Oncol*. 2013; 31(16):1928-30.
- 36 Fiscella K. Health care reform and equity: promise, pitfalls, and prescriptions. *Ann Fam Med*. 2011; 9(1):78-84.
- 37 Shaw FE, Asomugha CN, Conway PH, Rein AS. The Patient Protection and Affordable Care Act: opportunities for prevention and public health. *Lancet*. 2014;384(9937):75-82.
- 38 Sebelius K. Report to Congress: approaches for identifying, collecting, and evaluating data on health care disparities in Medicaid and CHIP [Internet]. Washington (DC): Department of Health and Human Services; 2011 Sep [cited 2016 Jun 28]. Available from: <https://www.medicare.gov/medicaid-chip-program-information/by-topics/quality-of-care/downloads/4302b-rtc.pdf>