



**Journal of Health Disparities Research and Practice**  
**Volume 9, OMH Special Issue, 2017, pp. 72-94**  
© 2011 Center for Health Disparities Research  
School of Community Health Sciences  
University of Nevada, Las Vegas

## **An Assessment of Funding and Other Capacity Needs for Health Equity Programming Within State-Level Chronic Disease Programs**

Tiffany M. Pertillar, MPH, MSW, CHES, Health Equity Council, National Association of Chronic Disease Directors (NACDD-HEC)

Ann Pobutsky, PhD, University of Hawaii at Manoa and Member, NACDD-HEC

Gail Brandt, EdD, MPH, Washington State Department of Health and Member NACDD-HEC

Marisa New, OTR, MPH, Oklahoma State Department of Health and Member, NACDD-HEC

JamieLou Delavan, BA, Idaho Department of Health and Welfare-Public Health and Member, NACDD-HEC

Robyn Taylor, MBA, Ohio State Department of Health and Member, NACDD-HEC

Amishi Shah, MPA, MA, ORISE Fellow, Office of Minority Health, Office of the Secretary, US Department of Health and Human Services

Folasayo Adunola, DDS, MPH, Office of Minority Health, Office of the Secretary, U.S. Department of Health and Human Services

Onyemaechi Nweke, DrPH, MPH, Office of Environmental Justice, US Environmental Protection Agency

**\*\*Corresponding Author:** Tiffany M. Pertillar, National Association of Chronic Disease Directors, 2200 Century Parkway, Suite 250, Atlanta, GA 30345,  
tpertillar@chronicdisease.org

### **ABSTRACT**

**Background:** Chronic diseases are an important contributor to morbidity and mortality among racial/ethnic minority, low-income, and other under-resourced populations. Given that state health departments (and their chronic disease programs) play a significant role in providing population and preventive health services, their capacity to promote health equity is an important consideration in national efforts to address chronic diseases. The purpose of this study was to examine capacity needs of state chronic disease programs with respect to promoting health equity.

Journal of Health Disparities Research and Practice Volume 9, OMH Special Issue, 2017

<http://digitalscholarship.unlv.edu/jhdrp/>

Follow on Facebook: Health.Disparities.Journal

Follow on Twitter: @jhdrp

**Methods:** In 2015, the National Association of Chronic Disease Directors (NACDD) conducted a survey of its members that work within a state chronic disease division (CDD) or the larger state health department. The survey was structured to provide information on major funding sources for chronic diseases, the extent to which key funders required a focus on health equity, dedicated staffing for health equity, and training and technical assistance needs of practitioners to support health equity integration in chronic disease programming. All data were analyzed using SPSS 19.0.

**Findings:** A total of 147 chronic disease directors and practitioners responded to the survey from 43 states, the District of Columbia and three of the U.S. Affiliated Territories and Commonwealths. Forty-two percent (N=25) of the 59 directors of state, territorial and tribal chronic disease programs at the time of the study responded. Only 52% of respondents believed their CDD adequately addressed health inequities. Among the 70 respondents who did not know or did not believe their health departments adequately addressed health inequities, barriers identified include insufficient funding (62%), inadequate training (54%), and health inequities not being a priority (22%). Respondents also identified opportunities to strengthen funding requirements to address health disparities

**Conclusions:** Overall, the data highlight some opportunities to enhance the capacity of state CDDs to promote health equity, such as through more direct funding requirements for health equity integration, staff training, increased funding, and specialized technical assistance. Because the response rate was less than 100%, we cannot generalize the findings to every state chronic disease program. However, the responses are relatable to their collective experience.

**Keywords:** Health Disparities; Health Equity; State Health Departments; Funding

## INTRODUCTION

### Chronic Disease Burden in the United States

Chronic diseases are the leading cause of premature death and disability in the United States (HHS, 2016). As of 2012, half of the nation's adult population had at least one major chronic disease and the numbers continue to rise each year (Ward, Schiller, & Goodman, 2014). According to data from the 2010 Medical Expenditure Panel Survey, 86% of healthcare spending goes to patients with one or more chronic conditions, and 71 cents of every dollar of healthcare spending goes to treating people with multiple chronic conditions (Gerteis et al., 2014). Due to higher insurance premiums and out of pocket expenditures, the costs of treating chronic disease puts a strain on the budgets of health insurance plans, Medicaid and Medicare, private employers, communities, patients, and families (Anderson & Horvath, 2004; Gerteis et al., 2014). Chronic conditions threaten employee productivity levels and can lead to revenue loss for employers. A significant burden is placed on society because of the indirect cost of low productivity levels in employees with chronic conditions such as diabetes, heart disease, and stroke, and the direct costs to affected individuals, their families, and society. During the period 2011 through 2012, lost future productivity attributable to cardiovascular and stroke premature mortality was estimated to be \$123.5 billion (Mozaffarian et al., 2015).

The burden of chronic disease tends to disproportionately affect certain groups in the population. For example, based on 2013 mortality data the death rate per 100,000 population

Journal of Health Disparities Research and Practice Volume 9, OMH Special Issue, 2017

<http://digitalscholarship.unlv.edu/jhdrp/>

Follow on Facebook: Health.Disparities.Journal

Follow on Twitter: @jhdrp

attributable to cardiovascular disease was higher for non-Hispanic Black males and females compared to non-Hispanic White males and females (Mozaffarian et al., 2015). In another study, the prevalence of hypertension for persons  $\geq 25$  years was much higher among those with less than high school education (36.9%) relative to persons with a college degree or higher (28%) (Gillespie & Hurvitz, 2013). These differences are known as health inequities/disparities; they are health differences closely linked with social, economic, and environmental disadvantage (OMH, 2011). Health inequities are deemed unjust given their origins in social processes rather than biology, and are also considered avoidable and modifiable (Whitehead & Dahlgren, 2006). Addressing inequities in chronic conditions is economically beneficial, especially for those most affected. Based on a 2009 analysis, eliminating health disparities for minority populations in the United States for the years 2003-2006 would have reduced direct medical care expenditures for those years by \$229.4 billion (LaVeist, Gaskin, & Richard, 2009).

While many factors contribute to a population's health, the World Health Organization (WHO) asserts a preeminent role for the social determinants of health (Figure 1) over individual factors such as genetics. Similarly, Healthy People 2020 (HP2020) acknowledges the need to address social determinants of health and the importance of "creating social and physical environments to promote good health for all" by making it one of the four cross-cutting goals for this decade. The social determinants of health refer to those circumstances or conditions in which people are born, learn, live, work, play, and worship (HHS, 2014). Examples of these conditions or circumstances include: access to affordable housing, safe neighborhoods, affordable and healthy foods, quality education, and health care that is both culturally and linguistically appropriate. The distribution of these determinants in society is the immediate premise for health inequities (CSDH, 2008; Dahlgren & Whitehead, 1991), including inequities in chronic disease conditions.

Figure 1: HP2020 Social Determinants of Health (SDOH) Framework



Source: HHS (2014)

While access to high-quality healthcare, especially preventive services, can reduce health disparities, improving the social conditions that lead to poor health may have a more profound impact on the health of the population (Park, Roubal, Jovaag, Gennuso, & Catlin, 2015). A society where improved social conditions are combined with increased access to high quality health care is both ideal and essential. As our understanding of the causal pathways for health disparities has increased, the mediating and/or initiating roles of factors such as chronic stress and racism have become more evident. For example, chronic stress affects how our immune system works. Chronic stress is associated with inflammation (Cohen et al., 2012; Kiecolt-Glaser et al., 2003); biological markers of inflammation are implicated in the etiology of chronic diseases such as diabetes (Pradhan, Manson, Rifai, Buring, & Ridker, 2001), high blood pressure (Chamarthi et al., 2011), and coronary heart disease and stroke (Cesari et al., 2003). All these are chronic disease conditions of concern for populations with higher burdens of poor health. Racial discrimination has been associated with biological events linked to chronic stress (Adam et al., 2015; Zeiders, Hoyt & Adam, 2014), and contributes to poor health outcomes independent of income and education (Lee, Muennig, Karachi, & Hatzenbuehler, 2015; Paradies et al., 2015). Racial/ethnic identity is also associated with inequities in the distribution of upstream and immediate determinants of health such as income (Wilson & Rodgers III, 2016), educational attainment (Reardon, Kalogrides, & Shores, 2016), and neighborhood poverty (Logan, 2011).

Integrating an equity lens into chronic disease programs and policies increases the potential for innovative interventions. These are interventions that target root, mediating, and immediate causes, provide solutions tailored to the needs of different populations, and subsequently improve health outcomes and reduce chronic disease burden over time. Although

there is no known consensus definition for the “equity lens,” in this paper we adopt the vision embodied in its emerging application within the context of policy and programming in the United States (King County Executive Office, 2014; Oregon Education Investment Board, 2013; US Department of Education, 2015). In these applications, the equity lens facilitates the examination of who experiences the benefits and burdens of policies and programs, as well as the basis for differential experiences.

This paper examines the capacity of chronic disease programs to effectively address chronic disease inequities with an emphasis on staffing and availability of fiscal resources. We focus on state health departments given that they are recipients of major chronic disease funding, they serve as key providers that address chronic diseases in communities, and because they coordinate efforts to achieve broad population health goals across multiple local jurisdictions. Availability of funding and staff with knowledge and skills to apply an equity lens to chronic disease prevention and management are strong incentives for action.

#### Programming to Address Chronic Diseases and Chronic Disease Inequities in the United States

In the United States, chronic diseases are addressed through numerous policies, and primary, secondary, and tertiary prevention programs implemented at the federal, state, local, and community levels. Since 2006, these programs have become more integrated, intersectoral, and comprehensive reflecting an increased recognition of the role of multiple determinants (including the social determinants of health) in chronic disease etiology. For example, at the federal level, the Centers for Disease Control and Prevention (CDC) routinely administers several longstanding federal grant programs to all fifty states and the District of Columbia to focus on diabetes, heart disease and stroke, nutrition, physical activity and obesity, and school health (CDC, 2015).

At the state and local levels, direct efforts to address chronic diseases are primarily managed within the public health system. The public health system comprises several entities including public health agencies, healthcare providers, public safety agencies, human service and charity organizations, education and youth development organizations, and environmental agencies and organizations (CDC, 2013). However, within this system, chronic disease prevention and management programs fall primarily to the public health agencies and healthcare providers. At public health agencies, chronic disease prevention and management initiatives are administered through several programs spanning the core public health functions - Assessment, Policy Development and Assurance (IOM, 1988). Initiatives also generally align with CDC’s four domains of chronic disease prevention, which include: epidemiology and surveillance to monitor needs; environmental approaches to promote health and support and reinforce healthy behaviors; health system interventions to improve the effective delivery and use of clinical and other preventive services; and community programs linked to clinical services, to improve and sustain management of chronic conditions (Bauer, Briss, Goodman, & Bowman, 2014).

Several states have addressed behavioral determinants of chronic disease such as physical inactivity, smoking, and alcohol consumption using legislative and other policy actions. Between 2014 and 2015, states enacted 24 legislative policies to improve nutrition, and 14 legislative policies to increase physical activity (CDC, 2001). Additionally, as of January 1, 2016, twenty-seven U.S. States and Territories have enacted laws requiring non-hospitality workplaces, restaurants, and bars to be 100% smoke free (Americans for NonSmokers' Rights Foundation,

2016).

In addition to policy-making and programming, collaboration and coordination across different levels and between different sectors is an important strategy to address health inequities (CSDH, 2008). The National Association of Chronic Disease Directors (NACDD) partnered with the National Partnership for Action to End Health Disparities (NPA) to identify specific ways that chronic disease programs can better address inequities in chronic diseases. The NPA's mission is to increase the effectiveness of programs that target the elimination of health disparities through coordination of leaders, stakeholders, and partners committed to action (OMH, 2011), which includes state chronic disease programs. The NPA is coordinated by the Office of Minority Health (OMH) within the Office of the Secretary at the US Department of Health and Human Services. A focus area under the NPA is to promote the integration of equity into policies and programs in both public and private sector organizations. Activities under the NACDD-NPA partnership are anticipated to increase the capacity for chronic disease programs to promote health equity such as by identifying ways that chronic disease programs can be improved, and seeding future dialogue among NACDD's Health Equity Council members on the concept of promoting health equity through chronic disease programs. Key questions identified under this partnership as necessary to provide insights into the current health equity landscape within the chronic disease prevention and management programs in state public health agencies are:

- To what extent are equity concepts linked to the issues addressed by chronic disease programs?
- What federal funding streams are routinely accessed by chronic disease directors and programs for their work?
- To what extent is the use of an equity lens overtly required by these funding streams?
- To what extent do chronic disease programs integrate equity considerations in their work?

Figure 2: Three-fold Goals of NACDD-NPA Collaboration

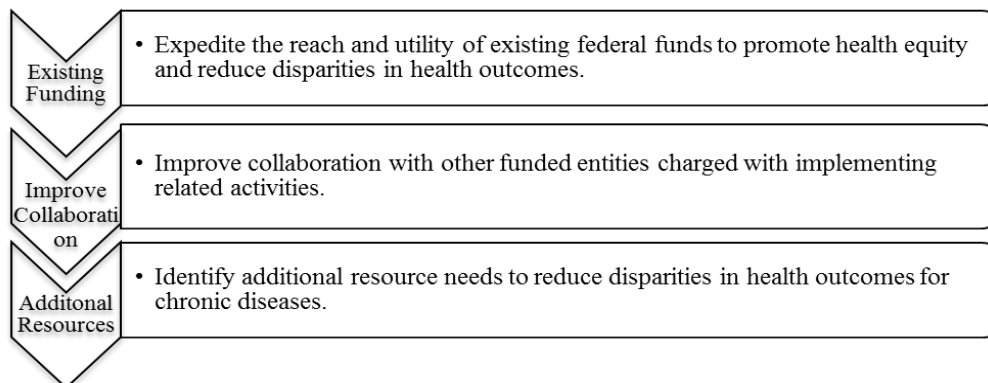


Figure 2 summarizes the goals of the partnership as synthesized from the questions above. To address the goals of the NACDD/NPA partnership, NACDD developed and

Journal of Health Disparities Research and Practice Volume 9, OMH Special Issue, 2017

<http://digitalscholarship.unlv.edu/jhdrp/>

Follow on Facebook: Health.Disparities.Journal

Follow on Twitter: @jhdrp

administered a member survey. Subsequent sections of this paper describe survey methods and findings.

## **METHODS**

### **Survey Instrument and Development**

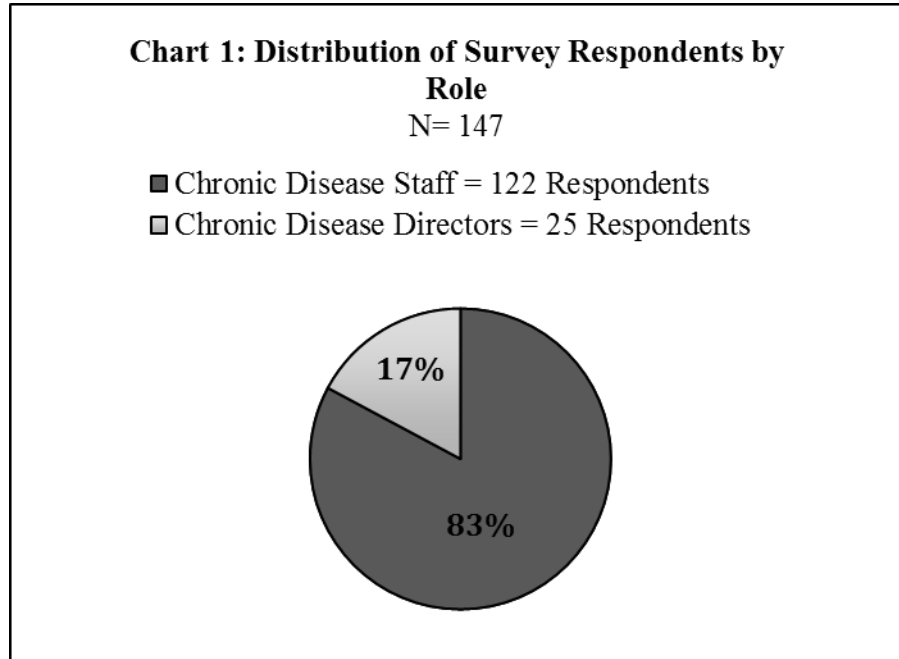
The 2015 Health Equity Assessment (Assessment) is a 34-question survey developed by the NACDD Health Equity Council and reviewed by the Association's evaluator. The Assessment was a combination of multiple choice and open-ended questions to obtain detailed answers to specific questions. The questions were designed to examine state health department chronic disease programs in three critical areas: funding, data monitoring/tracking, and training within the context of health equity programming. Briefly, the survey questions asked target practitioners about: institutional investments in health equity-related activities through the lenses of fiscal resources and staffing; barriers to health equity-related work; funder requirements; extent to which existing data collection mechanisms such as the Behavioral Risk Factor Surveillance System (BRFSS) are used to collect data on social determinants or health disparities-related issues; and capacity for health equity promotion as well as training needs. The questions were structured to provide information that will assist NACDD in its planning and programming to support health equity integration within chronic disease programs at the state and local levels. The assessment tool is included as Table 1 in the Supplemental Materials.

### **Target Survey Audience and Outreach Approach**

NACDD is a membership organization with over 6,000 members working in chronic disease prevention and control from various public health organizations at the local, state, and federal levels, as well as public health professionals working at foundations and non-governmental organizations. NACDD members work in every U.S. State and Territory in wide-ranging categorical areas such as diabetes prevention, school health, heart disease and stroke, arthritis, and cancer. The electronic survey was open to NACDD members specifically working in state health departments including state chronic disease programs. It was not open to NACDD members representing federal agencies or national partner organizations. An initial email invited members to participate in the survey. The NACDD Impact Brief Newsletter, which is sent to all members, also included an announcement and a link to the survey. In addition, NACDD sent weekly reminder emails to all members over a three-week period.

## RESULTS

Survey responses were gathered and analyzed in Statistical Package for the Social Sciences - SPSS 19.0. Results are described and depicted here with the response rates shown in Table 1 in the Supplemental Material. Overall, the Association received a total of 147 responses from 43 states, the District of Columbia (DC), and three of the U.S. Affiliated Territories and Commonwealths. Majority of respondents were state chronic disease program staff (83%) and state and territorial Chronic Disease Program Directors (17%) (See Chart 1).



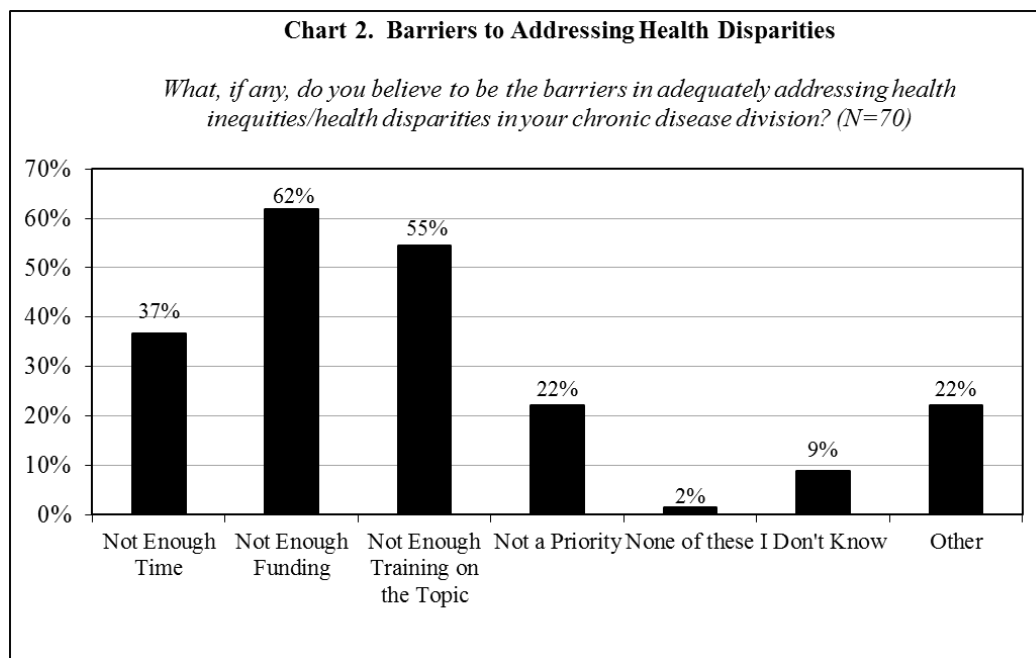
Slightly over half of the respondents (52%) completed the entire survey. The response rates to individual questions are included in Table 1 in the Supplemental Materials. The captured perspectives of the few respondents when combined with information received via routine informal interactions between NACDD and its members through their Health Equity Council offer helpful insights into issues of health equity integration that the Association can further explore as it plans its programs to meet the needs of chronic disease programs and practitioners. The respondents' perceptions across the several questions in the survey suggest that state health departments face important challenges in addressing health inequities. We discuss the findings in more detail below.

### Addressing Health Equity in Chronic Disease Programs

Respondents were asked if they believed their chronic disease division adequately addressed health inequities. Slightly over half (52%) believed their Chronic Disease Division (CDD) adequately addresses health inequities/health disparities in its daily activities, while one-third (33%) did not, and 14% did not know. Among those individuals who did not believe their



CDD adequately addressed health equity, or did not know if their CDD adequately addressed health equity (n=70), the following barriers to addressing health equity were identified (Chart 2): not enough funding (62%) and not enough training (54%). Other identified barriers included “not enough time” (37%), and “not a priority” (22%).



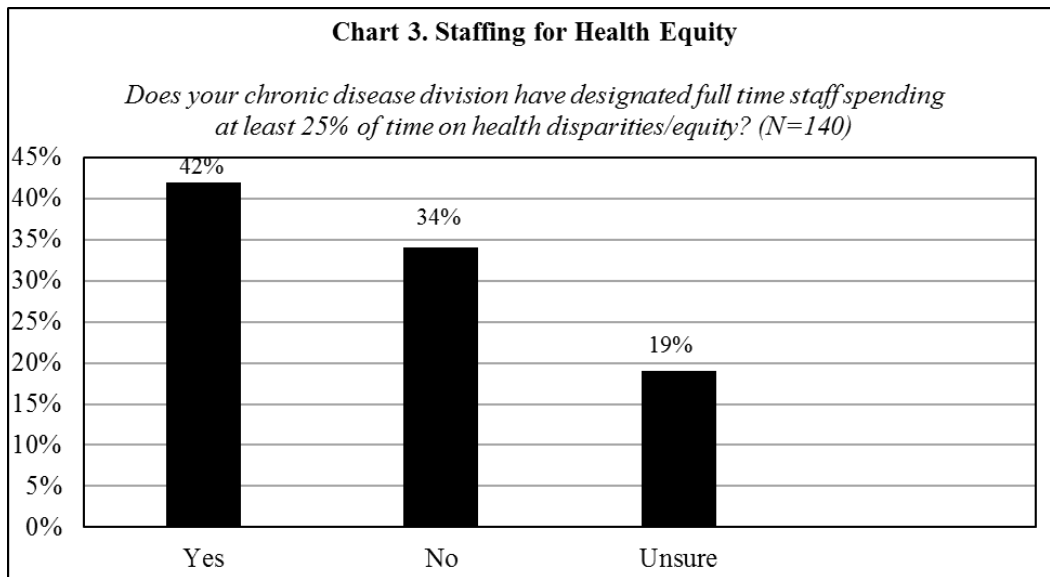
### Availability of Resources to Address Health Equity

The survey included questions to understand the respondents’ perspectives on issues of dedicated staffing to promote health equity within chronic disease programs; sources of funding for health equity-focused work; the extent to which health equity is a requirement for funding; and outstanding needs to advance a health equity agenda in chronic disease programs given current funding.

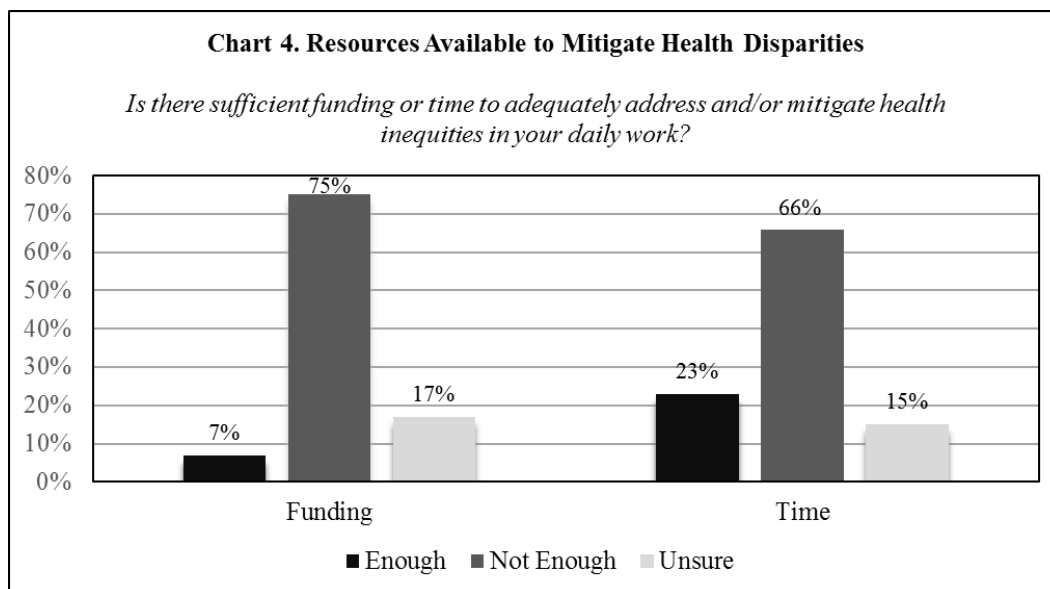
*Staffing:* Of the 140 responses to the question on full time employees who spend at least 25% of their time addressing health equity, approximately 42% indicated their Chronic Disease Division had one designated full-time staff member that committed at least 25% of their time to health inequities/health disparities (Chart 3). Thirty-four percent (34%) indicated they did not have a full-time staff spending at least 25% of their time on health inequities.

*Funding:* We queried perceptions about the adequacy of available resources (time and fiscal resources) to address or mitigate health inequities/disparities in daily work. Three-fourths of those who responded thought their Chronic Disease Division lacked sufficient funding (Chart 4). Only seven percent believed their funding was sufficient. Aside from the federal and foundation funding sources listed in the survey, two-thirds of the respondents indicated they have sought funding from other sources (i.e., private business, pharmaceutical companies, etc) to address health equity and health disparities but have been unsuccessful in securing such funds.

Without federal, state, and foundation funding opportunities respondents indicated they would be unable to comprehensively address health equity in their work.



*Time Resource:* Many respondents felt that there was a lack of sufficient time dedicated to addressing or mitigating health disparities within their Chronic Disease Programs. Almost two-thirds of respondents thought their Chronic Disease Division did not have enough time to adequately address health inequities in their daily work. Only 23% thought their divisions allocated sufficient time to address health inequities. Sixty-six percent did not believe sufficient time was allocated to addressing health inequities in their daily work.



Funding Sources and Funder Requirements and Expectations:

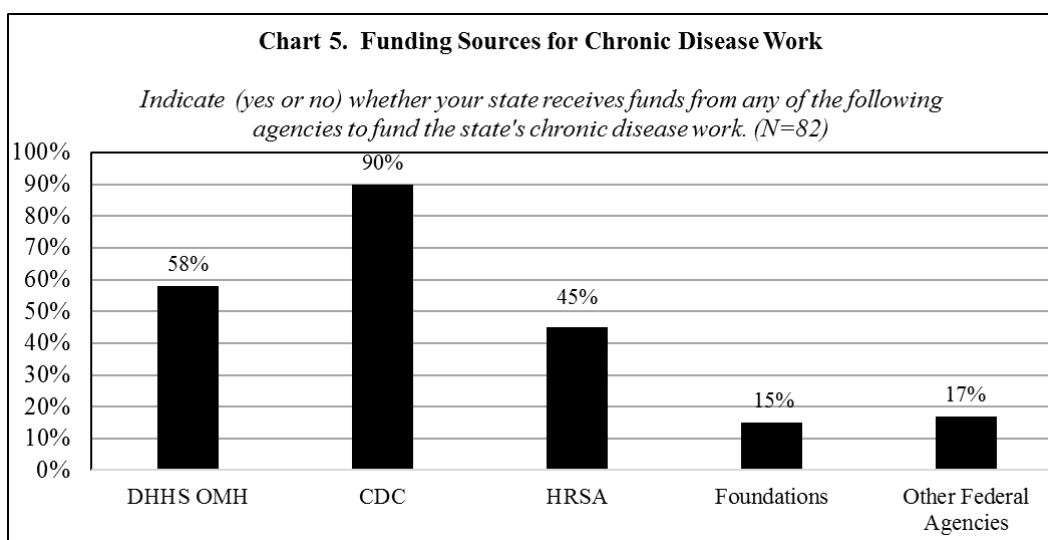
Journal of Health Disparities Research and Practice Volume 9, OMH Special Issue, 2017

<http://digitalscholarship.unlv.edu/jhdrp/>

Follow on Facebook: Health.Disparities.Journal

Follow on Twitter: @jhdrp

Requirements or expectations tied to funding are a type of lever that can incentivize Chronic Disease Programs to address health inequities. We sought to identify the sources of state funding to address chronic diseases, and better understand funder requirements or expectations with regards to addressing health inequities in state chronic disease work (Chart 5). Only 82 respondents provided input for this question. Respondents were also able to select more than one source of funding in the responses since many divisions typically rely on multiple funding sources. Ninety percent of respondents reported that the Centers for Disease Control and Prevention (CDC) funded majority of their chronic disease work within the past five years. The HHS Office of Minority (HHS OMH) was reported as the second highest source of funding (58%), followed by the Health Resources and Services Administration also within HHS at 45%. The percentage of respondents indicating that they received funding from foundations and other federal agencies was 15% and 17% respectively.



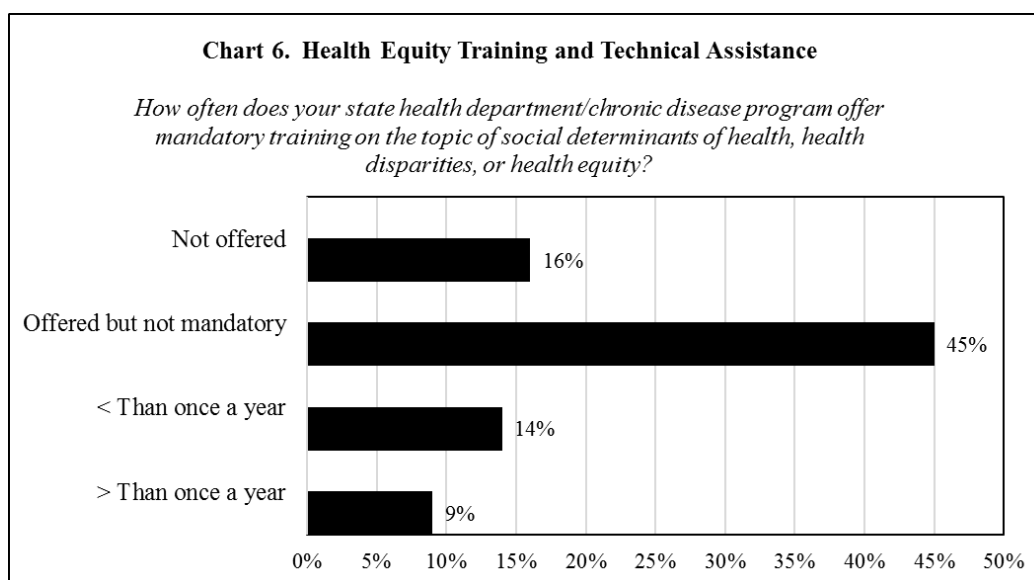
In response to a related question about which funders explicitly required the use of awarded funds to address/mitigate health inequities, 86% of respondents reported that Requests for Applications (RFAs) and Proposals (RFPs) from CDC explicitly require awarded funds to be used for addressing/mitigating health inequities. Nearly 40% of the respondents reported that RFAs/RFPs from DHHS-OMH explicitly required awarded funds to be used for addressing health inequities. A lesser percentage of respondents noted that there were similar requirements for the use of funds for health equity work from the Health Resources and Services Administration (HRSA) (35%), foundations (15%), and other agencies (13%). These data reflect respondents' understanding of funders' health equity expectations, which in turn depends on the level of guidance funders provide in funding announcements on the use of funds for health equity promotion.

In terms of developing health equity-focused proposals independent of funder requirements, we found that almost one-half of 82 respondents (47.6%) who answered the question indicated they had proposed addressing health equity issues in their current work portfolios, even if a funding agency did not require it. A little over one-third (38%) of those who responded to this question in the affirmative indicated that they had funding from an agency that requires they address

health equity issues. Three-fourths of respondents who indicated they proposed addressing health equity issues even if it was not a requirement of funders indicated they did not have sufficient funds to support their work in health equity.

### Training, Technical Assistance and Workforce Development

The survey also assessed training and technical assistance needs of chronic disease practitioners on issues related to health equity (Chart 6). Almost half (45%) of those who responded to the question indicated that training on the topic of social determinants of health, health disparities, or health equity is offered but not mandatory at their state health department. Sixteen percent of respondents indicated that training on the topic is not offered at all, and only nine percent indicated training was offered more than once a year. About 14% of the respondents reported the referenced type of training is provided less than once a year. Of those that responded yes to whether training was offered, 60% indicated the training offered was inadequate, and that the training did little to help them do their jobs more effectively. However, 25% of those that responded in the affirmative regarding whether training was offered reported that they thought the available training is adequate and helps them to do their jobs more effectively. Fifteen percent did not know if the training was adequate or not.



## **DISCUSSION**

### Investing in State Health Departments and Chronic Disease Programs to Promote Equitable Outcomes

Federal agencies are the primary source of funding for state health departments to address population health through innovative programs, policies, and initiatives. Survey respondents indicated receiving funds from federal agencies, including but not limited to DHHS OMH, CDC, and HRSA. Also, according to “Volume 3 of ASTHO Profile of State Public Health” report, federal funds were the largest source of state health agency revenue for Fiscal Years (FY) 2010 and 2011. Additionally, state health agency total federal revenue for FY 2010 was approximately

Journal of Health Disparities Research and Practice Volume 9, OMH Special Issue, 2017

<http://digitalscholarship.unlv.edu/jhdrp/>

Follow on Facebook: Health.Disparities.Journal

Follow on Twitter: @jhdrp

\$14.3 billion and exceeded \$14.0 billion for FY 2011. More than half (55%) of state health agency total federal revenue in FY 2011 was obtained from the U.S. Department of Agriculture. Sixteen percent came from the CDC, and 10% from HRSA. Despite the current levels of federal investment, the study shows a perception among respondents that resources allocated for state chronic disease programs to address health inequities is insufficient. Also, some study responses suggest that the requirement to address health disparities may be inconsistent across funding streams, and/or not well understood. The capacity to address health equity is also predicated on the social and political climate in any given state, which can create differential investments in addressing disparities in chronic diseases from state to state, and consequently, differential chronic disease impacts across states.

Collectively, these issues uncover important opportunities to increase federal funding to eliminate disparities in chronic diseases at the state level, harmonize understanding of what it means to promote health equity within the context of funder-directed public health programming, and strengthen the reach and impact of federally funded programs on health equity. A number of ameliorative actions are worth noting in this regard. First, requirements for an enhanced focus on the social determinants of health and health equity can be embedded within Funding Opportunity Announcements (FOAs). Focus on health equity and the social determinants of health can also be achieved through emphasis on a “health in all policies” approach within funded programs. In addition, funders can encourage grantees to embrace specific strategies to meaningfully address health inequities within a chronic disease program. At a minimum, these strategies should include analyzing data to identify which groups bear the highest burden of chronic disease in the target population, exploring and defining social and structural causes of chronic disease within each population group, and allocating resources according to need. Pointers to explicit core strategies can improve grantees’ understanding of funder requirements for health equity promotion, and foster consistency in the interpretation of an FOA’s health equity requirements. The 2011 release of guidance and a checklist by HRSA to assist with full integration of cultural and linguistic competence and health literacy factors into HRSA FOA exemplifies how funders’ articulation of requirements of grantees can address the issues mentioned above. The recent guidance document offers template language for FOAs, a policy statement regarding cultural competence and linguistic appropriateness, definitions for core concepts, a performance measure for assessing grantee performance, and a checklist for grantees to assess the extent to which cultural competence and linguistic appropriateness has been integrated into their programming (HRSA, 2011). Funders may also adopt national frameworks such as the NPA’s National Stakeholder Strategy for Achieving Health Equity (NSS) (OMH, 2011), and the “Multiple Chronic Conditions” (MCC) framework (HHS, 2010). The NSS strategy to eliminate health disparities is anchored on five goals: 1) increasing awareness of health disparities, their impacts, and solutions; 2) strengthening and broadening leadership for addressing health disparities at all levels; 3) improving health and healthcare outcomes for racial and ethnic minority and underserved populations; 4) improving cultural and linguistic competency and the diversity of the health-related workforce; and 5) improving data availability, coordination, and utilization. The MCC framework is designed to address all population groups with multiple chronic conditions, and features four interdependent goals: 1) foster health care and public health system changes to improve the health of individuals with MCC; 2) maximize the use of proven self-care management and other services by individuals with MCC; 3) provide

better tools and information to health care, public health and social services workers who deliver care to individuals with MCC; and 4) facilitate research to fill knowledge gaps about, and interventions and systems to benefit individuals with MCC. Funders may also adopt and promote multiple complementary strategies for greater impact.

Finally, federal funders cannot solely shoulder the financial responsibility this kind of work requires. Foundations and other private funders should consider engaging state chronic disease programs to sustain and scale their efforts, and should strengthen the alignment of this type of investment with their organizational mission and vision. This study revealed that only 14 of the 147 participants (9.5%) utilized resources provided by foundations. For more sustainable funding, each state health department will need to diversify its pool of accessed resources to include foundations and private business. On the part of funders, commitments of public and private foundation resources should be commensurate with the extent of the work that needs to be done, and structured temporally to last long enough to change conditions in communities and systems.

#### Infrastructure to Address Chronic Disease

Meaningful improvements to population health will not be achieved without identifying the social determinants of health, understanding how they are distributed throughout society, and addressing the disparities and inequities that exist within society's structures and systems. This approach requires the application of an "equity lens" to public health improvement efforts. An equity lens demands explicit attention to how problems are distributed to different segments of society, and enables solutions to be matched to the level of need. It also allows determination of upstream factors that shape the inequitable distribution of social determinants of health (MN Department of Health, 2013). "Upstream factors" refer to factors and conditions beyond the individual that shape behaviors, health status, and disease. Upstream factors include social determinants of health, and structural determinants such as discrimination and macro-level policies that shape how the social determinants of health are distributed in society (Bharmal et al., 2015; Gehlert et al., 2008). There is variation in the field of practice with regards to defining health equity, and a consensus approach or framework for applying an equity lens to public health work is lacking. In this regard, the public health community would benefit greatly from the development of a health equity framework for chronic disease programs that encompasses all elements of sound public health program implementation articulated by the Centers for Disease Control and Prevention (CDC, n.d.), and is replicable across different populations and programs. A 2009 report for the New York State Department of Health offers specific recommendations for integrating an equity lens into the essential elements of a sound public health program (Smedley, 2009). This framework can inform a chronic disease-centered health equity framework. Despite a significant uptick in the application of the equity lens to policies and programs, evidence that the equity lens yields greater improvements in population health barely exists. Nevertheless, a recent study reported that "equity-focused" approaches to public health issues narrowed gaps in health status between the most and least deprived population groups, and were more cost-effective (Carrera et al., 2012). To integrate more equity-focused approaches within programs, state health departments will need tailored training to increase their capacity to plan and implement chronic disease programs and initiatives built on a foundation of health equity.

Other key structural barriers suggested by respondents include insufficient staffing, inadequate time dedicated to addressing health disparities, and the perception that addressing

health disparities is often not identified as a departmental priority. Leaning on these findings, state health departments will need to build infrastructure for addressing disparities in chronic disease by increasing staff numbers, and by expanding staff capacity through regular training on health equity. To meet the needs of state health departments with respect to eliminating health disparities and increasing equity, national efforts should be centered on building the capacity of state public health agencies to advance population health by focusing on health disparities. NACDD, through funding received from the Centers for Disease Control and Prevention hosted a Chronic Disease Academy in August 2016 to further develop the chronic disease public health workforce. Per the findings from this study and the identified training needs of its members, NACDD focused on health equity, and trained its members on topics such as the social determinants of health, applying a health equity lens to programs and policies, and cultural competency. Training the workforce of state health departments to understand health equity within the contexts of theory and practice should be considered a national priority, with commensurate increases in funding to support workforce development at national, state, and local levels. The importance of health equity programming is further underscored by the standards and measures set forth by the Public Health Accreditation Board (PHAB) in which health equity is a key element in the accreditation process. In 2014, PHAB Standards and Measures were upgraded (Version 1.5) and health equity was highlighted as an emerging public health issue.

Achieving health equity is a positive vision to guide ongoing and future work. This vision includes a broad frame of reference that is aspirational, inclusive, and encourages multi-disciplinary action. Without adequate training, financial support, and explicitly stated expectations from funders, state health departments will inevitably be bound in an uphill movement as they seek to address health disparities and alleviate the chronic disease burden in the US. Given that health inequities are differences in health status that are avoidable, remediable, socially-derived and therefore unjust (Whitehead and Dahlgren, 2006), and the prevailing costs and burden of chronic diseases, addressing these differences via public health chronic disease programs should be considered a national priority. In addition, tackling health inequities should be included in a comprehensive strategy to reduce the overall cost of poor health. Moving forward, we suggest that the necessary next steps to address gap areas identified in this paper will require collaboration between chronic disease practitioners, funders, health departments, and other stakeholders. Such collaboration should center on defining core strategies and specific needs for the successful integration of health equity in chronic disease programming, while leveraging insights from this study.

The work described in this paper has some limitations. The overall sample size is small. Due to this limitation, the results are not generalizable to the universe of state chronic disease practitioners and programs in all U.S. States and Territories. However, 17% (N=25) of the respondents were state/territorial/tribal Chronic Disease Directors, which translates to 42% of all state chronic disease directors. In this regard, the findings are relatable to the experiences of state-level chronic disease programs through the US, and the data are insightful about areas of future inquiry to inform strategies for enhancing the capacity of chronic disease programs to promote health equity. Furthermore, the perspectives obtained from the study are those of the respondents and may or may not accurately reflect the status of the chronic disease programs they represent. Also, because the target audience and NACDD membership base consist

primarily of individuals working in state health departments, we recognize the observations in this study may not reflect the experiences of chronic disease programs at the county and city levels, where many effective community-based interventions take place.

The data collected for the purposes of this paper do not state the extent to which funding streams require an equity lens. Rather, the data highlight respondents' understanding of which funding streams they have accessed in the past that have included such requirements. Therefore, it is possible that this paper over- or underestimates the extent of differential inclusion of equity requirements across FOAs. Lastly, this study is a snapshot not bound by a time frame. Therefore, the findings are not generalizable to any specific/reference year. However, because respondents were asked about their current status we believe the data most likely reflects their recent experiences. Finally, as with all retrospective studies, recall bias is an important consideration when using survey data.

## **CONCLUSION**

In conclusion, we hope the results of this study initiate more focused discussions about the issues of health equity programming within state chronic disease programs. The study was not designed to serve as a source of directives for changing funding formulas and programs. In the near future, NACDD anticipates delving deeper into the issues identified in the 2015 Health Equity Assessment, identifying additional resources to support continued focus on health equity in chronic disease programs, initiating discourse about creating consistency in the practice of promoting health equity within the context of chronic disease programs, and coordinating with other state/territorial/tribal cross-agency efforts to ensure programs are planned and implemented through an equity lens.

## **ACKNOWLEDGEMENTS**

This work was done to support implementation of the National Partnership for Action to End Health Disparities, a national initiative coordinated by the Office of Minority Health at the US Department of Health and Human Services. The authors thank the Office of Minority Health for its support for this project.

## **DISCLAIMER**

At the time this work was executed, Onyemaechi Nweke was a staff detail to the Office of Minority Health at the US Department of Health and Human Services. The views expressed are those of the authors and do not reflect the views of the US Environmental Protection Agency.

## **REFERENCES**

Adam, E. K., Heissel, J. A., Zeiders, K. H., Richeson, J. A., Ross, E. C., Ehrlich, K. B., Levy, D. J., Kemeny, M., Brodish, A. B., Malanchuk, O., Peck, S. C., Fuller-Rowell, T. E., & Eccles, J. S. (2015). Developmental histories of perceived racial discrimination and

Journal of Health Disparities Research and Practice Volume 9, OMH Special Issue, 2017

<http://digitalscholarship.unlv.edu/jhdrp/>

Follow on Facebook: Health.Disparities.Journal

Follow on Twitter: @jhdrp



- diurnal cortisol profiles in adulthood: A 20-year prospective study. *Psychoneuroendocrinology*, 62, 279-291.
- Americans for NonSmokers' Rights Foundation. (2016). U.S. 100% Smokefree Laws in Non-Hospitality Workplaces and Restaurants and Bars. Retrieved from <http://www.no-smoke.org/goingsmokefree.php?id=519>
- Anderson, G., & Horvath, J. (2004). The growing burden of chronic disease in America. *Public Health Rep*, 119 (3), 263-270.
- Bauer, U. E., Briss, P. A., Goodman, R. A., & Bowman, B. A. (2014). Prevention of chronic disease in the 21st century: elimination of the leading preventable causes of premature death and disability in the USA. *Lancet*, 384 (9937), 45-52.
- Bharmal, N., Derose, K. P., Felician, M., & Weden, M. M. (2015). *Understanding the Upstream Social Determinants of Health*. Arlington VA: RAND Corporation.
- Carrera, C., Azrack, A., Begkoyian, G., Pfaffmann, J., Ribaira, E., O'Connell, T., Doughty, P., Aung, K. M., Prieto, L., Rasanathan, K., Sharkey, A., Chopra, M., Knippenberg, R., & Unicef Equity in Child Survival Health Nutrition Analysis Team. (2012). The comparative cost-effectiveness of an equity-focused approach to child survival, health, and nutrition: a modelling approach. *Lancet*, 380(9850), 1341-1351.
- CDC. (2001). Chronic Disease State Policy Tracking System. Retrieved from <http://nccd.cdc.gov/CDPHPPolicySearch/Default.aspx>
- CDC. (2013). The Public Health System and the 10 Essential Public Health Services. Retrieved from <http://www.cdc.gov/nphpsp/essentialServices.html>
- CDC. (2015). State Public Health Actions to Prevent and Control Diabetes, Heart Disease, Obesity and Associated Risk Factors and Promote School Health (DP13-1305). Retrieved from <http://www.cdc.gov/chronicdisease/about/state-public-health-actions.htm>
- CDC. (n.d.). National Public Health Performance Standards. Retrieved from <https://www.cdc.gov/nphpsp/essentialServices.html>
- Cesari, M., Penninx, B. W., Newman, A. B., Kritchevsky, S. B., Nicklas, B. J., Sutton-Tyrrell, K., Rubin, S. M., Ding, J., Simonsick, E. M., Harris, T. B., & Pahor, M. (2003). Inflammatory markers and onset of cardiovascular events: results from the Health ABC study. *Circulation*, 108 (19), 2317-2322.
- Chamarthi, B., Williams, G. H., Ricchiuti, V., Srikumar, N., Hopkins, P. N., Luther, J. M., Jeunemaitre, X., & Thomas, A. (2011). Inflammation and hypertension: the interplay of interleukin-6, dietary sodium, and the renin-angiotensin system in humans. *Am J Hypertens*, 24 (10), 1143-1148.
- Cohen, S., Janicki-Deverts, D., Doyle, W. J., Miller, G. E., Frank, E., Rabin, B. S., & Turner, R. B. (2012). Chronic stress, glucocorticoid receptor resistance, inflammation, and disease risk. *Proc Natl Acad Sci U S A*, 109(16), 5995-5999.
- CSDH. (2008). *Closing the Gap in a Generation: Health Equity Through Action on the Social Determinants of Health. Final report of the Commission on the Social Determinants of Health*. Geneva: World Health Organization.

- Dahlgren, G., & Whitehead, M. (1991). *Policies and Strategies to Promote Social Equity in Health. Background Document to WHO - Strategy Paper for Europe*. Stockholm, Sweden: Institute for Future Studies.
- Gehlert, S., Sohmer, D., Sacks, T., Mininger, C., McClintock, M., & Olopade, O. (2008). Targeting Health Disparities: A Model Linking Upstream Determinants to Downstream Interventions: Knowing about the Interaction of Societal Factors and Disease can Enable Targeted Interventions to Reduce Health Disparities. *Health Aff (Millwood)*, 27(2), 339-349.
- Gerteis, J., Izrael, D., Deitz, D., LeRoy, L., Ricciardi, R., Miller, T., & Basu, J. (2014). *Multiple Chronic Conditions Chartbook. 2010 Medical Expenditure Panel Survey Data (AHRQ Pub. No. 14-0038)*. Rockville, MD: Agency for Healthcare Research and Quality, US Department of Health and Human Services.
- Gillespie, C. D., & Hurvitz, K. A. (2013). Prevalence of Hypertension and Controlled Hypertension - United States, 2007-2010. *MMWR*, 62(3), 144-147.
- HHS. (2010). *Multiple Chronic Conditions: A Strategic Framework. Optimum Health and Quality of Life for Individuals with Multiple Chronic Conditions*. Washington, DC: US Department of Health and Human Services.
- HHS. (2014). Social Determinants of Health. Retrieved from <https://www.healthypeople.gov/2020/topics-objectives/topic/social-determinants-of-health>
- HHS. (2016). General Health Status: Chronic Disease Prevalence. Retrieved from <https://www.healthypeople.gov/2020/about/foundation-health-measures/General-Health-Status#chronic>
- HRSA. (2011). *Grants Policy Operations Memo (GPOM)*. (GPOM-2011-01). Washington, DC: Health Resources and Services Administration, US Department of Health and Human Services.
- IOM. (1988). *The Future of Public Health*. Washington, DC: Committee for the Study of the Future of Public Health, Division of Health Care Services.
- Kiecolt-Glaser, J. K., Preacher, K. J., MacCallum, R. C., Atkinson, C., Malarkey, W. B., & Glaser, R. (2003). Chronic stress and age-related increases in the proinflammatory cytokine IL-6. *Proc Natl Acad Sci U S A*, 100(15), 9090-9095.
- King County Executive Office. (2014). *King County Equity and Social Justice Annual Report* King County Executive Office, Washington State.
- LaVeist, T. A., Gaskin, D. J., & Richard, P. (2009). *The Economic Burden of Health Inequalities in the United States*. Washington, DC: Joint Center for Political and Economic Studies.
- Lee, Y., Muennig, P., Kawachi, I., & Hatzenbuehler, M. L. (2015). Effects of Racial Prejudice on the Health of Communities: A Multilevel Survival Analysis. *Am J Public Health*, 105(11), 2349-2355.
- Logan, J. R. (2011). *Separate and Unequal: The Neighborhood Gap for Blacks, Hispanics and Asians in Metropolitan America*. New York, NY: US2010 Project: Discover America in a New Century. Russell Sage Foundation.
- McEwen, B. S., & Gianaros, P. J. (2010). Central role of the brain in stress and adaptation: links to socioeconomic status, health, and disease. *Ann N Y Acad Sci*, 1186190-222.

- MN Department of Health. (2013). *Health Equity Implementation Guide*. St. Paul, MN: MN Department of Health. Statewide Health Improvement Program (SHIP)
- Mozaffarian, D., Benjamin, E. J., Go, A. S., Arnett, D. K., Blaha, M. J., Cushman, M., Das, S. R., de Ferranti, S., Despres, J. P., Fullerton, H. J., Howard, V. J., Huffman, M. D., Isasi, C. R., Jimenez, M. C., Judd, S. E., Kissela, B. M., Lichtman, J. H., Lisabeth, L. D., Liu, S., Mackey, R. H., Magid, D. J., McGuire, D. K., Mohler, E. R., 3rd, Moy, C. S., Muntner, P., Mussolino, M. E., Nasir, K., Neumar, R. W., Nichol, G., Palaniappan, L., Pandey, D. K., Reeves, M. J., Rodriguez, C. J., Rosamond, W., Sorlie, P. D., Stein, J., Towfighi, A., Turan, T. N., Virani, S. S., Woo, D., Yeh, R. W., & Turner, M. B. (2016). Heart Disease and Stroke Statistics-2016 Update: A Report From the American Heart Association. *Circulation* 133(4), e38-360.
- OMH. (2011). *National Stakeholder Strategy for Achieving Health Equity*. Rockville, MD: Office of Minority Health, US Department of Health and Human Services.
- Oregon Education Investment Board. (2013). Education Investment Board: Equity Lens. Retrieved from [http://education.oregon.gov/wp-content/uploads/2015/09/Final\\_Equity\\_Lens\\_Adopted.pdf](http://education.oregon.gov/wp-content/uploads/2015/09/Final_Equity_Lens_Adopted.pdf)
- Paradies, Y., Ben, J., Denson, N., Elias, A., Priest, N., Pieterse, A., Gupta, A., Kelaher, M., & Gee, G. (2015). Racism as a Determinant of Health: A Systematic Review and Meta-Analysis. *PLOS One*, 10(9), e0138511.
- Park, H., Roubal, A. M., Jovaag, A., Gennuso, K. P., & Catlin, B. B. (2015). Relative Contributions of a Set of Health Factors to Selected Health Outcomes. *Am J Prev Med*, 49(6), 961-969.
- Pradhan, A. D., Manson, J. E., Rifai, N., Buring, J. E., & Ridker, P. M. (2001). C-reactive protein, interleukin 6, and risk of developing type 2 diabetes mellitus. *JAMA*, 286(3), 327-334.
- Reardon, S. F., Kalogrides, D., & Shores, K. (2016). *The Geography of Racial/Ethnic Test Score Gaps* (CEPA Working Paper No. 16-10). Stanford, CA: Stanford Center for Education and Policy Analysis.
- Smedley, B. (2009). *Moving Toward Health Equity in New York: State Strategies to Eliminate Health Disparities. A Report for the Minority Health Council, New York State Department of Health* New York, NY: New York State Department of Health.
- US Department of Education. (2015). *State Plans to Ensure Equitable Access to Excellent Educators* (OMB Number: 1810-0725). Washington DC: US Department of Education.
- Ward, B. W., Schiller, J. S., & Goodman, R. A. (2014). Multiple chronic conditions among US adults: a 2012 update. *Prev Chronic Dis*, 11, E62.
- Whitehead, M., & Dahlgren, G. (2006). *Leveling Up (Part 1): A Discussion Paper on Concepts and Principles for Tackling Social Inequities in Health*. Copenhagen, Denmark: World Health Organization.
- Wilson, V., & Rodgers III, W. M. (2016). *Black-White Wage Gaps Expand with Rising Wage Inequality*. Washington DC: Economic Policy Institute.
- Zeiders, K. H., Hoyt, L. T., & Adam, E. K. (2014). Associations between self-reported discrimination and diurnal cortisol rhythms among young adults: The moderating role of racial-ethnic minority status. *Psychoneuro-endocrinology*, 50, 280-288.

**Supplemental Material**

**Table 1. Response Rates from the NACDD 2015 Health Equity Assessment**

Question	Answered	Skipped	Response rate
Q1 What State Health Department do you represent?	138 (9 coded as 0%)	9	93.9%
Q2 What is your position at the State Health Department	147	0	100%
Q3 Do you believe your chronic disease division adequately addresses health inequities/health disparities in its daily work?	147	0	100%
Q4 What are the barriers in adequately addressing health inequities/health disparities in your chronic disease division?	68	79	46.3%  More than one-half (53.7%) did not state barriers
Q5 Does your chronic disease division have designated full time staff spending at least 25% of time on health disparities/equity?	140	7	95.2%
Q6 If yes, how many full-time staff spending at least 25% of time on health equity issues?	37	62 (who replied yes Q5)	59.7% (37 of 62)
Q7-What are the primary agencies/funding streams that fund your chronic disease work in the past 5 years? (i.e. DHHS-OMH, CDC, HRSA)	82	65	55.8% (44.2% did not answer the question)
Q8-Funds from some agencies require explicit focus on addressing/ mitigating health inequities as communicated within	82	65	55.8% (44.2% did not answer the

their RFA/RFP.			question)
Q9-According to the RFA/RFP guidance how much funding and/or time is your chronic disease division <i>required</i> to address/mitigate health inequities?	82	65	55.8% (44.2% did not answer the question)
Q10 Is this sufficient <u>funding</u> to adequately address and/or mitigate health inequities in your daily work?	82	65	55.8% (44.2% did not answer the question)
Q11 Is this sufficient <u>time</u> to adequately address and/or mitigate health inequities in your daily work?	82	65	55.8% (44.2% did not answer the question)
Q12 Without federal/state/local funds are you able to address health equity and health disparities through other funding opportunities and/or mechanism in your chronic disease division?	82	65	55.8% (44.2% did not answer the question)
Q13 If the funding announcement does not require you to address health equity issues have you, on your own and apart from the grant guidance, proposed addressing these issues in other specific strategies?	82	65	55.8% (44.2% did not answer the question)
Q14 Would you be willing to provide more feedback in the future?	19	129	12.9% (87.8% Did not want to follow-up)
Q15 Does your chronic disease division currently collect data about health disparities or social determinants of health in your state?	81	66	55.1% (44.9% did not answer the question)
Q16 What information do you currently collect?	60	87	40.8% (59.2% did not answer the question)

Q17 What data source(s) do you use to collect this information?	60	87	40.8% (59.2% did not answer the question)
Q18 How do you currently use the information you collect?	60	87	40.8% (59.2% did not answer the question)
Q19 Would you like to and/or do you have plans to collect any additional information about health disparities or social determinants of health in your state that you do not currently monitor?	74	73	50.3% (49.7% did not answer the question)
Q20 Do you regularly work with the BRFSS office in your state?	74	73	50.3% (49.7% did not answer the question)
Q21 Which of the following statements reflect your experience working with the BRFSS office and BRFSS data in your state?	64	83	43.5% (56.5% did not answer the question)
Q22 How did your program use the BRFSS data it collected?	64	83	43.5% (56.5% did not answer the question)
Q23 Did you know that there is a Social Context module available as part of the Behavioral Risk Factor Surveillance System (BRFSS)?	64	83	43.5% (56.5% did not answer the question)
Q24 Has your chronic disease division ever worked with the BRFSS office in your state to collect information about the social determinants of health or health disparities?	69	78	47.0% (53.0% did not answer the question)
Q25 Why has your state never used the Social Context module?	69	78	47.0% (53.0% did not answer the question)

Q26 Did you receive funding from NACDD to utilize the Social Context module?	69	78	47.0% (53.0% did not answer the question)
Q27 Are the topics included in the Social Context module of interest to your program?	69	78	47.0% (53.0% did not answer the question)
Q28 Would data from the Social Context module be useful to your program for any of the following activities?	14	133	9.5% Most respondents did not explain why they are not using the social context module
Q29 How often does your state health department/chronic disease program offer mandatory training on the topic of social determinants of health, health disparities, and health equity?	68	79	46.3% (53.7% did not answer the question)
Q30 Do you think this amount of training is adequate and helps you to do your job more effectively?	67	80	46.5% (54.2% did not answer the question)
Q31 Do you or someone you know participate in the NACDD Health Equity Council?	67	80	46.5% (54.2% did not answer the question)
Q32 Would you be interested in participating in a Community of Practice on the topic of Health Equity?	67	80	46.5% (54.2% did not answer the question)
Q33 If you could receive health equity training and workforce development support from NACDD, what topics would you be interested in?	67	80	46.5% (54.2% did not answer the question)