

Community Health Assessment for Population Health Improvement

Resource of Most Frequently Recommended
Health Outcomes and Determinants



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Executive Summary

Effective planning and decision-making for improving the health of a community requires good information about the current health status and factors that will influence that health status.

This document identifies the metrics – the population health outcomes and important risk and protective factors – that, taken together, can describe the health of a community and drive action. Selection of these metrics reflects the weight of professional and academic judgment over the past three decades.

Why Now?

An accurate portrait of a community's health can always help residents, community groups, and professional organizations prioritize prevention activities and build coalitions to make improvements and address existing problems. But the second decade of the 21st century provides new unique reasons for a community to assess its well-being. Tough economic times demand communities make the best, most cost-effective health choices possible. Additionally, community health assessments and improvement plans are prerequisites in a new, voluntary public health department accreditation process. Section 9007 of the Patient Protection and Affordable Care Act (Pub. L. 111-148, 124 Stat. 119) requires nonprofit hospitals to conduct community health needs assessments every three years and to adopt implementation strategies to meet the identified needs in order to retain their tax-exempt status. Finally, a health needs assessment is required for some Centers for Disease Control and Prevention (CDC) Community Transformation Grants.

The terms “community health assessment (CHA)” and “community health needs assessment (CHNA)” are used interchangeably to refer to the process of community engagement; collection, analysis, and interpretation of data on health outcomes and health correlates/determinants (heretofore referred to as health determinants); identification of health disparities; and

identification of resources that can be used to address priority needs. To avoid confusion, this report uses the term “community health assessment (CHA)” to include the processes and products common to CHAs and CHNAs.

Common Set of Health Outcome and Determinant Metrics

A common set of health status metrics can facilitate comparisons across populations, promote collaboration between organizations conducting assessments, assist in establishing a shared understanding of the factors that influence health, and help to galvanize residents to work collaboratively to improve community health. Unfortunately, there is no widely accepted consensus on which health metrics should be used in conducting a comprehensive community health assessment. Different perspectives, divergent needs, and the evolving understanding of the complex relationships between modifiable, upstream determinants and overall population health have resulted in differing recommendations. Ideally, a core set of outcomes and determinants respecting national, state, and local priorities would arise from an evidence-based consensus process.

To inform such a consensus process and current community health assessment work across the nation, this report provides a referenced list of the most frequently recommended health outcomes and determinants and, where possible, links each health outcome and determinant to valid and reliable indicators available at the metropolitan statistical area (MSA), county, or sub-county level. CDC is providing this information on metrics linked to valid and reliable indicators to assist efforts involving assessing and improving community health. For this report, CDC and its public health partners have not evaluated these metrics and indicators to determine if they would represent a recommended core set.

Methods

A systematic literature review identified the authoritative source documents that contain the metrics presented here. The source references are two Institute of Medicine reports, three published reports, three sets of web-based resources developed and maintained by state health departments, and two sets of web-based resources developed and maintained by professional organizations. To be recommended in this report, a metric had to be identified by three or more of these 10 resources.

Results

We have identified 42 metrics, broadly categorized as those characterizing the status of health outcomes or health determinants. This report also contains links to and descriptions of existing sources of indicators for these metrics. The majority of the 42 metrics have indicators available at the level of metropolitan statistical area, county, or sub-county (census tract, census block groups) (Table 2). Links to new sources of indicators will be added to the table as they become available.

We used a population health framework to organize the metrics of health outcomes and determinants. Outcomes were categorized as mortality or morbidity. Health determinants were organized into the following categories: health care, personal behaviors, demographics and the social environment, and the physical environment (Table 1). The links for each health outcome and determinant to valid and reliable indicators available at the metropolitan statistical area (MSA), county, or sub-county level are identified in Table 2.

How to Use This Report

This *Community Health Assessment for Population Health Improvement: Resource of Frequently Recommended Health Outcomes and Determinants*, is meant to be a time-saving resource for identifying and analyzing data for community health assessments. It presents the most frequently recommended outcomes and determinants based on a systematic review of existing CHA guidance and resources. Staff from health departments and hospitals, and community based organizations, and others planning to conduct a community health assessment may find this useful. Links to existing indicator sources are provided so users can easily identify an indicator and assess its value for their community. Additional background information and the methods used to develop this resource as well as descriptions and links to existing CHA guidance are included for users who want more information or want to replicate the systematic review.

Table 1: Community Health Assessment for Population Health Improvement: Most Frequently Recommended Health Metrics*

Health Outcome Metrics		Health Determinant and Correlate Metrics			
Mortality	Morbidity	Health Care (Access & Quality)	Health Behaviors	Demographics & Social Environment	Physical Environment
Mortality - Leading Causes of Death (9)	Obesity (6)	Health Insurance Coverage (6)	Tobacco Use/ Smoking (8)	Age (9)	Air Quality (4)
Infant Mortality (6)	Low Birth-weight (3)	Provider Rates (PCPs, Dentists) (5)	Physical Activity (5)	Sex (6)	Water Quality (3)
Injury-related Mortality (3)	Hospital Utilization (4)	Asthma-Related Hospitalization (4)	Nutrition (4)	Race/Ethnicity (9)	Housing (5)
Motor Vehicle Mortality (3)	Cancer Rates (4)		Unsafe Sex (3)	Income (9)	
Suicide (4)	Motor Vehicle Injury (4)		Alcohol Use (4)	Poverty Level (6)	
Homicide (4)	Overall Health Status (4)		Seatbelt Use (3)	Educational Attainment (6)	
	STDs (chlamydia, gonorrhea, syphilis) (4)		Immunizations and Screenings (5)	Employment Status (6)	
	AIDS (3)			Foreign Born (3)	
	Tuberculosis (4)			Homelessness (3)	
				Language Spoken at Home (3)	
				Marital Status (3)	
				Domestic Violence and Child Abuse (3)	
				Violence and Crime (4)	
				Social Capital/Social Support (4)	

* Numbers in parenthesis indicate the number of 10 Guidance Documents that recommended that specific outcome or determinant/correlate.

Table 2: Links to Most Frequently Recommended Health Metrics by Geographic Area

Health Outcome	MSA	County	Sub-county
Mortality			
Mortality - Leading Causes of Death		http://wonder.cdc.gov/ http://www.communityhealth.hhs.gov/chna.org	
Infant Mortality		http://wonder.cdc.gov/ http://www.communityhealth.hhs.gov/chna.org	
Injury-related Mortality		http://www.countyhealthrankings.org http://wonder.cdc.gov/ http://healthindicators.gov/ http://www.communityhealth.hhs.gov/chna.org	
Motor Vehicle Mortality		http://wonder.cdc.gov/ http://www.communityhealth.hhs.gov/chna.org	
Suicide		http://wonder.cdc.gov/ http://www.communityhealth.hhs.gov/chna.org	
Homicide		http://wonder.cdc.gov/ http://www.communityhealth.hhs.gov/chna.org	
Morbidity			
Obesity	*http://apps.nccd.cdc.gov/BRFSS-SMART/index.asp	http://www.countyhealthrankings.org *http://apps.nccd.cdc.gov/BRFSS-SMART/index.asp http://healthindicators.gov/ http://www.communityhealth.hhs.gov/chna.org	
Low Birth-weight		http://www.countyhealthrankings.org http://wonder.cdc.gov/ http://healthindicators.gov/ http://www.communityhealth.hhs.gov/chna.org	
Hospital Utilization		http://www.countyhealthrankings.org http://healthindicators.gov/ http://www.communityhealth.hhs.gov/chna.org	
Cancer Rates	http://statecancerprofiles.cancer.gov/incidencerates/index.php	http://statecancerprofiles.cancer.gov/incidencerates/index.php http://www.communityhealth.hhs.gov/chna.org	

*Limited number of data available for geographic units

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Table 2: Links to Most Frequently Recommended Health Metrics by Geographic Area

Health Outcome	MSA	County	Sub-county
Motor Vehicle Injury	Not currently available	Not currently available	Not currently available
Overall Health Status	*http://apps.nccd.cdc.gov/BRFSS-SMART/index.asp	http://www.countyhealthrankings.org http://www.communityhealth.hhs.gov *http://apps.nccd.cdc.gov/BRFSS-SMART/index.asp http://healthindicators.gov/chna.org	
STDs (chlamydia, gonorrhea, syphilis)		http://www.countyhealthrankings.org http://www.communityhealth.hhs.gov http://healthindicators.gov/chna.org	
AIDS		http://www.countyhealthrankings.org http://healthindicators.gov/chna.org	
Tuberculosis		http://wonder.cdc.gov/	
Health Determinant	MSA	County	Sub-county
Health Care (Access & Quality)			
Health Insurance Coverage	*http://apps.nccd.cdc.gov/BRFSS-SMART/index.asp http://healthindicators.gov/	http://www.countyhealthrankings.org http://www.communityhealth.hhs.gov *http://apps.nccd.cdc.gov/BRFSS-SMART/index.asp http://healthindicators.gov/chna.org	http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml http://healthindicators.gov/
Provider Rates (PCPs, Dentists)	http://www.dartmouthatlas.org/data/region/	http://www.countyhealthrankings.org http://www.communityhealth.hhs.gov http://healthindicators.gov/chna.org	
Asthma-Related Hospitalization	http://www.dartmouthatlas.org/data/region/	http://www.countyhealthrankings.org http://healthindicators.gov/	
Personal Behaviors			
Tobacco Use/ Smoking	*http://apps.nccd.cdc.gov/BRFSS-SMART/index.asp	http://www.countyhealthrankings.org *http://apps.nccd.cdc.gov/BRFSS-SMART/index.asp http://healthindicators.gov/ http://www.communityhealth.hhs.gov http://healthindicators.gov/chna.org	

*Limited number of data available for geographic units

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Table 2: Links to Most Frequently Recommended Health Metrics by Geographic Area

Health Outcome	MSA	County	Sub-county
Physical Activity	*http://apps.nccd.cdc.gov/BRFSS-SMART/index.asp	http://www.countyhealthrankings.org * http://apps.nccd.cdc.gov/BRFSS-SMART/index.asp http://healthindicators.gov/ http://www.communityhealth.hhs.gov/chna.org	
Nutrition	*http://apps.nccd.cdc.gov/BRFSS-SMART/index.asp	*http://apps.nccd.cdc.gov/BRFSS-SMART/index.asp chna.org	
Unsafe Sex		http://www.countyhealthrankings.org http://healthindicators.gov/ http://www.communityhealth.hhs.gov	
Alcohol Use	*http://apps.nccd.cdc.gov/BRFSS-SMART/index.asp	http://www.countyhealthrankings.org * http://apps.nccd.cdc.gov/BRFSS-SMART/index.asp http://healthindicators.gov/chna.org	
Seatbelt Use	Not currently available	Not currently available	Not currently available
Immunizations and Screenings	*http://apps.nccd.cdc.gov/BRFSS-SMART/index.asp	http://www.countyhealthrankings.org http://www.communityhealth.hhs.gov * http://apps.nccd.cdc.gov/BRFSS-SMART/index.asp http://healthindicators.gov/chna.org	
Demographics & Social Environment			
Demographics – Age, Sex, Race/Ethnicity, Income, Educational Attainment	http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml	http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml http://www.countyhealthrankings.org http://www.communityhealth.hhs.gov http://healthindicators.gov/chna.org	http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml chna.org
Poverty Level	http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml	http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml http://www.countyhealthrankings.org http://www.communityhealth.hhs.gov http://healthindicators.gov/chna.org	http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml chna.org

*Limited number of data available for geographic units

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Table 2: Links to Most Frequently Recommended Health Metrics by Geographic Area

Health Outcome	MSA	County	Sub-county
Employment Status	http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml	http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml http://www.countyhealthrankings.org http://www.communityhealth.hhs.gov http://healthindicators.gov/	http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml chna.org
Foreign Born	http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml	http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml chna.org	http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml
Homelessness	Currently not available	Currently not available	Currently not available
Language Spoken at Home	http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml	http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml chna.org	http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml chna.org
Marital Status	http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml	http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml http://www.countyhealthrankings.org	http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml
Domestic Violence and Child Abuse	Currently not available	Currently not available	Currently not available
Violence and Crime		http://www.countyhealthrankings.org http://healthindicators.gov/	
Social Capital/ Social Support		http://www.countyhealthrankings.org http://healthindicators.gov/ chna.org	
Physical Environment			
Air Quality		http://www.countyhealthrankings.org http://healthindicators.gov/	
Water Quality		http://www.countyhealthrankings.org	
Housing	* http://www.census.gov/housing/ahs/data/metro.html	http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml	http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml

*Limited number of data available for geographic units

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Introduction

A community health assessment is a useful first step for understanding health status and health risks in a community. This information can help communities prioritize and evaluate the impact of prevention activities.

Recent developments make this a crucial time for community health assessments.

Several considerations make community health assessments crucial now. Tough economic times force communities to make the best health improvement choices and community health assessments can help. In addition, several programs and initiatives have either encouraged or required such assessments. First, voluntary public health accreditation standards launched in 2011 require as prerequisites a comprehensive community health assessment and community improvement plan (Public Health Accreditation Board, 2001). Second, Community Transformation Grants (CTGs), funded through the Patient Protection and Affordable Care Act (PPACA, Pub. L. 111-148, 124 Stat. 119) of 2010 and designed to help reduce chronic diseases such as heart disease, cancer, stroke, and diabetes, require a community health needs assessment and improvement plan (U.S. DHHS, 2011). Finally, Section 9007 of the PPACA requires nonprofit hospitals to complete community health needs assessments every three years and to adopt implementation strategies to meet the identified needs in order to retain their tax-exempt status. Section 9007 also requires nonprofit hospitals to include input from persons with “special knowledge of or expertise in public health” in conducting the assessment.

As noted by Hardcastle and colleagues, “integrating health care and public health — each with its own methodologies and bodies of knowledge — is likely to be the most effective strategy to respond to the complex, multifactorial chronic conditions that now represent the majority of our disease burden” (Hardcastle et al., 2011). The goal of this monograph is to contribute to that collaboration with a common set of metrics to assess the health status and determinants of their community.

Evolution of Community Health

Assessments

Public health agencies have a long history with health assessments. The 1988 Institute of Medicine (IOM) report *The Future of Public Health* identified assessment as a core public health function and recommended that “every public health agency regularly and systematically collect, assemble, analyze, and communicate information on the health of the community, including statistics on health status, community health needs, and epidemiologic and other studies of health problems.” The report delineated the federal, state, and local roles in assessment as follows:

- The federal government should support “knowledge development and dissemination through data gathering, research, and information exchange.”
- Each state should assess “health needs within the state based on statewide data collection.”
- Local public health units should be responsible for “assessment, monitoring, and surveillance of local health problems and needs and of resources for dealing with them.”

Thus, local health departments were identified as having primary responsibility for *community health assessment* (CHA), with assistance in data gathering and information exchange from state and federal governments (Institute of Medicine, 1998).

Integrating health care and public health is likely to be the most effective way to address our current disease burden.

Since the release of the 1988 IOM landmark report, the concept and practice of community health assessment has evolved, spurring the development of various frameworks, guidance documents, and tools (Friedman & Parish, 2009). As noted earlier, one evolution of particular note is the practice of community health needs assessment (CHNA), conducted for many years by numerous nonprofit hospitals as a component of their community health programs and community benefits planning (Bilton, 2011).

Consensus definitions do not exist for either CHA or CHNA. Definitions of both often include various aspects of the process as well as products of the broader, more comprehensive process of community health improvement including community engagement, primary and secondary data analysis, priority setting, intervention planning, and sometimes even intervention implementation (Friedman & Parish, 2009). Some examples:

- “CHNA is a systematic process involving the community to identify and analyze community health needs and assets in order to prioritize these needs, and to plan and act upon unmet community health needs” (Catholic Health Association, 2011).
- “CHNA is an effort to identify and prioritize a community’s health needs, accomplished by collecting and analyzing data, including input from the community” (Bilton, 2011).
- “CHAs are a means of identifying and describing community health problems, gaps and strengths in services, and interventions to improve the health of the community” (Myers & Stoto, 2006).
- “CHAs describe the health status of the population, identify areas for health improvement, determine factors that contribute to health issues, and identify assets and resources that can be mobilized to address population health improvement” (Public Health Accreditation Board, 2001).

Furthermore, as Irani and colleagues noted, the term community *health* assessment is somewhat misleading since most CHAs also examine the behavioral, socioeconomic, and environmental factors that influence health (Irani et al., 2006), commonly referred to as health determinants (Institute of Medicine, 2011), as well as health outcomes. For the purposes of this document, we will use the simpler term of community health assessment (CHA), defined to include the common process and products of CHAs and CHNAs including community engagement; data access, analysis, and interpretation; and identification of assets that can be mobilized to address priority needs (Irani et al., 2006).

Community Health Assessment Data

CHAs typically use primary and secondary data to characterize health outcomes and determinants, reflect community perspectives, and identify assets of the community” (Myers & Stoto, 2006). *Primary data*, which can be both quantitative and qualitative, are collected first-hand through surveys, listening sessions, interviews, and observations (North Carolina Division of Public Health, 2010). Primary data collection typically is needed to adequately capture the community’s perspective (U.S. DHHS, 1992) and to identify the community assets or resources that can be used or mobilized to address community needs (North Carolina Division of Public Health, 2010). *Secondary data* are data that were collected by another entity or for another purpose. Often, these data already are analyzed and transformed into *indicators*, which can be used to compare rates or trends of priority community health outcomes and determinants (Institute of Medicine, 2011).

The focus of this monograph is metrics of health outcomes and determinants from secondary data sources. Although primary data representing community perspectives and assets are equally important to the CHA priority-setting process, the purpose of this document is to provide a resource of health outcome and determinant metrics linked to currently available valid and reliable indicators and data sources.

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Having an agreed-upon set of metrics can galvanize partners to work together to improve community health.

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History and Need for a Common Set of Health Outcomes and Determinants

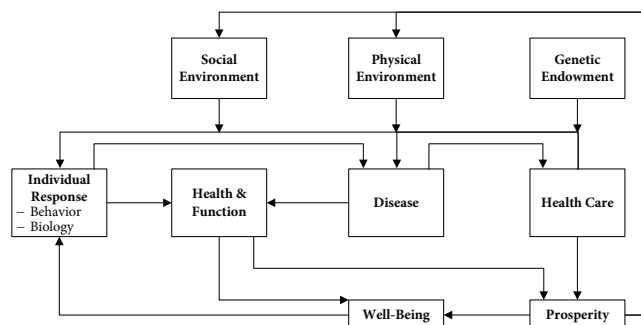
Having an agreed-upon common set of outcomes and determinants can facilitate shared understanding of the factors that influence health and assist in galvanizing local partners to work collaboratively toward community health improvement (Institute of Medicine, 2011). A core set can also facilitate cross-community comparisons which can motivate communities to action and assist with the prioritization process (Durch et al., 1977). Over the years, recommendations on which health outcomes and determinants should be included

in a CHA core set have varied based on different perspectives, needs, and the evolving understanding of the complex relationships between upstream determinants and population health (Institute of Medicine, 2011).

CDC reported the first set of core CHA indicators in a 1991 *Morbidity and Mortality Weekly Report (MMWR)*. The set included 18 indicators, developed through a consensus process by a CDC-convened committee of local, state, and federal officials, and representatives from academic institutions and professional organizations. The stated purpose of the core set was to ensure data comparability and “provide a broad determination of the general health status of a community.” The list of indicators included 13 health outcomes and five risk factors. Health outcomes consisted of nine categories of mortality rates (race/ethnicity-specific infant mortality, all-cause, and cause-specific mortality rates for motor vehicle crashes, work-related injury, suicide, lung cancer, breast cancer, cardiovascular disease, and homicide) and four categories of reported infectious diseases (AIDS, measles, tuberculosis, and syphilis). The five risk factors were low birth-weight, births to adolescents, inadequate prenatal care, children in poverty, and poor air quality. In selecting the final list, priority was given to “indicators commonly used in public health with readily available data sources” (Centers for Disease Control and Prevention, 1991).

In 1997, the IOM report *Improving Health in the Community: A Role for Performance Monitoring* recommended expanding the core set to 25 indicators that would provide descriptive information on demographic and socioeconomic characteristics as well as characterize important aspects of health status and health determinants, including behavior, social and physical environments, and health care. In developing the updated set, the IOM committee drew heavily from the 1991 consensus set of core indicators, which they described as influential in community assessments but insufficient to adequately represent a profile of community health status (Durch et al., 1977). Other criteria considered included consistency with a model of population health that illustrated how genetics and the social and physical environment, factors beyond an individual’s control, influence individual behavior and biologic response [Figure 1] (Evans & Stoddard, 1990; Centers for Disease Control and Prevention, 1991) and an increased focus on health needs of specific sub-populations, and data availability (Durch et al., 1977).

Figure 1. Evans and Stoddard Framework of Determinants of Health



Source: Evans R.G. & Stoddard, G.L. (1990). *Producing health, consuming health care*. Soc Sci Med. 31(12), 1347-1363. Reprinted with permission.

The current proliferation of fragmented indicator sets can overwhelm decision-makers and hamper community-level comparisons and assessments.

Currently, according to the 2011 IOM report *For the Public’s Health: The Role of Measurement in Action and Accountability*, no coordinated, standard set of indicators exist to assess and improve the health of a community (Institute of Medicine, 2011). Modern-day disease surveillance systems and registries have yielded a vast number of indicator sets for health outcomes such as mortality, infectious disease, cancer incidence, and other chronic diseases including diabetes, heart disease, and stroke. According to the committee, these distal indicators are typically based on data collection systems developed in isolation and far removed from data on their underlying causes. Furthermore, the proliferation of these fragmented and heterogeneous indicator sets can cause confusion, overwhelm busy decision-makers, impair valid community-level comparisons, and contribute to an inefficient use of limited resources (Institute of Medicine, 2011).

In contrast to the findings related to the health outcome indicator sets, the 2011 IOM report identified an insufficient number of available indicators sets based on accurate local data on the social and environmental determinants of health. To partially address this gap, the committee recommended “timely and authoritative review of the evidence base for the relationships between prominent indicators of upstream determinants and population health

outcomes” such as the reviews that led to community-level indicators of access to healthy food sources and density of fast-food outlets. For upstream determinants where the evidence base is lacking such as aspects of “the physical environment (sidewalks, pollution, green space, and housing), social support (such as cohesion, social capital, and social efficacy and engagement), and community vibrancy (such as participation in the arts and sports),” the committee called for systems-based modeling and additional observational studies. The objective of the modeling efforts and research would be to understand the complex relationships among these determinants; elucidate the causal pathways by which they affect population health; and to improve understanding on the most effective interventions and policies for addressing these upstream factors (Institute of Medicine, 2011).

The summary finding of the seminal 2011 report was that managing the proliferation of traditional health-related indicators, conducting systematic reviews of existing literature, and expanding the underdeveloped evidence on other important social and environmental factors to come up with a “parsimonious” core set “will require “considerable research, broad-based dialogue (involving all relevant parties), and prioritization” (Institute of Medicine, 2011).

To meet the immediate needs for CHA, this report identifies the most frequently recommended health outcomes and determinants and, where possible, links each to valid and reliable indicators available at the metropolitan statistical area (MSA), county, or sub-county level.

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There is an increasing need for research and metrics of upstream determinants that can be used to promote health, such as access to nutritious food or social capital.

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Organization of a Common Set Using a Population Health Framework

As suggested in the 1997 IOM report, we used a population health conceptual framework to organize the most frequently recommended health outcomes and determinants. These frameworks have historically been used to assist in assembling data, approximating complex causal relationships, and developing cost-effective policies and interventions

to improve population health and reduce disparities (Evans & Stoddart, 1990). Common features of these frameworks include emphasis on the context and the capacity of social, economic, cultural, and physical environments to modify the relationship between individual characteristics and health; acknowledgment of the complexity of these interactions; and a shift of attention from treatment of sick people to addressing the factors that can prevent the development of disease disparities (Evans & Stoddart, 2003).

Health outcomes and determinants identified in the population health framework used in this report can be traced back to a 1993 article by McGinnis and Foege, *Actual Causes of Death in the United States*. This seminal research identified the most prominent non-genetic contributors to death in the United States as tobacco, diet and activity patterns, alcohol, microbial agents, toxic agents, firearms, sexual behavior, motor vehicles, and use of illicit drugs (McGinnis & Foege, 1993). Subsequently, McGinnis organized the identified determinants of health into five domains: genetic and gestational endowments, social circumstances, environmental conditions,

Evolution of CHA Metrics
TIMELINE

- 1988 IOM report identifies assessment as core public health function.
- 1990 Evans and Stoddart publish first population health framework illustrating the interaction of the determinants of health including factors and forces beyond the health care system.
- 1991 CDC publishes first consensus-based CHA core set of 18 health outcomes and risk factors.
- 1993 McGinnis and Foege publish research identifying the most prominent non-genetic causes of death including personal behaviors and the social and physical environment.
- 1997 IOM Report expands the list to 25 indicators based on a population health framework and including demographic and socioeconomic characteristics, health outcomes and determinants.
- 2010 The ACA, voluntary public health accreditation standards, and Community Transformation Grants drive renewed nationwide interest in CHA.
- 2011 IOM report finds there currently is no coordinated, standard set of indicators to assess and improve the health of a community.

behavioral choices, and medical care (McGinnis, 2001). A 2001 IOM report described how the health of populations results from the intersecting influences of these different domains, which are dynamic and vary in their impact. The report also identified the importance of community interventions in addressing the social and environmental factors that influence behavioral choices and degrade or improve the health status of the population (Institute of Medicine, 2001).

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Modern population health frameworks emphasize prevention and the complex role of social, economic, cultural, and physical environments in shaping health.

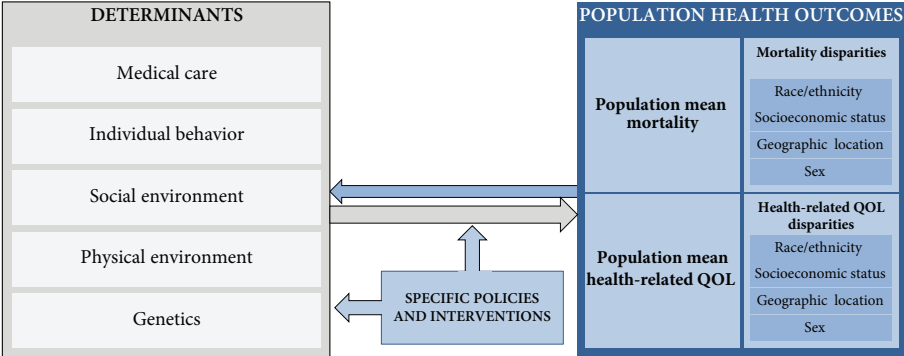
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Most modern population health frameworks include some variation of the five health determinant domains identified by McGinnis. This report organizes the list of frequently recommended health outcomes and determinants using categories adapted from a framework recently developed by Kindig and colleagues for the purposes of population health planning [Figure 2] (Kindig et al., 2008). Specifically, the health outcomes domain includes categories of mortality and morbidity. The health determinants include four framework domains: health care, health behaviors, social environments, and physical environments. In our adapted framework, the health care domain includes aspects of access and quality. The social environment domain includes socioeconomic demographics and social factors. The physical environment includes aspect of the natural and built environment. The domain of genetic determinants is not included because none of the 10 CHA recommending sources identified factors in this domain, likely because genetic factors usually are not modifiable (Institute of Medicine 2011).

Methods for Identification of Health Outcomes and Determinants

We conducted a systematic search to identify published literature and information on CHA guidance using PubMed, Google Scholar, and Google; our search terms were “community health needs assessment,” “community health assessment,” “community assessment,” “community assessment data,” “community health data,” “community health indicators,” and “community health measures.” Published print and web-based guidance materials were included if they recommended specific health outcome indicators (cancer mortality, obesity rates, etc.) and/or determinants (smoking prevalence, poverty rates, etc.). Additional guidance materials were identified based on a search of the citations in each of the included sources as well as the citations of the Rand systematic literature review *Criteria for Assessing the Usefulness of Community Health Assessments* (Myers & Stoto, 2006). Identified sources that were narrowly focused on a particular area of public health were excluded (e.g., a protocol for assessing community excellence in environmental health) (National Association of County and City Health Officials, 2000). Other exclusions included out-of-date sources in which most web links to indicators were broken. Also excluded were sources no longer freely available to the public, such as the 1991 MMWR *Consensus set of health status indicators for the general assessment of community health status—United States* (Durch et al., 1977).

Figure 2. A Schematic Framework for Population Health Planning



Source: Kindig, D.A., Asada, Y, & Booske, B. (2008). A population health framework for setting national and state health goals. JAMA. 299(17), 2081-2083. Reprinted with permission.

Our systematic review yielded 10 sources of CHA guidance documents or websites. The final list included two IOM reports, three published reports, three sets of web-based resources developed and maintained by state health departments, and two sets of web-based resources developed and maintained by professional organizations. The dates of the 10 sources range from 1992 through 2011. Appendix A provides a description of each of the 10 as well as web links where available.

The review identified a total of 108 unique health outcomes and determinants. To determine the most frequently recommended outcomes and determinants, we compiled those identified by three or more of the guidance documents or web-based resources. Of the 108, 42 outcomes and determinants were recommended by three or more of the 10 CHA documents and web resources and met the criteria of most frequently recommended metrics. Some of the outcomes included in the 42 health metrics are broad categories of individual outcomes (i.e., leading causes of mortality).

We also conducted a sensitivity analysis by determining the list of health outcomes and determinants if inclusion had required two or more and four or more citations.

Results Summary – Health Outcomes

Health outcomes are divided into categories of mortality¹ and morbidity² representing the aggregate disease burden in a community (Institute of Medicine, 2011). The presentation of overall and cause-specific death rates by sex, age, and race/ethnicity can demonstrate health disparities and provide readily understandable information on health status to policy-makers and community members (Institute of Medicine, 2011). Measured over time, mortality indicators can be used to monitor the success of targeted efforts to increase life expectancy (Field & Gold, 1998). The inclusion of morbidity indicators can advance other important public health goals, such as the improvement of physical and mental functioning, prevention of disabilities, and prevention or relief of distress and pain related to serious but non-fatal physical and mental diseases and conditions (Field & Gold, 1998).

1 Mortality is defined as the number of deaths in a population within a prescribed time, expressed as either crude death rates or death rates specific to diseases and sometimes to age, sex, race/ethnicity and other attributes (Turnock, 2009).

2 Morbidity is defined as any departure, subjective or objective, from a state of physiological or psychological well-being. (Turnock, 2009).

Six categories for mortality (leading causes of death, infant mortality, homicide, suicide, injury-related mortality, and motor vehicle mortality) met the criteria of most frequently recommended. As mentioned previously, several of the guidance documents and resources recommending examination of the leading causes of death do not specify how many causes should be considered. This allows for the flexibility to consider available resources and community priorities in examining causes that may not rise to the level of “leading” except in subpopulations.

Nine categories (obesity, cancers, hospital utilization, motor vehicle injury, overall health status, sexually transmitted diseases, tuberculosis, AIDS, and low birth-weight) met the criteria for most frequently recommended morbidity outcomes. In this sense, *sickness, illness, and morbid condition* are similarly defined and synonymous (Porta, 2008). One of the sources recommends examination of the top 10 causes of hospital utilization; the other three sources do not specify a specific number.

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Social determinants of health include the conditions in which people are born, grow, live, work, and age. These, in turn, are shaped by the global distribution of money, power, and resources.

–World Health Organization

.....

Results Summary – Health Determinants

Health determinant metrics meeting the most frequently recommended criteria included three categories describing health care, seven describing health behavior, 14 addressing demographics and the social environment, and three addressing the physical environment.



The most frequently recommended health care metrics included the extent of health insurance coverage, the availability of health care providers (primary care physicians and dentists), and the level of asthma-related hospitalization. Broadly speaking, these

metrics address access to and the quality of health care, both of which can affect population health. Access to health care refers to the ease with which an individual can obtain needed medical services. Quality of health care describes whether the delivery of clinical care, including inpatient, outpatient, and diagnostic services, is appropriate, safe, and timely (Commonwealth Fund, 2011). Asthma-related hospitalization is a commonly used indicator for accessibility and overall quality of primary medical care, as asthma is an ambulatory care-sensitive condition and hospitalization is considered potentially preventable (Laditka et al., 2005).



The most frequently recommended health behavior metrics address tobacco use/smoking, immunizations and screenings, physical activity, alcohol use, nutrition, seatbelt use, and unsafe sex. These behavior determinants include choices about lifestyle or habits, either spontaneously or through response to incentives or stimuli from social or physical environments. Metrics of behaviors include proposed or established behavioral factors that affect health outcomes including diet, exercise, and substance abuse (Kindig, 2007).

The most frequently recommended demographics and social environment metrics describe age, income, race/ethnicity, educational attainment, employment status, gender, poverty level, social capital/social support, violence and crime, domestic violence and child abuse, homelessness, language spoken at home, marital status, and foreign born. The World Health Organization (WHO) defines social determinants of health as the conditions in which people are born, grow, live, work, and age, including the health system. These circumstances are shaped by the distribution of money, power and resources at global, national and local levels, which are themselves influenced by policy choices (Sheiham, 2009). Community-level social environments reflect culture, language, political and religious beliefs, social norms, and attitudes (e.g., discriminatory or stigmatizing attitudes). This category of health determinants includes



socioeconomic conditions (e.g., poverty), exposure to crime and violence, social cohesion, and social disorder (e.g., the presence of trash and graffiti) (Secretary's Advisory

Committee, 2009). Metrics of social determinants include proposed or established causal factors in the social environment that affect health outcomes (e.g., income, education, occupation, class, social support) (Kindig, 2007). For our report, this category also contains the demographic factors used to describe important characteristics of the community, including age, sex, race, ethnic background, citizenship status, primary language, and literacy levels.

The physical environment not only directly affects health but also choices and behaviors that influence health.

The most frequently recommended physical environment metrics include physical housing characteristics, air quality, and water quality. The physical environment encompasses the natural environment (air, water, and soil) and the built environment (safe and affordable housing, transportation, access to nutritious and affordable food). The physical environment can directly affect health as well as influence choices and health behaviors (Fielding et al., 2010). Metrics of the physical environment include proposed or established causal factors in the natural and built environment that affects health outcomes (e.g., air and water quality, lead exposure, the design of neighborhoods) (Kindig, 2007).



State and local health departments
should be the first stop for organizations
conducting a community health assessment.

Links to Existing Community-Level Indicators

As noted earlier, both federal and state public health agencies have the responsibility to support CHA through data collection and information exchange (Institute of Medicine, 1998). The 1997 IOM report further clarified the role of states to include collecting and publishing data as well as providing technical assistance to communities for community-level data collection and use when data are not available from other sources (Institute of Medicine, 2011). A number of states and large local health departments currently provide technical assistance, including access to online sources of CHA health outcome and determinant indicators (Laditka et al., 2005). These indicators are likely to be more frequently updated and extensive than those available nationally (Institute of Medicine, 2011). Therefore, organizations conducting CHA should first consult their state and health departments for assistance before turning to national sources.

Appendix B contains the links and describes each of the primary sources of indicators recommended in this document. The majority of the frequently recommended outcomes and determinants have existing sources of valid, reliable, and nationally consistent indicators at the level of MSA, county, or sub-county (census tract, census block groups). However, in some cases, indicators are available for a limited number of these geographic units. Table 2 provides links to one or more websites with existing community-level indicators for each outcome and determinant.

Sensitivity Analysis

In compiling the list of most frequently recommended health outcomes and determinants, we chose to include those suggested by three or more of the included recommending sources. It is useful to examine how the final list changes if less or more restrictive inclusion criteria are applied. Given the range of diversity in health needs, community member priorities, and available resources, organizations may want to consider the results of this analysis in planning their CHAs.

Of the 108 unique health outcomes and determinants identified in the CHA recommendation sources, 52 appeared in two or more documents. If the inclusion criteria had been based on two or more, the following 10 additional outcomes and determinants would have made the final list:

- Hepatitis A, B, C
- HIV
- Number of mentally unhealthy days
- Number of physically unhealthy days
- Measles
- Number local health department staff
- Prenatal care
- Safe and healthy food
- Single-parent families
- Voter registration

More restrictive inclusion criteria based on four or more CHA recommending sources would have eliminated 12 of the final list of 42 health outcomes and determinants:

- | | |
|-------------------------------------|----------------------------|
| • AIDS | • Injury-related mortality |
| • Domestic violence and child abuse | • Motor vehicle mortality |
| • Homelessness | • Seatbelt use |
| • Language spoken at home | • Unsafe sex |
| • Low birth-weight | • Marital status |
| | • Foreign born |
| | • Water quality |

Some of the 56 health outcomes or determinants suggested by only one of the recommending sources reflect regional concerns (e.g., Rocky Mountain spotted fever, fluoridated water, waterborne disease). Others have a sparse body of scientific evidence of association with health outcomes (social activities, civic engagement, per-pupil expenditures) and others do not have routinely collected data for many localities (walkability, municipal funding for sidewalks, discrimination).

Conclusion

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Additional research and an evidence-based consensus process reflecting the convergence of national, state, and local priorities is needed to generate a prioritized core set of health outcome and determinant indicators.

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Achieving lasting and substantial population health improvements requires a concerted effort by many entities, including primary care and public health (Institute of Medicine, 2012). The use of a common set health outcomes and determinants for community assessment can facilitate these lasting and substantial improvements by creating a shared understanding of the factors that affect population health and by galvanizing local multisectoral partnerships to action.

Ideally, a core set of health outcomes and determinants with standardized indicators for each would be based on additional considerable research, developed through extensive dialogue using a consensus-based process, and reflective of a convergence of national, state, and local priorities (Institute of Medicine, 2011).

The metrics identified here reflect the current understanding of important modifiable population health determinants. This resource additionally provides links to readily available sources of community-level indicators as well as existing CHA guidance and practices. As such, this resource is designed to meet the needs of health departments, nonprofit hospitals, and other organizations that are conducting CHAs now.

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Appendices

Appendix A:

Guidance Documents or Web-based Resources

1. Association for Community Health Improvement (2007). Community Health Assessment Toolkit.
<http://www.assesstoolkit.org/>

The Association for Community Health Improvement (ACHI) is a professional organization established in 2002 and affiliated with the American Hospital Association. As part of their mission to improve community health through education, they developed the ACHI Community Health Assessment Toolkit as a guide for planning, leading and using community health needs assessments to gauge the health of communities. The toolkit includes six steps that serve as a framework for conducting assessments as well as case examples and resource links.

2. Catholic Health Association (2011). Assessing & Addressing Community Health Needs.
<https://www.vha.com/AboutVHA/PublicPolicy/CommunityBenefit/Documents/AssessingAddressingCH.pdf>
http://www.chausa.org/Assessing_and_Addressing_Community_Health_Needs.aspx

The Catholic Health Association of the United States (CHA) was founded in 1915 as a ministry of the Roman Catholic Church. CHA is the largest group of nonprofit healthcare providers in the United States, representing 600 hospitals and over 1400 long-term care facilities. For over 20 years, CHA has been a leader in providing resources to assist nonprofit health care organizations in fulfilling their community benefit mission. That mission includes programs and services designed to improve health in communities and increase access to health care.

In response to the new ACA requirements, CHA developed a 2011 guidance document in collaboration with VHA Inc. and the Healthy Communities Institute. Using CHA's previous work, the experience of community benefit professionals and public health expertise, they offer practical advice on how hospitals can work with community and public health partners to assess community health needs and develop effective strategies for improving health in our communities.

3. Durr, J.S., Bailey, L.A., & Stoto, M.A. (Eds.) Institute of Medicine, Division of Health Promotion and Disease Prevention (1977). *Improving Health in the Community: A Role for Performance Monitoring*. Washington, D.C.: National Academies Press. <http://www.nap.edu/openbook.php?isbn=0309055342>

This report from the IOM Committee on Using Performance Monitoring to Improve Community Health is based on a two-year study to understand how a performance monitoring system could be used to improve the public's health. Specific strategies include identifying the range of actors that can affect community health, monitoring the extent to which their actions make a constructive contribution to the health of the community, and promoting policy development and collaboration between public and private sector entities. The report proposes an iterative and evolving community process for health improvement efforts in which performance monitoring is a critical tool for establishing meaningful stakeholder accountability. It also includes a set of indicators or community profile that can provide background information needed to understand a community's health issues and identify specific problems they want to address. In addition, the IOM report introduced three important notions about community health assessment and improvement: (1) awareness and appreciation of the nature of health and its determinants, (2) placement of greater importance on community perspective, and (3) interest in utilizing performance measurement to improve the quality of health and other services in public and private settings.

4. Institute of Medicine, Committee on Public Health Strategies to Improve Health, Board on Population Health and Public Health Practice. (2011). *For the Public's Health: The Role of Measurement in Action and Accountability*. Washington, D.C., National Academies Press.
https://download.nap.edu/catalog.php?record_id=13005

To assist with achieving the goals of the Patient Protection and Affordable Care Act (PPACA) of 2010, the committee reviewed “population health strategies, associated metrics, and interventions within the context of a reformed health care system.” In developing the report, the committee concluded that without an “ecologic population-based approach to health improvement,” improving healthcare delivery through PPACA provisions would have a minimal impact on the Nation’s health. The committee recommended development of a currently lacking “coherent template for population health information that could be used to understand the health status of Americans and to assess how well the nation’s efforts and investments result in improved population health.” Additionally, the report recommended “the Department of Health and Human Services support and implement the following to integrate, align, and standardize health data and health-outcome measurement at all geographic levels: (1) a core, standardized set of indicators that can be used to assess the health of communities; (2) a core, standardized set of health-outcome indicators for national, state, and local use; and (3) a summary measure of population health that can be used to estimate and track health-adjusted life expectancy for the United States.”

5. Missouri Department of Health (2002). *Community Health Improvement Resources (CHIR)*
<http://health.mo.gov/data/chir/>

The Missouri Department of Health, with funding from the Missouri Foundation for Health and the Centers for Disease Control and Prevention, designed an online interactive planning system--Community Health Improvement Resources (CHIR), for public health practitioners and community stakeholders. CHIR uses a data driven, evidence-based public health process to guide decision-making, priority setting and intervention planning through 7 components of the health improvement process: Partnership, Assessment, Readiness, Capacity, Intervention MICA, Evaluation, and Momentum. The Data Missouri Information for Community Assessment (Data MICA) is an interactive system that allows users to query state and local health information from 20 databases for information on births, pregnancies, deaths, hospital discharges, ED visits, cancer incidence, Behavioral Risk Factor Surveys, etc. The user is given the choice to select condition and demographic variables by county or ZIP code of residence.

6. National Association of County and City Health Officials (NACCHO) (2001). Mobilizing for Action through Planning and Partnerships (MAPP). <http://www.naccho.org/topics/infrastructure/mapp/framework/>

Mobilizing for Action through Planning and Partnerships (MAPP) was developed by NACCHO and CDC from 1997 to 2001 as a community-driven strategic planning process for improving community health. It allows communities to strategically prioritize public health issues and identify resources to address them with facilitation by public health leaders. MAPP is an interactive 6- phase process that can improve the efficiency, effectiveness, and ultimately the performance of local public health systems. Phase 3 of MAPP includes the Community Health Status Assessment (CHSA), which provides guidance on six identified steps including preparation; data collection; selection of locally appropriate indicators; data analysis, interpretation, findings dissemination; establishment of a monitoring system; and identification of health status-related challenges and opportunities. CHSA resources include a list of 25 indications that should be assessed as well as additional indicators of health outcomes and risk factors organized into 11 broad-based categories including demographics; socioeconomic characteristics; health resource availability; quality of life; behavioral risk factors; environmental health indicators; social and mental health; maternal and child health; death, illness and injury; infectious disease; and sentinel events. Community health issues are identified by collecting and analyzing data for each of the categories and tracking the changes over time or examining differences among population subgroups. The results of the CHSA enable the MAPP Committee, defined as a group of 15-20 community representatives who guide the entire process, to incorporate specific health status issues among the community’s health priorities.

7. New York State Department of Health (2008). *2010-2013 Community Health Assessment Guidance*.
<http://www.health.ny.gov/statistics/chac/nysguidance.htm>

The New York State Department of Health (NYSDOH) provides guidance for performing iterative, interactive community health assessments (CHAs). The recommended process includes describing the health of the community by presenting health status information and identifying target populations that may be at increased risk of poor health outcomes. The CHA is designed to gain a better understanding of the community's needs and gaps and how to address them appropriately.

In addition to documenting the health of the community, the NYSDOH CHAs are designed to serve several other purposes for health departments: planning and evaluating programs, identifying overlapping health-related activities within the community, justifying budget appropriations and program development, disseminating to the public information about community health needs, providing accounting or staffing needs, publicizing important health outcome measures, giving technical assistance to other agencies including needs assessment for categorical grants, enabling local health departments to identify health improvement activities to be undertaken by community partners, and fulfilling legal and regulatory requirements.

8. North Carolina Division of Public Health Office of Healthy Carolinians and Health Education and the State Center for Health Statistics (2010). *Community Health Assessment Guide Book*.
<http://publichealth.nc.gov/lhd/cha/docs/CHA-GuideBookUpdatedDecember15-2011.pdf>

The North Carolina Division of Public Health has developed the North Carolina Community Health Assessment (CHA) Process with an accompanying Guide Book and Data Book. CHA is required of public health departments in the consolidated agreement between the North Carolina Division of Public Health and local public health departments and for local public health department accreditation through the North Carolina Local Health Department Accreditation Board. (G.S. § 130A-34.1).

The CHA process identifies health factors that affect the population and determines the availability of resources within the county (community) to address these factors adequately. The Guide Book recommends that county residents take the lead role in forming partnerships, gathering health-related data, determining priority health issues, identifying resources, and planning community health programs. Recommended partners in CHA community coalitions include county leaders, public health agencies, businesses, hospitals, medical providers, academic centers, and others interested in community health.

The CHA eight-phase process is a repetitive, four-year cycle. Year 1 includes the health assessment process: planning the assessment, gathering the necessary data and information and developing and submitting an annual report of health concerns and actions to the Community Assessment Branch of the North Carolina Division of Public Health. During the first half of Year 2, community health action plans are developed and their implementation begins. The remainder of Year 2 and Years 3 and 4 focus on implementation and evaluation of the community action plans. At the end of Year 4, it is time to repeat the cycle to consider the health assessment process, evaluate the interventions of the previous community health action plans, and determine current health concerns and resources. The Community Health Assessment is submitted by the local health departments every four years for local health department accreditation by the state.

9. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention National Center for Chronic Disease Prevention and Health Promotion (1992). *Planned Approach to Community Health: Guide for the Local Coordinator*.

The Planned Approach to Community Health (PATCH) concept emerged in 1983 as a cooperative agreement program funded by the CDC to enhance state and local health departments' ability to take an organized, planned approach to community-based interventions [32]. The PATCH planning model was developed by CDC in partnership with state and local health departments and community groups. The 1992 Report includes a Concept Guide with information and tools for implementing the PATCH process; a Meeting Guide, designed to assist with planning and conducting the community group meeting throughout the process; and the Visual Aids packet, with camera-ready copy of overheads and handouts. Steps of the PATCH process include establishing a health promotion team; assessing community health status by collecting and analyzing local data; setting health priorities; and designing, implementing and evaluating interventions.

10. World Health Organization. (2001). *Community Health Needs Assessment - An introductory guide for the family health nurse in Europe*. http://www.euro.who.int/_data/assets/pdf_file/0018/102249/E73494.pdf

The World Health Organization developed a document targeting the family health nurse that describes the ways in which health needs assessment can identify priority health needs, target resources to address inequalities and involve local people. The family health nurse in Europe is a health care provider in local communities who plays a role throughout the individual's life course and along the entire health–illness continuum, with particular attention to the needs of the most vulnerable groups in society. This document offers a comprehensive tool to assist the family health nurse in performing community, individual, and family needs assessments

Appendix B:

Existing Sources of Community-Level Indicators

Community Health Needs Assessment, <http://www.CHNA.org>

The CHNA tool is a free web-based platform designed to assist hospitals, nonprofit organizations, state and local health departments, financial institutions, and other organizations seeking to better understand the needs and assets of their communities, and to collaborate to make measurable improvements in community health and well-being. The tools and resources on this site support a rigorous assessment of the determinants of health and current health status of communities, the identification of resources that exist in communities, and the fostering of public dialogue and collective action at scale. Answers to inquiries are available in multiple forms, including narrative, graphic, and mapping format, building a more complete and easy to interpret set of findings to share with others. The Full Health Indicators Report is a feature particularly useful for community assessments. After selecting one or more counties, the user is presented with indicators for the following.

- demographics
- social and economic factors
- physical environment
- clinical care
- health behaviors
- health outcomes

In addition to stratifying indicators by race/ethnicity or age where available, some indicators are also provided and/or mapped for geographies below the county level. For example, census tract data are available for population density, demographics, linguistically isolated populations, poverty, education, and food deserts.

CHNA.org is powered by IP3, a nonprofit organization based in Missouri. Current collaborative partners include United Way Worldwide, Kaiser Permanente, ASTHO, County Health Rankings and Roadmaps, Public Health Institute, CDC, NACCHO, the Robert Graham Center, AHA, Community Catalyst, the University of South Maine, the Boston Indicators Project, CMS, the Kansas Health Institute, the Catholic Health Association, IHI, Trinity Health, and the National Business Coalition on Health.

County Health Rankings and Roadmaps: A Healthier Nation County by County, <http://www.countyhealthrankings.org/>

The University of Wisconsin's Population Health Institute (UWPHI), with funding from the Robert Wood Johnson Foundation, hosts the *County Health Rankings and Roadmaps (Rankings)* website. The *Rankings* are based on a model of population health that emphasizes the many factors that, if improved, can make communities healthier places to live, learn, work and play. Annual rankings of counties within each of the 50 states are based on an index of health outcomes (morbidity and mortality) and a related index of modifiable health determinants with measures of health care access and quality, health behavior, socioeconomic factors, and environmental conditions. The *Rankings* are compiled using county-level measures from various data sources. They are then standardized and combined using scientifically informed weights and finally ranked within each state.

Note: When using the *Rankings* for community assessment and population health improvement it is important to understand the source and methodology for each of the indicators. For example, several of the health outcome and determinant indicators are based on seven-year rolling averages of self-reported survey data.

Community Health Status Indicators, <http://www.communityhealth.hhs.gov/>

Several federal agencies including the CDC, the National Institutes of Health/National Library of Medicine, and the Health Resources and Services Administration partnered with non-governmental public health organizations including the Public Health Foundation, the Association of Health and Territorial Health Officials, the National Organization of County and City Health Officials, the National Association of Local Boards of Health, and the Johns Hopkins School of Public Health to develop the *Community Health Status Indicators (CHSI)* project with the Robert Wood Johnson Foundation. The goal of the CHSI project is to provide an overview of key measures of health (average life expectancy, all causes of death, self-rated health status, and average unhealthy days) for local communities and to encourage dialogue about actions that can be taken to improve a community's health. The CHSI report was designed not only for public health professionals but also for members of the community who are interested in the health of their community. The CHSI report contains over 200 health indicators, including risk factors, personal behaviors, and lifestyle choices for each of the 3,141 United States counties. Each county report permits comparisons of a county's health status with similar "peer counties," with all counties, and with national Healthy People 2010 objectives. The database is accessible and downloadable and community education materials can be generated from the report through the website (U.S. DHHS, a).

Note: When using the CHSI for community assessment and population health improvement it is important to understand the source and methodology for each of the indicators. For example, several of the health outcome and determinant indicators are based on 3-, 5-, or 10-year averages of self-reported survey data depending on the size of the county.

U.S. Census Bureau, <http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml>

The U.S. Census Bureau's (Census Bureau) website features over 6,300 data items for the United States, states, and counties from a variety of sources. The Census Bureau surveys the entire population every 10 years and surveys population-based samples in intervening years. The Census Bureau estimates the size of the population by age, sex, race, and Hispanic origin for the nation, states, and counties; estimates the total population of functioning governmental units; and estimates the number of housing units for states and counties annually.

SMART: BRFSS City and County Data: Selected Metropolitan/ Micropolitan Area Risk Trends, <http://apps.nccd.cdc.gov/BRFSS-SMART/>

The Behavioral Risk Factor Surveillance System (BRFSS) was created by the CDC to collect information on health risk behaviors, preventive health practices, and health care access primarily related to chronic disease and injury. Surveys are conducted via telephone within each state. The *Selected Metropolitan/Micropolitan Area Risk Trends (SMART)* project was an outgrowth of BRFSS from the burgeoning number of respondents who made it possible to produce prevalence estimates for smaller statistical areas. These areas included metropolitan areas of 50,000 or more inhabitants and micropolitan areas comprised of at least one urban cluster of 10,000-50,000 inhabitants. These SMART data can be used to identify trends of emerging health issues within specified local micropolitan and metropolitan areas smaller than the county level (U.S. DHHS, b).

CDC WONDER, <http://wonder.cdc.gov/>

The CDC developed user-friendly, integrated information and communication system, *Wide-ranging Online Data for Epidemiologic Research (WONDER)*, for public health professionals and the public to access the public health information resources of the CDC. CDC WONDER is valuable for public health research, decision-making, priority setting, program evaluation, and resource allocation. The user is able to access statistical research data, references, reports and guidelines published by CDC while querying numeric data sets on CDC's computers. The data easily interfaces with desktop applications in several formats (U.S. DHHS, c).

Health Indicators Warehouse, <http://healthindicators.gov/>

The U.S. Department of Health and Human Services (HHS) *Health Indicators Warehouse* is a database of high-quality data sources for national, state, and community health indicators linked to evidence-based interventions. The *Health Indicators Warehouse* is maintained by CDC's National Center for Health Statistics with support and funding from HHS, the Centers for Medicare & Medicaid Services, and the Health Resources and Services Administration. A user can filter and display data by age, sex, race, and ethnicity where available. The database contains the most recent data available for tracking Healthy People 2020 objectives – including sociodemographic data by race, Hispanic origin, sex, education, income, family type, age, country of birth, disability, geographic location, marital status, and selected other characteristics. Frequently updated indicators are available for HIV prevalence at the national, state, and county levels; select notifiable disease counts and rates at the state and county levels; counts of Medicare participating facilities at the state and hospital referral region level; Medicare and Medicaid expenditures and managed care participation at the national and state level, and many indicators from the Behavioral Risk Factors Surveillance System (BRFSS), at the state level as well as the county level when combining seven years of data.(U.S. DHHS, d).

Dartmouth: Atlas of Health Care, <http://www.dartmouthatlas.org/>

The *Dartmouth Atlas Project (DAP)* began in 1993 as a study of health care markets in the United States, measuring variations in health care resources and their utilization by geographic areas: local hospital market areas, hospital referral regions, and states by the Dartmouth Institute from Dartmouth College. More recently, the research agenda has expanded to reporting on the resources and utilization among patients at specific hospitals. *DAP* research uses very large claims databases from the Medicare program and other sources to define where Americans seek care, what kind of care they receive, and to correlate increasing expenditures and the supply of health providers and services with health outcomes. The database contains information on Medicare spending and on Medicare utilization of selected services, providers, and facilities, by state, local, and regional market areas; by selected subpopulations of Medicare beneficiaries, including decedents and chronically ill beneficiaries; and by providers. The database also allows users to compare quality measures across hospitals [37].

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