

Advancing Measurement for High-Risk Populations and Communities Related to Childhood Obesity



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Advancing Measurement for High-Risk Populations and Communities Related to Childhood Obesity: Implications and Recommendations for the Field

EXECUTIVE SUMMARY

Background

The National Collaborative on Childhood Obesity Research (NCCOR) is a public-private partnership of four leading research funders—the Centers for Disease Control and Prevention (CDC), National Institutes of Health (NIH), Robert Wood Johnson Foundation (RWJF), and the U.S. Department of Agriculture (USDA)—that addresses childhood obesity through research and evaluation and dissemination of research findings.

NCCOR aims to make an impact on childhood obesity research by creating tools for researchers and practitioners, building knowledge on key research topics, engaging with leading experts to advance research and novel implementation and evaluation approaches, and disseminating knowledge to the field. From its inception, a key priority for NCCOR has been to promote the common use of valid, standardized measures and methods across childhood obesity research, evaluation, and surveillance efforts. This includes identification of measures and methods to assess individuals, families, and policy and environmental factors that influence obesity prevention, development, and treatment.

On September 23–24, 2019, NCCOR convened a workshop entitled “Advancing Measurement for High-Risk Populations and Communities Related to Childhood Obesity.” This workshop was the second in a series of three workshops on measuring childhood obesity and related factors. The workshop focused on identifying priorities for measurement in high-risk populations, with an emphasis on children, families, and their communities at high risk of obesity. The other two workshops in the series focused on understanding the role of individual, policy, and environmental influences when measuring childhood obesity.

Workshop Aims

The workshop aimed to convene leading research and practice experts to (1) illustrate current challenges, needs, and gaps in measurement for high-risk populations; (2) discuss current practices used to adapt existing measures and develop new measures for high-risk populations; and (3) develop short-term (1–3 years) and medium-term (3–5 years) recommendations for NCCOR, researchers, practitioners, and funders to address measurement gaps.

Workshop Proceedings

Thirteen researchers and practitioners with subject matter expertise in measurement, childhood nutrition, physical activity, obesity, and related factors were invited to participate in the workshop. The first day of the workshop consisted of a series of panel presentations examining why measurement of high-risk children, families, and communities needs to be conducted differently from measurement in other populations and communities, and particularly how social determinants of health (SDoH) can be incorporated into measurement approaches. Moderated discussions followed each group of related presentations. The day concluded with small group sessions in which participants discussed priorities for measuring SDoH in high-risk populations.

On the second day, participants heard expert panel presentations on needs for individual- and environmental-level measures for high-risk populations, focusing on children and families. Following the presentations, attendees split into small group sessions in which participants discussed actionable steps to address short-term (1–3 years) and medium-term (3–5 years) measurement needs for diet and physical activity in high-risk populations. The day concluded with prioritizing recommendations compiled from both workshop days in the areas of SDoH, diet, and physical activity. The top recommendations included the following: (1) develop new, and adapt existing, measures for high-risk groups, (2) develop methods and guidance to accommodate the need to balance standardization against tailoring, (3) support efforts to ensure that measures and their implementation reflect cultural competence and cultural humility, and (4) develop ways to share current work to improve learning and leverage existing research and implementation practices.

Next Steps

This white paper can be accessed on the NCCOR website at <https://www.nccor.org/measurement-workshop-series/>. White papers for the other two workshops will be available on the NCCOR website. In addition, NCCOR plans to publish a synthesis of findings and recommendations from the three workshops in the scientific literature.

It is anticipated that recommendations from these workshops will advance development of improved measures that can be used across a range of research, surveillance, and intervention activities related to diet, physical activity, and childhood obesity by addressing the many levels of influences such as social determinants that

impact the onset and progression of childhood obesity. NCCOR aims for these efforts, along with the work of other strategic activities, to facilitate research and interventions that help reduce health inequities associated with childhood obesity.

Background

One of NCCOR's main goals is to create tools and resources to aid in efforts to effectively assess diet, physical activity, and other factors related to community-based childhood obesity prevention, research, and practice. A key priority, therefore, is promoting the common use of high-quality, standardized measures for research, evaluation, and surveillance efforts. Valid, standardized measures are critical for efforts to characterize and identify the many factors influencing childhood obesity and healthy weight, develop effective interventions, assess intervention outcomes, and evaluate the implementation of such interventions in practice.

Through the [Measures Registry](#), NCCOR has catalogued an extensive list of measures currently being used in the field. However, significant knowledge gaps remain. Assessments of the Measures Registry indicated that few measures exist for some high-risk populations and settings or take into account cultural differences within populations groups.^{1,2} Additionally, few measures exist for children with disabilities or other special health care needs, and fewer measures are available for rural than for urban populations.²

To help advance progress in the development of measures where gaps exist, NCCOR hosted a series of three workshops to explore next steps for measurement science relevant to childhood obesity. The first and last workshops in the series focused on understanding the role of individual, policy, and environmental influences when measuring childhood obesity.

This white paper describes the second workshop, which covers childhood obesity-related measurement issues for high-risk populations. The workshop focused on the following key topics: reasons why high-risk populations need to be measured differently from other populations; the critical role that culture plays in developing measurement approaches; ways to best incorporate social determinants of health, culture, and context into measurement development; and specific needs for diet and physical activity measurement in high-risk populations.

Defining “High-Risk Populations”

High-risk populations are children and their families residing in communities where the risk of obesity and related comorbidities may be highest.

Factors related to high-risk for obesity include an individual's race and ethnicity, education, income, urbanicity, region of the country, and disability status and exposure to health hindering policies, social conditions, and environments such as economic or neighborhood disadvantage.

1 IOM (Institute of Medicine). 2013. Evaluating obesity prevention efforts: A plan for measuring progress. Washington, DC: The National Academies Press.
2 Foti K, Perez CL, Knapp EA, Kharmats AY, Sharfman AS, Arteaga SS, et al. Identification of measurement needs to prevent childhood obesity in high-risk populations and environments. *Am J Prev Med*. In Press

SESSIONS

Overview of Measurement Needs Related to Childhood Obesity for High-Risk Populations and Environments; Emerging Domains for Future Research

Session 1: Why Do We Need to Measure Children/Families in High-Risk Populations Differently?

Session 2: Incorporating Cross-Cutting Social Determinants of Health Into Measures of Individual Diet and Physical Activity and Environments in High-Risk Populations

Session 3: Individual- and Environmental-Level Diet-Related Measurement Needs for High-Risk Populations

Session 4: Individual and Environmental Physical Activity Measurement Needs for High-Risk Populations

Describing the Measurement Issues and Challenges

To set the stage for the presentations and discussions, the workshop opened with a presentation on a review of NCCOR's Measures Registry, conducted during Summer 2019. The review was conducted to update a 2013 Institute of Medicine [report](#) that reviewed the 174 behavioral- and environmental-level measures related to high-risk populations out of the 893 total measures contained in the Registry. The 2019 review identified measures added to the Registry since 2013 that are used among high-risk populations and discussed methods used in these measures for adapting and validating the measures. Since 2013, nearly 500 measures have been added to the Measures Registry, but only 38 measures met criteria related to use in high-risk populations. Of these 38 measures, 30 assessed individual behaviors; 25 assessed individual dietary behaviors, and 13 assessed individual physical activity behaviors (eight assessed both). Eleven measures assessed environmental-level determinants of obesity; eight assessed the food environment and seven assessed the physical activity environment (four assessed both). As for populations studied, Hispanic and African American populations were most commonly measured in both the individual-level and environmental-level.

The report also examined emerging measurement domains that influence childhood obesity in high-risk populations and environments and that present promising targets for future research. The workshop presentations focused on this last objective, which is described in more detail next. Drs. Wendy Bennett and Kathryn Foti presented the findings from the report.

During subsequent sessions, expert speakers and participants discussed issues, challenges, and needs in measurement development and use for high-risk populations and described new advances in research and practice. Moderated discussions with two discussants, one representing a research perspective and the other a practice perspective, followed each group of related presentations. Each presentation is summarized in this section of the white paper. The following section, beginning on page 15, synthesizes cross-cutting themes that emerged from the presentations and participants' discussions and highlights priorities and recommendations for actionable steps to address short- and medium-term measurement needs for high-risk populations.

Overview of Measurement Needs Related to Childhood Obesity for High-Risk Populations and Environments; Emerging Domains for Future Research

Importance of This Topic for Childhood Obesity

Researchers and practitioners may find that some populations may respond to interventions and assessments in unexpected ways because their cultural practices and context were not appropriately considered in advance, which may affect the feasibility and effectiveness of interventions and the accuracy and reliability of research and surveillance. [Assessments of available measures](#) have identified many gaps. Valid, reliable measures of diet, physical activity, and other obesity-related individual- and environmental-level risk factors are needed to more appropriately assess high-risk populations of children, families, and their communities.

Ten emerging measurement domains in the scientific literature are pertinent to high-risk populations beyond traditional measures of diet and physical activity. Seven pertain to measurement of individual-level factors: food insecurity, sleep, sedentary and screen time behaviors, early life and pregnancy exposures, adverse childhood experiences and child mental health, English proficiency and acculturation, and the home environment and parenting practices. Three pertain to environments: social vulnerability of communities, neighborhood safety and deprivation, and rurality vs. urbanization. Moving forward, it will be important to assess these emerging domains to understand their effects on childhood obesity in high-risk populations.

Key Challenges

Few or no measures exist for key populations, such as Asians, American Indians/Alaska Natives, Hawaiian/Pacific Islanders, children with special health care needs, children and adolescents who identify as gender or sexual minorities, and rural populations. In addition, measures that can help identify important variation within high-risk populations are often missing in general population assessments and analyses even though they can influence outcome and behavior assessment. Finally, methods for cultural adaptation, translation, and validation are lacking or may vary across studies.

SESSION 1: WHY DO WE NEED TO MEASURE CHILDREN/FAMILIES IN HIGH-RISK POPULATIONS DIFFERENTLY?

1

Why Do We Need to Measure High-Risk Populations with a Focus on Children/Families Differently?



Shiriki Kumanyika, PhD, MPH, Drexel University

2

When Does Culture Matter in Measurement?



Karen Peterson, ScD, University of Michigan School of Public Health

3

Achieving Cultural Resonance for Research Methods Through Community Partnership



Stella Yi, PhD, MPH, New York University School of Medicine



Discussants:

Mahasin Mujahid, PhD, University of California Berkley

Chris Espersen, MSPH, Safety Net Consultant

1

Why Do We Need to Measure High-Risk Populations Differently?

Shiriki Kumanyika

Importance of This Topic for Childhood Obesity

High-risk populations differ from other populations, including by demographic characteristics, historical and social contexts that influence an individual's lived experiences and perspectives, exposure to risk factors, access and response to interventions, and trends in obesity prevalence. Understanding these differences is key to accurately assessing relationships among demographic variables, environmental contexts, caregiver and child behaviors, and child outcomes and designing effective interventions; thus, it is essential that both researchers and practitioners answer the question, "When do differences matter from a measurement perspective?"

Key Challenges

Differences in high-risk populations may be a challenge for measurement because they can affect the interpretation of questions or influence a participants' response. Other challenges include understanding the nature of, range of, and variability in potential responses, and respondents' comprehension of survey items, which is affected by linguistics, literacy, and numeracy. Other factors to be considered include ways in which to standardize measures used to compare diverse populations versus those used within a single population, and how to handle intersectionality (the interactions between different aspects of high-risk within the same person, such as being both black and low-income).

2

When Does Culture Matter in Measurement?

Karen Peterson

Importance of This Topic for Childhood Obesity

Culture is a set of learned beliefs, traditions, and principles that guide individual and collective behaviors that members of a particular group commonly share with each other. Public health frameworks used in child obesity research and programs, including the social contextual model³ and the CDC's Framework for Program Evaluation,⁴ offer "built-in," though often underutilized, opportunities to identify measures of culture that have implications for research and practice. Qualitative research methods, such as in-depth individual and focus group interviews, and robust analyses, have been harnessed to capture cultural nuances relevant to childhood obesity.

Key Challenges

Cultural values vary across and within racial/ethnic groups and other cultural subgroups and have different implications for survey response tendencies, which can contribute to bias in studies. In addition, measures of acculturation that are feasible for use in health promotion settings may not capture nuances of the immigrant experience or changes in identification with a host culture and culture of origin across diverse racial and ethnic groups and subgroups. Another challenge is the need for researchers to integrate cultural competence and cultural humility into their methods to enhance the ability to engage stakeholders and potentially improve stakeholder-driven research that yields relevant approaches, outcomes and solutions. A final challenge relates to the need for standardization of measures across studies. However, mixed method approaches, which may be valuable for studies in high-risk populations, may be most relevant in specific contexts and not necessarily yield comparable approaches across different populations.

3

Achieving Cultural Resonance for Research Methods Through Community Partnership

Stella Yi

Importance of This Topic for Childhood Obesity

Although prevalence of obesity is overall lower in Asian American children compared with children in other ethnic and racial groups, there is significant heterogeneity in obesity prevalence in different Asian American subgroups. For some of the subgroups, including Filipino Americans and Southeast Asian Americans, it is a significant public health issue for this community that is understudied. A focus on obesity among Asian American children is needed for five reasons. First, current definitions of overweight and obesity may underestimate the true burden of the cardiometabolic effects of obesity in Asian Americans. Second, overweight and obesity prevalence is not homogeneous across Asian American subgroups. Third, the systems that contribute to obesity among Asian American children include distinctive factors, such as grandparents as primary caretakers, residence in low-income urban enclaves, dietary acculturation practices, dietary cultural norms, and attitudes that obesity does not

apply to Asian American children. Fourth, Asian American children tend to have low levels of physical activity and unique dietary patterns. Fifth, Asian American children and families are not considered a health disparate population and are one of the most understudied racial and ethnic populations in the United States.

Key Challenges

A key challenge is the lack of health outcome data on Asian American children that accurately reflect the wide diversity of risk in this population. Perceptions that conducting research among this population is resource intensive and difficult add to the challenge, as does a perception that research in this group has poor generalizability and limited potential for dissemination. Finally, deep cultural adaptations of materials and interventions, beyond linguistic translation, are needed but often lacking.

3 Sorensen G, Emmons K, Hunt MK, Barbeau E, Goldman R, Peterson K, Kuntz K, et al. Model for Incorporating Social Context in Health Behavior Interventions: Applications for Cancer Prevention for Working-Class, Multiethnic Populations. *Prev. Med.* 2003 Sep;37(3):188-97

4 Centers for Disease Control and Prevention. Framework for program evaluation in public health. *MMWR* 1999;48 (No. RR-11)



Discussants: Summing Up and Providing Context to the Presentations

Session I moderator, Shiriki Kumanyika, invited two discussants to comment on the need to measure high-risk populations differently from other populations:

- **Mahasin Mujahid** provided a research perspective, noting that even if it were possible to identify a “best measure” for use in high-risk populations, tailoring would still be necessary to ensure measurement of the same construct across populations. A need also exists to better understand intersectionality and its effects on intervention outcomes. In addition, although it is useful to shift thinking away from a population’s risk to celebrating their resilience, it is important to acknowledge the potential health costs of the effort and energy required to overcome adversity.
- **Chris Espersen** provided a practice perspective, explaining that for patients at Federally Qualified Health Centers (FQHCs), trust is critical and is frequently an obstacle due to staff’s lack of cultural humility, as well as exposures to historical discriminatory practices and enduring structural racism, immigration raids, and marketing of unhealthy behaviors targeted at minority and low-income communities. Patients’ unmet health-related social needs, i.e., adverse SDoH, increase their risk for obesity. Although FQHCs have collected race and ethnicity demographic data for years, many patients do not identify with census definitions. Preferred language and country of origin, which can help in collecting demographic data, tend to become less useful with increased acculturation.

SESSION 2: INCORPORATING CROSS-CUTTING SOCIAL DETERMINANTS OF HEALTH INTO MEASURES OF INDIVIDUAL DIET AND PHYSICAL ACTIVITY AND ENVIRONMENTS IN HIGH-RISK POPULATIONS

1

Measures Related to Social Determinants of Health in the PhenX Toolkit



Nancy Breen, PhD, National Institute of Minority Health and Health Disparities,
National Institutes of Health

2

Measures Related to Obesity: The Environmental influences on Child Health Outcomes (ECHO) Program



S. Sonia Arteaga, PhD, Office of the Director, National Institutes of Health

3

Recommendations for Cultural and Linguistic Adaptations of Instruments for Children and Families



Teresia O’Connor, MD, MPH, Baylor College of Medicine

4

Validity and Reliability of Measures for Children and Families



Sharon Kirkpatrick, PhD, RD, University of Waterloo



Discussants:

Lisa Goldman-Rosas, PhD, MPH, Stanford University
Lindsey Lunsford, MEM, PhD, Tuskegee University

1

Measures Related to Social Determinants of Health in the PhenX Toolkit Nancy Breen

Importance of this Topic for Childhood Obesity

The [PhenX Toolkit](#) is an NIH-funded, web-based catalogue that provides recommended standard data collection protocols for conducting biomedical research. The National Institute for Minority Health and Health Disparities (NIMHD) is leading a collaborative process to conceptualize key structural domains and contexts—structural SDoH—that are relevant to high-risk populations, identify existing validated measures, and incorporate them into a supplement to the PhenX Toolkit. The 10 proposed elements for the supplement cover the built environment; economic resources; structural racism, hierarchy, and

discrimination; employment status; occupational health and safety; education; environmental exposures; food and nutrition; health care availability and access; and sociocultural community context.

Key Challenges

Identifying measures for these SDoH and compiling these and other closely related measures already in PhenX into a single module for easy use by researchers is challenging because of the breadth of measures and the lack of standard definitions.

2

Measures Related to Obesity: The Environmental Influences on Child Health Outcomes (ECHO) Program S. Sonia Arteaga

Importance of this Topic for Childhood Obesity

In 2016, NIH established the [Environmental influences on Child Health Outcomes \(ECHO\)](#), which aims to answer questions about the effects of a broad range of early environmental exposures on child health and development through cohort studies. Obesity and positive child health are among the health outcomes of interest. The 71 ECHO cohorts consist of more than 50,000 children from diverse backgrounds. Although ECHO and its measures were not designed specifically to examine high-risk populations, the measures were chosen because they could be assessed within broad, diverse populations.

Key Challenges

For any study, including ECHO, the most appropriate measures depend upon the goals of the research. These goals dictate how different considerations, such as burden, cost, and generalizability, must be addressed. A key challenge is ensuring that the measures selected are sensitive to change over time across the lifespan and recognizing that those measures most relevant to childhood obesity may vary by population.

3

Recommendations for Cultural and Linguistic Adaptations of Instruments for Children and Families Teresia O'Connor

Importance of this Topic for Childhood Obesity

Accurately measuring children's physical activity, dietary intake, and associated environmental variables is critical. Culturally and linguistically appropriate assessments are essential for high-risk groups. These assessments can be done in three ways: (1) use an existing instrument, (2) develop a study-specific instrument, and (3) adapt an existing instrument. The first approach is generally taken because the other two are time-consuming and costly. Best practices have been developed for adapting instruments, and these can be applied to measures of individual diet and physical activity and environments.

Key Challenges

Little to no evidence exists to determine the minimum adaptation required to result in a psychometrically sound and culturally appropriate instrument. Additionally, few instruments have undergone extensive cultural adaptation and testing among the high-risk groups in which they are used. Another challenge is that the variables associated with SDoH may introduce errors into potential new objective tools to measure diet, physical activity behaviors, and associated environmental variables.



4 Validity and Reliability of Measures for Children and Families

Sharon Kirkpatrick

Importance of this Topic for Childhood Obesity

The aim of validation is to examine whether a given measure provides useful data for a given purpose and context, such as childhood obesity. To do so, the measure must be grounded in an understanding of the construct of interest within the given population and context. It also must provide data that are accurate and precise within specified ranges of factors such as age, ethnicity, geographic location, etc. Assessing validity and reliability requires considering multiple pieces of evidence, with that evidence and the resulting inferences specific to the population and setting in which it was generated.

Key Challenges

Validation research is often not conducted in diverse populations, and when it is, findings are usually not disaggregated across groups. A range of terms are used, sometimes synonymously (and potentially incorrectly). Procedures used also vary and sometimes do not support assertions of validity and reliability. These limitations make it difficult to synthesize what is known about the usefulness (or lack thereof) of measures among different populations. Another challenge is that tests of validity or reliability are often used to conclude a measure is either valid/not valid or reliable/not reliable, when in fact, these properties exist on a continuum. Rather than referring to a measure as binary, i.e., “valid” or “validated,” the focus should be on whether it provides useful data for a given purpose, population, and context.



Discussants: Summing Up and Providing Context to the Presentations

Session 2 moderator, S. Sonia Arteaga, invited two discussants to comment on incorporating SDoH into diet and physical activity measurement for high-risk populations:

- **Lisa Goldman-Rosas** provided a research perspective, reiterating the importance of building research capacity at the ground level so that communities can participate in initiating research questions, selecting measures, and disseminating results. Given communities’ experience with visible and explicit injustice, measurement tools must be implemented with sensitivity. Considering research goals, context, and make-up of the study population will all help in selecting and appropriately implementing the best measures.
- **Lindsey Lunsford** shared a practice perspective on how historical injustices and structural racism have contributed to discrimination toward the Black community, with corresponding negative impacts on health. Given a national legacy of social and racial injustices, African Americans remain one of the least healthy ethnic groups in the United States, while still facing challenges to equitable health care. Incorporating an understanding of the unique and often trauma- and stress-filled lived experiences of African Americans is necessary to develop culturally relevant measures of diet, physical activity, and environment.

SESSION 3: INDIVIDUAL- AND ENVIRONMENTAL-LEVEL DIET-RELATED MEASUREMENT NEEDS FOR HIGH-RISK POPULATIONS

1

Recommendations for Individual-level Measures of Diet as They Relate to High-Risk Populations



Uriyoán Colón-Ramos, ScD, MPA, The George Washington University

2

Recommendations for Environmental-level Measures of Diet as They Relate to High-Risk Populations



Erica Kenney, SCD, MPH, Harvard T.H. Chan School of Public Health

3

Recommendations for Social Determinants of Health Measures as They Relate to Diet and High-Risk Populations



Shreela Sharma, PhD, RD, LD, University of Texas Health Science Center at Houston, School of Public Health



Discussants:

Angela Odoms-Young, PhD, University of Illinois at Chicago

Carmen George, MS, Navajo Nation Community Outreach and Patient Empowerment Program

1

Recommendations for Individual-level Measures of Diet as They Relate to High-Risk Populations

Uriyoán Colón-Ramos

Importance of this Topic for Childhood Obesity

High-risk populations who are disproportionately burdened by poor nutrition, poor dental health, and obesity are often under-represented in validation studies of instruments. Surveys that have been developed and validated for mainstream populations may be limited in their ability to accurately capture dietary intake in high-risk, hard-to-reach populations.

Key Challenges

Access to high-risk communities and families is a key, and often understated, challenge for researchers aiming to accurately assess and represent dietary intake.

The systematic development or adaptation of instruments used in these assessments requires extensive knowledge of the dietary behaviors and beliefs for review and cognitive testing. Another challenge to assessing diet in these populations is that unfamiliar foods, brands, and package sizes available in the community may not be included in national food composition tables, and foods perceived to be cultural equivalents of standard American dishes may differ widely in preparation and nutrient content. Researchers may need to spend extra time and resources in improving data quality when working with high-risk populations.

2

Recommendations for Environmental-Level Measures of Diet as They Relate to High-Risk Populations

Erica Kenney

Importance of this Topic for Childhood Obesity

Very few measures have been adapted or specifically developed to measure the quality of the food environment for high-risk populations, and few validated measures exist for many specific groups and settings. Measures that capture variations in the types of foods and beverages that are available in different contexts can help to accurately describe quality in many settings and allow stronger comparisons and estimations of disparities. Consideration of policies and other factors that affect the food environment, and how policies or other programs and practices are implemented, is key to understanding the full context of food environment differences for high-risk populations and whether those differences are driven by health inequities.

Key Challenges

Measures that seek to document or describe disparities in the quality of the food environment should be evaluated to ensure that the construct being measured is being adequately conceptualized in different cultural contexts. Another challenge is to ensure that when the research question is about why disparities in the food environment persist, a broad perspective is included that takes into account other social and economic factors beyond just the types of foods and beverages available such as food assistance, job training, and deterrents such as discrimination, safety, and targeted food marketing.

3

Recommendations for Social Determinants of Health Measures as They Relate to Diet and High-Risk Populations

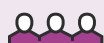
Shreela Sharma

Importance of this Topic for Childhood Obesity

Addressing social determinants is necessary to promote health, prevent disease, and achieve health equity for children and adults. Frameworks for SDoH can help anchor those determinants in their structural drivers and inform appropriate measures. A number of groups, including [CDC](#), the [World Health Organization](#), [Healthy People 2020](#), and the [Kaiser Family Foundation](#), have established frameworks for understanding how health disparities originate and how health equity can be achieved by addressing SDoH.

Key Challenges

Most food insecurity instruments remain unidimensional, measuring this construct in the context of food access. Other critical dimensions, such as availability, utilization, and stability over time, remain understudied. Moreover, the psychometrics of many of the measures used currently in population health remain understudied, and validation studies are limited. Another challenge is that variation in administration can greatly influence findings. In addition, it may not be easy to change which domains are screened for, and sectors (healthcare, community service providers, education) lack knowledge on how to address “positive” results of these screenings. A final challenge is that systemic efforts to create cross-sectoral linkages to effectively address SDoH are lacking.



Discussants: Summing Up and Providing Context to the Presentations


Session 3 moderator, Amy Yaroch, invited two discussants to comment on the key measurement needs for diet in high-risk populations:

- **Angela Odoms-Young** shared a research perspective, noting that although the designation of “high-risk population” includes factors such as race, ethnicity, and urbanization, little is known about the pathways and mechanisms that distinguish a high-risk population from one that is not at high risk. A theoretical lens may help identify upstream factors that increase a group’s risk and inform whether the risk condition can be removed or reduced. It also is important to note that risk exists along a continuum; differences between risk and non-risk groups are not binary. Comparisons between similar groups can provide insights about differences observed in health outcomes.
- **Carmen George** shared her practice perspective that the Navajo Nation Community Outreach and Patient Empowerment (COPE) Program began a Fruit and Vegetable Prescription Program (FVRx), in which healthcare providers give patients vouchers that they can redeem for fruits and vegetables. FVRx was initially marketed as a program serving children with overweight and obesity, but participation was low because of stigma. FVRx changed the enrollment criterion to food insecurity, and participation increased dramatically. Community involvement, leading to program tailoring to suit community needs, has been essential to its success.




SESSION 4: INDIVIDUAL AND ENVIRONMENTAL PHYSICAL ACTIVITY MEASUREMENT NEEDS FOR HIGH-RISK POPULATIONS


1 Recommendations for Individual-level Measures of Physical Activity as They Relate to High-Risk Populations

 **Melissa Bopp, PhD**, Pennsylvania State University

2 Recommendations for Environmental-level measures of Physical Activity and Built Environment as They Relate to High-Risk Populations

 **Sandy Slater, PhD**, Concordia University

3 Recommendations for Social Determinants of Health Measures as They Relate to Physical Activity and High-Risk Populations

 **Elva M. Arrendondo, PhD**, San Diego State University



Discussants:

Melicia Whitt-Glover, PhD, Gramercy Research Group

Emiko Atherton, Smart Growth America

1 Recommendations for Individual-level Measures of Physical Activity as They Relate to High-Risk Populations Melissa Bopp

Importance of this Topic for Childhood Obesity

Physical activity is positively related to cardiorespiratory fitness in children. Questions about the context in which physical activity occurs can enhance understanding of physical activity volume and type and provide insights about specific age, gender, or sociocultural norms. Tailored measures to accommodate the unique circumstances of high-risk populations may require formative research and increase participant burden, but they have potential to yield rich data.

Key Challenges

Both subjective and objective measures for physical activity have challenges. The challenges of subjective measures include age appropriateness for recall and reporting, developmental ability of child respondents and whether concerns for cognitive or intellectual disabilities exist, reliability and validity concerns, and difficulties in assessing sedentary behavior. Challenges of objective measures include feasibility, accessibility, and reactivity, which is the tendency to change one's behavior in response to monitoring or the expectation of being measured.

2

Recommendations for Environmental-level Measures of Physical Activity and Built Environment as They Relate to High-Risk Populations

Sandy Slater

Importance of this Topic for Childhood Obesity

Characteristics of the physical environment exert substantial influence on the physical activity behaviors of children and adolescents. Many studies have examined the relationship between school and neighborhood environments and physical activity, but few longitudinal studies have been conducted to examine the built environment and youth health outcomes. The studies that have been conducted have used multiple methods, including device-based, direct observation, and self-report, to measure relationships. Many of these tools are complex and burdensome, and some investigators have tried to simplify them and operationalize their use across settings to provide consistency in measurement.

Key Challenges

Challenges of built environment measurements include the time and cost burdens of data collection; difficulty accessing information about micro-scale level measures of specific built environment features, which include attributes within a setting such as streets; and inconsistency in definitions of built environment measures and in how measures are collected across audit tools. Other challenges include the need to tailor measures to gradations of rurality, develop or modify existing built environmental audit tools to capture relevant measures for high-risk populations (e.g., rural, universal design measures), and identify the correct activity spaces and objective and subjective built environment measures and constructs for high-risk populations.

3

Recommendations for Social Determinants of Health Measures as They Relate to High-Risk Populations

Elva Arrendondo

Importance of this Topic for Childhood Obesity

Measures of parental support for physical activity can help explain disparities in prevalence of physical activity among Latino children. However, most parent physical activity support measures have been developed in Caucasian populations, tested in Mexican Americans, and involved urban and suburban groups. To overcome these limitations, researchers have engaged community partners and conducted focus groups and cognitive interviews to adapt measures and help ensure conceptual equivalence for various Latino subgroups.

Key Challenges

Parental support for physical activity is likely to vary by racial and ethnic group, Latino subgroup, and context. Furthermore, even if parents are supportive of physical activity, it may not be perceived the same way by their children. Parent support for physical activity also may vary by contextual and internal factors. Understanding the factors that influence parent physical activity support can inform effective interventions.



Discussants: Summing Up and Providing Context to the Presentations

Session 4 moderator, David Berrigan, invited two discussants to comment on the key measurement needs for physical activity for high-risk populations:

- **Melicia Whitt-Glover** shared a research perspective, noting that the choice of device to measure physical activity should consider the study population's ability to use and access data from that device. She also underscored the importance of contextual influences on physical activity by high-risk groups, especially perceived safety and freedom of mobility within built environments. Another important contextual influence is the relative priority that parents place on physical activity, given that parents in high-risk groups may prioritize children's education based on their perception of its impact on upward mobility. An intervention's most important contextual consideration is its potential for a positive impact in the study population.
- **Emiko Atherton** shared a practice perspective, which reiterated that built environments are a driver of physical activity behaviors. She noted however, that built environment features and objective environmental measures (such as low crime rates) that are believed to encourage physical activity may not consistently correlate with expected individual behaviors. Qualitative data are useful because they can examine the reasons underlying people's activity patterns.

IDENTIFYING CROSS-CUTTING PRIORITIES TO

Advance Measurement for High-Risk Populations Related to Childhood Obesity

During the presentations and subsequent discussions, a number of priorities emerged for advancing diet and physical activity measurement for high-risk populations, with a particular focus on SDoH in children, families, and communities. In addition, participants were asked to consider short- and medium-term actionable steps that would be top priorities for NCCOR to pursue. Groups considered the following questions to guide their discussions:

- What are researcher needs and issues in diet and physical activity measurement in high-risk populations?
- What are practitioner needs and issues in this area?
- What common issues do researchers and practitioners have in this area?
- What short-term (1–3 years) recommendations for measurement priorities can be made?
- What medium-term (3–5 years) recommendations for measurement priorities can be made?

Several cross-cutting themes and priorities emerged during the workshop and are summarized below. Specific priorities are listed in Table 1.

1. Develop new, and adapt existing, measures for high-risk groups.

Researchers and practitioners may find that some populations may respond to interventions and assessments in unexpected ways because their cultural practices and context were not appropriately considered in advance, which may affect the feasibility and effectiveness of interventions and the accuracy and reliability of research and surveillance. Valid, reliable measures of individual- and environmental-level risk factors are needed among high-risk populations. However, few or no measures currently exist for a number of key racial and ethnic populations, such as Asians, American Indians/Alaska Natives, and Hawaiian/Pacific Islanders. In addition, few measures exist for other populations that may be at increased risk, such as children with special health care needs, children and adolescents who identify as gender or sexual minorities, and rural populations. Another important gap in existing measures is that factors such as language, country of origin, and acculturation are often missing in general population assessments and

analyses, even though they can be important influencers of attitudes, beliefs, and behaviors.

Developing and adapting multi-level measures for understudied populations at high risk of childhood obesity involves a number of specific considerations. First, researchers and practitioners must take into account the factors that differentiate high-risk populations from other populations. These factors include their demographic, economic, cultural, and language characteristics; the backdrop of racism, toxic stress, and adverse social circumstances that influence their lived experience; and their exposure to risk factors. All of these factors affect their access and response to interventions. Second, these factors do not exist in isolation from one another. Measures designed for high-risk groups must address the complexities of intersectionality, which involve the interactions between different aspects of high risk within the same individual or group (e.g., race or subgroup and income; urban vs. rural).

As part of this effort, minimum standards for reliability and validity should be considered. The goal of validation is to determine whether a measure provides useful information for a given purpose and context—in this case, measures for childhood obesity prevention in high-risk children, families, and communities. The measure also must provide data that are accurate and precise, to the extent possible. Assessing reliability and validity requires taking multiple pieces of evidence into consideration and ensuring that the resulting inferences are specific to the population and context for which it was generated. Given the multiplicity of factors that influence childhood obesity in high-risk groups, developing one set of minimum standards for reliability and validity that can universally be applied across all populations is a major challenge and most likely not an attainable goal. However, advances can be made by describing validity and reliability on a continuum and for a specific purpose or population rather than as binary (e.g., universally valid or not).

2. Develop methods and guidance to accommodate the need to balance standardization against tailoring.

The U.S. population is highly diverse, with many racial, ethnic, and cultural groups and subgroups. This presents a major dilemma for the development of new measures or adaptation of existing measures. Developing standardized measures for use in diverse populations

may be cost-efficient and desirable because it increases the likelihood of achieving statistical power, and it allows researchers to compare results across studies and over time. However, this approach risks overgeneralization or misrepresentation. Given the diversity across population groups and subgroups, even if it was possible to identify a “best measure” for use in high-risk populations, tailoring would still be needed to ensure measurement of the same construct across populations. For example, knowledge, attitudes, values, and traditions around food and physical activity vary widely. Even the foods and beverages available in grocery stores and food outlets may vary widely depending on the culture of the community in which those outlets are located. These variations have significant implications for the wording of survey instruments, the analysis of resulting data, and respondents’ survey responses tendencies.

Methods and guidance on how and when to adapt measures are needed to help researchers balance the need to tailor measures for specific groups against the need to aggregate results and standardize instruments to achieve sufficient power and to compare results. Resources and tools such as toolkits, roadmaps, checklists, and decision trees should be developed to help researchers identify key metrics and approaches for specific groups and tips for successful adaptation. These tools will help in identifying when and how to include standard measures that allow for cross-cohort comparisons and less-standard measures to allow for more nuanced characterization.

In addition, specific strategies, resources, and tools are needed to guide researchers on choosing appropriate, standardized SDoH measures and adapting them for specific populations. For example, guidance on conducting pathway analysis could help researchers determine where and how SDoH may potentially affect outcomes and document how SDoH influence people’s responses to assessments. Since cultural values vary across ethnic groups and subgroups, this has different implications for survey response and contributes to bias. Guidance on criteria that can be used to identify good measures of SDoH and when they are most useful could also help. This could be realized through a typology of potential measures catalogued by purpose (e.g., surveillance, behavior change). These resources and tools also can serve another critical purpose, which is to help justify to funders why SDoH measures, such as historical impact analyses that demonstrate how policy and structural changes influence equity, should be collected.

To the extent they are helpful, implementation science frameworks, could be used in developing and evaluating adapted measures. In addition, implementation science journals may be a useful resource because they provide

opportunities to document the various process details involved in adapting measures that are not typically included in other peer-reviewed literature venues.

3. Support efforts to ensure that measures and their implementation reflect cultural competence and cultural humility.

Given the national legacy of social and racial injustice that continues to affect many populations, incorporating an understanding of their unique lived experiences, resilience, and mechanisms through which these affect health is necessary if the field is to develop culturally relevant and useful measures of diet, physical activity, and environment. Cultural values and attitudes vary across groups and subgroups and have different implications for survey response tendencies. In addition, measures of acculturation that are useful for some purposes and in some settings may not capture nuances of the immigrant experience or the changes in identification with the host culture that occur over time.

A variety of strategies, tools, and resources (e.g., trainings, toolkits, roadmaps, webinars) are needed to help researchers integrate cultural humility and cultural competence into their methods so that they can better understand the communities they are working in and successfully engage community members. Strategies could include an explicit consideration of how historical context influences current situations, and efforts to engage communities in concrete ways such as reimbursement for their time and inclusion of key informants and community leaders.

4. Develop ways to share current work to improve learning and leverage existing research and implementation practices.

With increasing recognition of the need for focused attention on the needs of high-risk populations, a variety of efforts are beginning to emerge to develop new and adapt existing measures of diet, physical activity, and environment that incorporate SDoH. Sharing this work to leverage its findings to improve learning is a critical priority. This can be accomplished in a variety of ways.

NCCOR could take steps to update the Measures Registry by highlighting the measures related to high-risk populations and creating a new SDoH domain.

NCCOR or other entities could create a hub for best practices, theoretical frameworks and approaches to support and inform community engagement, qualitative and quantitative protocols, results of qualitative research, and details about how measures have been adapted. The hub also could feature a curated list of culturally adapted resources. It also could include resources from various



sources, such as the National Association of Community Health Center's [PRAPARE](#) (Protocol for Responding to and Assessing Patients' Assets, Risks, and Experiences), the RWJF-commissioned report [Measuring What Works to Achieve Health Equity: Metrics for the Determinants of Health](#), and the [Institute of Medicine report Capturing Social and Behavioral Domains and Measures in Electronic Health Records](#). An important feature of the hub would be a mechanism for researchers and practitioners to provide feedback on those resources.

Capacity building could also be encouraged by bringing researchers and practitioners together directly. Practitioners could be invited to participate in measure development panels so they can comment on the

feasibility of potential measures. Their practical advice could improve measurement of high-risk populations. The research community could explore ways to share unpublished data on the adaptation and validation of culturally appropriate tools and methods such as learning collaboratives of researchers and practitioners. Webinars and workshops are another way to disseminate information and learn about the experience of both researchers and practitioners in their efforts to engage communities. These methods also may be an effective way to engage those from other areas, such as housing and transportation, who are more advanced in this area.

NEXT STEPS

This white paper can be accessed on the NCCOR website at <https://www.nccor.org/measurement-workshop-series/>. White papers for the other two workshops will also be available on the NCCOR website. In addition, NCCOR plans to publish a synthesis of findings and recommendations from the three workshops in the scientific literature.

It is anticipated that recommendations from these workshops will advance development of improved

measures that can be used across a range of research, surveillance, and intervention activities related to diet, physical activity, and childhood obesity by addressing the many levels of influences such as social determinants that impact the onset and progression of childhood obesity. NCCOR aims for these efforts along with the work of other strategic activities to facilitate research and interventions that help reduce health inequities associated with childhood obesity.

Other Recommendations for Priority Actions to Advance Measurement for High-Risk Populations and Communities Related to Childhood Obesity

During the presentations and discussions, a number of priorities emerged for advancing measurement for high-risk populations. In addition, participants were asked to consider short- and medium-term action steps that would be top priorities for NCCOR to pursue. The previous section synthesized priorities and action steps common across all the domains. **The following priorities, some of which may overlap with the synthesis above, represent specific action items discussed during the course of the workshop related to Social Determinants of Health (SDoH), Diet, and Physical Activity/Sedentary Behavior (PA/SB). These items have been categorized into six headings; (1) develop new measures, (2) review what is known and maximize use of cross-sectoral collaboration, (3) build measurement tools, guidance, and data resources, (4) enhance capacity/dissemination and collaboration, 5) develop research methods, approaches, and enhanced linkages, and (6) expand data collection, research, and publication.** All resources highlighted in the following tables are listed in the Reference section.

PRIORITY	DOMAIN		
DEVELOP NEW MEASURES	SDoH	DIET	PA/SB
Develop and adapt multi-level PA measures for understudied populations at high risk of childhood obesity through an intersectional, historical trauma, or critical race theory lens.			X
Review and identify which social and environment measures (e.g., social capital) may be relevant to PA.			X
BUILD MEASUREMENT TOOLS, GUIDANCE, AND DATA RESOURCES	SDoH	DIET	PA/SB
Delineate the processes and protocols needed to develop measures; create standards for measurement development and adaptation.	X	X	X
Create a roadmap for measure selection and adaptation <ul style="list-style-type: none"> Develop minimum standards for the process of validating adapted measures 	X	X	X
Identify what SDoH metrics are most relevant to childhood obesity	X	X	X
Update/revamp the NCCOR Measures Registry <ul style="list-style-type: none"> Add measures for B-24 Curate the Measures Registry around indicators (SNAP-Ed Eval Framework) Make it more tool-focused Add sleep measures and specific measurement protocols Consider if SDoH measures are added as a new domain or linkage provided to existing SDoH measurement registries (i.e., PhenX) Modify the Measures Registry to better reflect populations for which measures have been developed and tested and to provide more information on validity and reliability Identify measures related to high-risk populations 	X	X	X
Develop toolkits and roadmaps for optimal PA measures selection.			X
Promote measures of process implementation.	X	X	X
Create a repository of best practices and feedback systems.	X	X	X
Develop guidance on incorporating SDoH measures into surveillance vs. study communities in large cohort studies.	X	X	X
Help practitioners determine new measures to add, including how to make judgments about what measures to include or exclude.	X	X	X

ENHANCE CAPACITY, DISSEMINATION, AND COLLABORATION	SDoH	DIET	PA/SB
Encourage capacity building through webinars. Suggested topics include: <ul style="list-style-type: none"> Addressing frameworks for PA measurement to help users make decisions about which key PA measures to include Measuring systems change with input from diverse disciplines and topic domains 	x	x	x
Conduct regular systematic review of acceptable and already adapted measures and create feedback loops to inform practice.	x	x	x
Improve rapid technical assistance to practitioners.	x	x	x
Find other ways to disseminate with impact, such as community engaged research, adapting tools, ethical issues, critical race theory.	x	x	x
Promote uptake and appropriate adoption of structural measures.			x
Engage those from other areas that are more advanced in such measurement.	x	x	x
Compile theoretical frameworks and approaches to support and inform community engagement. This may require framing the projects around issues the communities care about, e.g., climate change, multi-disciplinary solutions to local problems. Pay particular attention to populations that have received little attention (e.g., immigrants).	x	x	x
Build capacity for citizen science in PA in high-risk communities.			x
Foster multisector/agency partnerships (e.g., HUD, transportation).	x	x	x
Improve dissemination; publish in diverse forms; publish null results on what doesn't work.	x	x	x
Highlight examples/case studies, such as historical/structural factors that may influence PA.	x	x	x
Create a system like Cancer Planet with research and practitioner matches, non-health agency leads, local entity participation.	x	x	x
Foster community-engaged research and convene relevant stakeholders to develop protocols to answer questions such as how/who/why.	x	x	x
Encourage team science and trans-disciplinary teams; support incorporating team science into academic training.	x	x	x
DEVELOP RESEARCH METHODS, APPROACHES, AND ENHANCED LINKAGE	SDoH	DIET	PA/SB
Develop methods and approaches to address declining survey response rates, such as using hybrid approaches for surveillance. May need to combine and triangulate data.	x	x	x
Encourage improved and diverse sample sizes (innovative methods could allow smaller sample sizes).	x	x	x
Develop approaches to capture structural/historical factors that may influence PA.			x
Develop ways to improve understanding of parent-child interactions in the context of facilitating PA (likely varies by age). Be aware of intentional or unintentional biases.			x
Consider if grant support within SNAP-Ed or FQHCs can be used to assess how well measures are adopted in the field.	x	x	x
EXPAND DATA COLLECTION, RESEARCH, AND PUBLICATION	SDoH	DIET	PA/SB
Validate findings from secondary data sources and community voices.	x	x	x
Identify and address biases of using found/repurposed data. Determine who are not represented in such data and address endogeneity issues.	x	x	x
Support research to evaluate natural experiments designed to identify policy and place-based changes that could individually or collectively have positive health benefits.	x	x	x

In addition, each presenter shared a series of opportunities to consider ahead of the workshop to help enhance the discussion. The following list represents these ideas.

Opportunities Shared by Presenters

PRIORITY	DOMAIN		
DEVELOP NEW MEASURES	SDoH	DIET	PA/SB
Develop systemic measures that involve economic investment; criminal system reform; decreased segregation in positions of institutional power; and inclusive research and appropriate funding of public agencies, healthcare institutions, and historically Black colleges and universities to counteract the social determinant of racism that causes health disparities.	X	X	X
Promote the development and adoption of common individual-level behavioral measures for specific high-risk populations, particularly for Asians and Pacific Islanders and for children with disabilities.	X	X	X
Develop new measures or new approaches to investigate why disparities in the food environment exist and/or why the food environment may affect different populations differently. Use Kumanyika's Getting to Equity Framework (2019) to inform measure development.	X	X	
Adapt parent physical activity measures to population of interest.			X
REVIEW WHAT IS KNOWN AND MAXIMIZE USE OF CROSS-SECTORAL COLLABORATION	SDoH	DIET	PA/SB
Systematically review and recommend measures of culture at different levels of influence (e.g., individual, social, physical, policy) for use in child obesity studies in high-risk populations.	X	X	X
Examine the approach taken by the ADOPT group (Accumulating Data to Optimally Predict Obesity Treatment) to provide guidance on priority measures.	X	X	X
Leverage existing studies with similar measures/constructs to maximize power.	X	X	X
Consider the balance between measures developed for a specific group and measures applicable for many groups.	X	X	X
Catalog and assess need for measures of cultural values associated with respondent characteristics that contribute to bias and measurement error across key cultural groups.	X	X	X
BUILD MEASUREMENT TOOLS, GUIDANCE, AND DATA RESOURCES	SDoH	DIET	PA/SB
Create an additional domain in the Measures Registry for psychosocial and socio-cultural determinants.	X		
Standardize approaches to cultural adaptation and language translation in both adults and children.	X	X	X
Develop approaches and training materials to address cultural competence and cultural humility in engaging stakeholders.	X	X	X
Develop guidelines to incorporate measures of acculturation in observational studies and program planning and evaluation that are responsive to field constraints.	X	X	X
Emphasize the use of instruments that have been culturally adapted using best practices and assessed for validity and reliability for specific high-risk groups.	X	X	X
Encourage explicit descriptions of the systematic formative work that researchers use in developing, adapting, and/or validating individual-level diet measures.	X		
Develop a common conceptualization of validity and reliability that considers multiple sources of evidence to assess the usefulness of measures.	X	X	X
Limit inferences to the specific objectives of a validation study and the populations and contexts in which it was conducted. Be clear about appropriate uses of measures based on what is known about their validity and reliability.	X	X	X
Adopt a framework for measuring and addressing key SDoH, such as the Kaiser Family Foundation framework, which is driven by evidence on the various social factors that drive health outcomes, including economic stability, neighborhood and physical environment, education, food, community and social context, and health care systems.	X		
Create a framework for the types of constructs that should be considered when collecting data from high-risk populations. The framework should address developmentally sensitive and culturally appropriate measures.	X	X	X
Continue efforts to ensure that food inventories; rating scales of stores, menus, restaurants, or other environments; and other measures assessing food access include culturally appropriate food and beverage items.		X	

ENHANCE CAPACITY, DISSEMINATION, AND COLLABORATION	SDoH	DIET	PA/SB
Provide training and tools on mixed methods to enhance quantitative measures of cultural variables in specific populations and study settings.	x	x	x
Prioritize outreach and training to young people of color to encourage them to pursue health career professions. Strengthen the role of historically Black colleges and universities in preparing young populations for health careers.	x		
DEVELOP RESEARCH METHODS, APPROACHES, AND ENHANCED LINKAGE	SDoH	DIET	PA/SB
Develop and pilot test a systematic process for creating and adapting existing tools for specific population groups that includes both qualitative and quantitative methods and attention to community involvement in the process.	x	x	x
Address racial disparities in health and health care by creating a realistic conceptual paradigm that can assess the U.S. society's white racist roots and contemporary racist realities.	x	x	x
Consider validity and reliability among different cultural and geographic groups in objective assessments.	x	x	x
Conduct validation research with a range of populations and disaggregate results by sociodemographic characteristics. When distinct measures are necessary for different populations, assess equivalence to enable synthesis across studies.	x	x	x
Increase linkage and interoperability across systems that request the same types of information from families. Leverage best practices and successes in using Fast Healthcare Interoperability Resources to connect disparate systems.	x	x	x
Find ways to use existing service provider data, such as those from Health Center Controlled Networks, to complement research data.	x	x	x
Design studies to compare and assess alternate methods for culturally and linguistically adapting an instrument.	x	x	x
EXPAND DATA COLLECTION, RESEARCH, AND PUBLICATION	SDoH	DIET	PA
Improve knowledge about the population of interest by considering factors such as ethnic subgroups, specific language needs, needs of children vs. their parents/caregivers, acculturation status, income/education level, and health literacy level.	x	x	x
Apply a cultural lens throughout data collection by using colloquial rather than formal language in translations; improving understanding of data collectors; and changing existing materials or rethinking entire approach as needed.	x	x	x
Focus on context in both subjective and objective assessments to allow for more complete understanding of the volume and type of physical activity.			x
Publish methods used to culturally and linguistically adapt instruments.	x	x	x
Conduct longitudinal observational and natural experimental studies and intervention trials to identify and evaluate best practices.	x	x	x
Ensure high-quality validation studies are conducted when new measures are developed or adapted for key populations. Identify and overcome the barriers to conducting these validation/best practice for methods studies.	x	x	x

Abbreviations

CDC	Centers for Disease Control and Prevention
COPE	Navajo Nation Community Outreach and Patient Empowerment Program
ECHO	Environmental influences on Child Health Outcomes
FQHC	Federally Qualified Health Center
FVRx	Fruit and Vegetable Prescription Program
NCCOR	National Collaborative on Childhood Obesity Research
NIH	National Institutes of Health
PA	Physical Activity
RWJF	Robert Wood Johnson Foundation
SDoH	Social determinants of health
SB	Sedentary Behavior
USDA	U.S. Department of Agriculture

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Following is a list of selected references provided by workshop participants, grouped by session:

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ADVANCING MEASUREMENT OF INDIVIDUAL BEHAVIORS RELATED TO CHILDHOOD OBESITY

AGENDA

September 23, 2019 9:00–4:30 p.m.
September 24, 2019 8:30–3:30 p.m.

FHI 360 – Academy Hall & Vista
1825 Connecticut Ave NW, Washington, DC 20009

Goal: Identify priorities for measurement related to children in high-risk populations with a focus on children/families and their communities

Working definition of high-risk population: High-risk populations are defined as children and their families residing in communities where the risk of obesity and related comorbidities may be highest. Factors related to high-risk individuals and communities include race/ethnicity, education/income, urbanicity, region of the country, disability. Race/ethnicity and socioeconomic status are well described risk factors for obesity.

Objectives for the workshop:

1. Illustrate current challenges, needs, and gaps
2. Discuss current practices to adapt and develop measures
3. Develop short- and long-term recommendations to address gaps for NCCOR, researchers, and practitioners, and funders

Workshop Deliverables:

- Peer review article based on the workshop findings
- Clear recommendations for the next steps to advance the science (short- and long-term goals)
 - » Recommendations for NCCOR
 - » Recommendations for researchers and practitioners
 - » Recommendations for funders
- Communication/dissemination activities
 - » Ex. An infographic on what can be done now in terms of measures for high-risk populations underserved populations
 - » Ex. Case studies to help practitioners and researchers better understand which measures to use for high-risk populations

DAY 1 September 23, 2019

8:30–9:00	Breakfast
9:00–9:15	Welcome – Elaine Arkin, <i>NCCOR Coordinating Center</i>
9:15–9:30	Background and Workshop Goals – Latetia Moore, <i>CDC</i>
9:30–10:10	Measurement needs related to childhood obesity for high-risk populations and environments: Emerging domains for future research – Wendy Bennett and Kathryn Foti, <i>Johns Hopkins University</i>
	Q&A
10:10–10:25	Break
10:25–11:10	Session 1: Why we need to measure children/families in high-risk populations differently <ul style="list-style-type: none"> Why do we need to measure high-risk populations with a focus on children/families differently? – Shiriki Kumanyika, <i>Drexel University</i> When does culture matter in measurement? – Karen E. Peterson, <i>University of Michigan School of Public Health</i> Achieving cultural resonance for research methods through community partnership – Stella Yi, <i>New York University School of Medicine</i>
11:10–12:00	Session 1 Discussion: Why do we need to measure high-risk populations with a focus on children/families differently? <ul style="list-style-type: none"> Moderator – Shiriki Kumanyika, <i>Drexel University</i> Discussants – Mahasin Mujahid, <i>University of California Berkeley</i> and Chris Espersen, <i>Safety Net Consultant</i>
12:00–1:00	Lunch
1:00–1:55	Session 2: Incorporating cross-cutting social determinants of health into measures of individual diet and physical activity and environments in high-risk populations with a focus on children/families <ul style="list-style-type: none"> Measures related to social determinants of health in the PhenX Toolkit – Nancy Breen, <i>NIH</i> Measures related to obesity: The Environmental Influences on Child Health Outcomes program – S. Sonia Arteaga, <i>NIH</i> Recommendations for cultural and linguistic adaptations of instruments for children/families – Teresia O'Connor, <i>Baylor College of Medicine</i> Validity and reliability of measures for children/families: Considerations and best practices – Sharon Kirkpatrick, <i>University of Waterloo</i>
1:55–2:40	Session 2 Discussion: How do we incorporate cross-cutting social determinants of health into measures of diet and physical activity and environments in high-risk populations with a focus on children/families? <ul style="list-style-type: none"> Moderator – S. Sonia Arteaga, <i>NIH</i> Discussants – Lisa Goldman Rosas, <i>Stanford University</i> and Lindsey Lunsford, <i>Tuskegee University</i>
2:40–2:50	Break
2:50–4:15	Overview and small group discussions on social determinants of health measurement priorities related to high-risk populations with a focus on children/families – Leslie Lytle, <i>University of North Carolina, Chapel Hill</i> and Elaine Arkin, <i>NCCOR Coordinating Center</i> <ul style="list-style-type: none"> Group 1 <ul style="list-style-type: none"> Room: Angle Call-in number: 1-866-668-0721, Conference Code: 703-686-2738 Group 2 <ul style="list-style-type: none"> Room: Academy Hall Call-in number: 1-866-668-0721, Conference Code: 166-732-1196 Discussion Questions <ul style="list-style-type: none"> What are the researcher needs and issues in this area? What are the practitioner needs and issues in this area? What are the common issues researchers and practitioners have relative to measurement in high-risk populations? What are the short-term recommendations (0-2 years)? What are the long-term recommendations (3-5 years)?
4:15–4:30	Report out and wrap up – Elaine Arkin, <i>NCCOR Coordinating Center</i>

DAY 2 September 24, 2019

8:00–8:30	Breakfast
8:30–8:50	Welcome and Review of Day 1 – Elaine Arkin, <i>NCCOR Coordinating Center</i> and Latetia Moore, <i>CDC</i>
8:50–9:35	Session 3: Individual and environmental level diet-related measurement needs for high-risk populations with a focus on children/families <ul style="list-style-type: none"> Recommendations for individual level measures of diet as they relate to high-risk populations – Uriyoan Colon-Ramos, <i>The George Washington University</i> Recommendations for environmental level measures of diet as they relate to high-risk populations – Erica Kenney, <i>Harvard T.H. Chan School of Public Health</i> Recommendations for social determinants of health measures as they relate to diet and high-risk populations – Shreela Sharma, <i>University of Texas Health Science Center at Houston, School of Public Health</i>
9:35–10:15	Session 3 Discussion: What are the Individual and environmental level dietary measurement needs for high-risk populations with a focus on children/families? <ul style="list-style-type: none"> Moderator – Deb Galuska, <i>CDC</i> Discussant – Karin Pfeiffer, <i>Michigan State University</i>
10:15–10:30	Break
10:30–11:15	Session 4: Individual and environmental physical activity measurement needs for high-risk populations with a focus on children/families <ul style="list-style-type: none"> Recommendations for individual level measures of physical activity as they relate to high-risk populations – Melissa Bopp, <i>Penn State University</i> Recommendations for environmental level measures of physical activity and built environment as they relate to high-risk populations – Sandy Slater, <i>Concordia University</i> Recommendations for social determinants of health measures as they relate to physical activity and high-risk populations – Elva M. Arredondo, <i>San Diego State University</i>
11:15–12:00	Session 4 Discussion: What are the Individual and environmental physical activity measurement needs for high-risk populations with a focus on children/families? <ul style="list-style-type: none"> Moderator: David Berrigan, <i>NIH</i> Discussants: Melicia Whitt Glover, <i>Gramercy Research Group</i>, and Emiko Atherton, <i>Smart Growth America</i>
12:00–12:30	Lunch
12:30–2:00	Small group discussions on diet and physical activity measurement priorities related to high-risk populations with a focus on children/families <ul style="list-style-type: none"> Diet <ul style="list-style-type: none"> Room: Angle Call-in number: 1-866-668-0721, Conference Code: 703-686-2738 Physical Activity <ul style="list-style-type: none"> Room: Academy Hall Call-in number: 1-866-668-0721, Conference Code: 166-732-1196 Discussion Questions <ul style="list-style-type: none"> What are the researcher needs and issues in this area? What are the practitioner needs and issues in this area? What are the common issues researchers and practitioners have relative to measurement in high-risk populations? What are the short-term recommendations (0-2 years)? What are the long-term recommendations (3-5 years)?
2:00–2:30	Report Out
2:30–2:50	Break and Prioritizing Activity
2:50–3:15	Review of Top Priorities – Elaine Arkin, <i>NCCOR Coordinating Center</i>
3:15–3:30	Wrap Up and Next Steps – Elaine Arkin, <i>NCCOR Coordinating Center</i> and S. Sonia Arteaga, <i>NIH</i>