Promoting Healthy Weight for Young Children:

A Blueprint for Preventing Early Childhood Obesity in North Carolina

September 2013

North Carolina Institute of Medicine

In collaboration with the Blue Cross Blue Shield of North Carolina Foundation and the North Carolina Partnership for Children

Funded by
Blue Cross Blue Shield of North Carolina Foundation

NCIOM

North Carolina Institute of Medicine

shaping policy for a healthier state

The North Carolina Institute of Medicine (NCIOM) is a nonpolitical source of analysis and advice on important health issues facing the state. The NCIOM convenes stakeholders and other interested people from across the state to study these complex issues and develop workable solutions to improve health, health care access, and quality of health care in North Carolina.

The full text of this report is available online at **http://www.nciom.org**

North Carolina Institute of Medicine
Keystone Office Park
630 Davis Drive, Suite 100
Morrisville, NC 27560
919.401.6599

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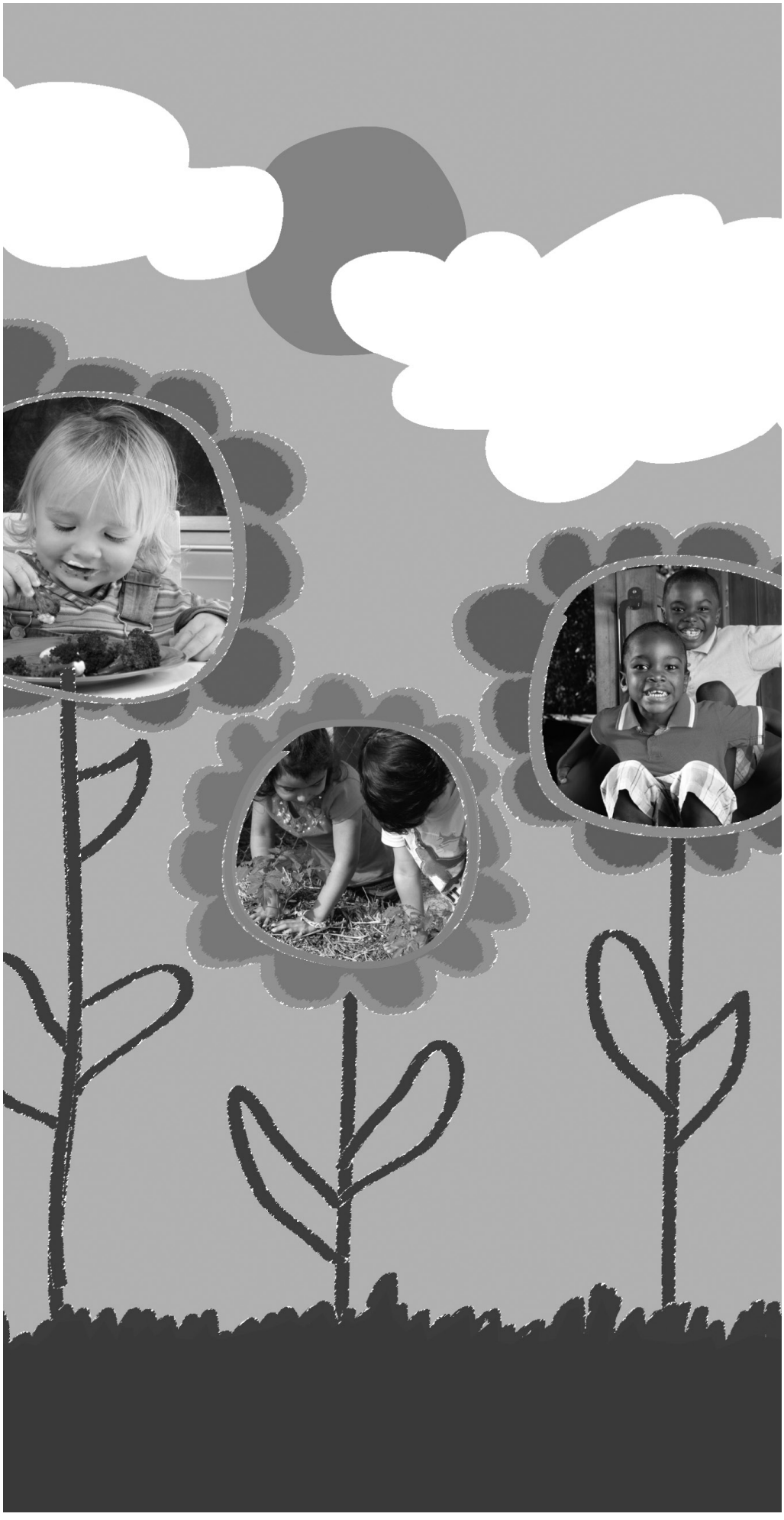

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Acknowledgements

The North Carolina Institute of Medicine's (NCIOM) Task Force on Early Childhood Obesity Prevention was convened in collaboration with the Blue Cross and Blue Shield of North Carolina Foundation (BCBSNCF) and the North Carolina Partnership for Children (NCPC). The NCIOM Task Force on Early Childhood Obesity Prevention was charged with examining evidence-based and promising practices from North Carolina and national task forces, in addition to developing a strategic plan that can prevent or reduce early childhood obesity among children ages 0-5 in North Carolina that can also serve as a blueprint for other foundations, associations, or government entities.

The Task Force was chaired by Kathy Higgins, President, Blue Cross and Blue Shield of North Carolina Foundation and Olson Huff, MD, former Chair, Board of Directors, North Carolina Partnership for Children, Inc. and Chair, Board of Directors, North Carolina Early Childhood Foundation. The NCIOM also wants to thank the 75 members of the Task Force and Steering Committee who gave freely of their time and expertise from September 2011 through May 2013 to address this important issue. The Steering Committee members guided the work of the Task Force by helping to shape the meeting agendas, identify speakers, and arrange presentations. For a complete list of Task Force and Steering Committee members please see pages 7-11of this report.

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Miriam H. Labbok, MD, MPH, FACPM, IBCLC, FABM, director, Carolina Global Breastfeeding Initiative; Alice Lenihan, RD, MPH, director, Child and Adult Care Food Program, North Carolina Division of Public Health; Laura Louison, MSW, MSPH, former NC maternal, infant, and early childhood home visiting program director, Children and Youth Branch, Women's and Children's Health Section, North Carolina Division of Public Health; Cheryl Lowe, Care Coordination 4 Children program manager, Children and Youth Branch, Women's and Children's Health Section, North Carolina Division of Public Health; Robin Moore, director, The Natural Learning Initiative; College of Design, North Carolina State University; Seth M. Noar, PhD, associate professor, School of Journalism and Mass Communication, University of North Carolina at Chapel Hill; Jenni Owen, MPA, director of policy initiatives, Center for Child and Family Policy; lecturer, Sanford School of Public Policy, Duke University; Richard Rairigh, director of programs and early childhood development, Be Active NC; Robert P. Schwartz, MD, Professor Emeritus of Pediatrics, Wake Forest School of Medicine; Willona Stallings, MPH, program coordinator, North Carolina Council of Churches; Elizabeth Cuervo Tilson, MD, MPH, pediatrician, Wake County Human Services Child Health Clinic, medical director, Community Care of Wake and Johnston Counties; Dianne Ward, MS, EdD, associate director, Clinical Nutrition Research Center, University of North Carolina at Chapel Hill, Professor, Department of Nutrition, Gillings School of Global Public Health, University of North Carolina at Chapel Hill; Stacy Warren, CHIPRA project director, Office of Rural Health and Community Care; Jan Williams, program director, Healthy Families Durham, Center for Child and Family Health; Michelle Wells, MPA, CPRP, program director, North Carolina Recreation and Park Association; Susan Zeisel, EdD, investigator, Frank Porter Graham Child Development Institute, University of North Carolina at Chapel Hill.

In addition to the above individuals, the staff of the North Carolina Institute of Medicine contributed to the Task Force's study and the development of this report. Pam Silberman, JD, DrPH, president and CEO, guided the work of the Task Force. Jennifer Hastings, MS, MPH, project director, interim managing editor, and Kimberly Alexander-Bratcher, MPH, project director, served as project directors for the Task Force. Krutika Amin, MSPH candidate, intern, Kimberly Alexander-Bratcher, Elizabeth Chen, research assistant intern, Jen Hastings, Pam Silberman, Anne Williams, research assistant, and Adam J. Zolotor, MD, DrPH, vice president contributed to the report. Key staff support was also provided by Adrienne Parker, director of administrative operations, and Thalia Fuller, administrative assistant.

NCIOM Task Force on Preventing Early Childhood Obesity

Co-Chairs:

Kathy Higgins
President
Blue Cross and Blue Shield of North Carolina Foundation

Olson Huff, MD
Chair, Board of Directors
North Carolina Early Childhood Foundation
Immediate Past Chair, Board of Directors
North Carolina Partnership for Children, Inc.

Clinical Group

Mark E Archambault, DHSc, PA-C
Chair, Program Director
Department of Physician Assistant Studies
Elon University

Randall Best, MD, JD
Chief Medical Officer
Division of Medical Assistance
North Carolina Department of Health and Human Services

Don W. Bradley, MD, MHS-CL
Senior Vice President of Healthcare
Chief Medical Officer
Blue Cross and Blue Shield of North Carolina

Anthony Emekalam, PharmD
Clinical Assistant Professor
Elizabeth City State University

Miriam Labbok, MD, MPH, FACPM, IBCLC, FABM
Director
Carolina Global Breastfeeding Institute

John T Newton, MD
Clinton Medical Associates

Lisa H Oxedine, MAEd, PAC, DFAAPA
Director of Obesity and Diabetes Prevention
Pembroke Pediatrics

M. Alec Parker, DMD
Executive Director
North Carolina Dental Society

Melissa Roupe, RN, MSN
Senior Administrator, Community Health
Vidant Health

Robert P Schwartz, MD
Professor Emeritus of Pediatrics
Wake Forest School of Medicine

Elizabeth Cuervo Tilson, MD, MPH
Pediatrician, Wake County Human Services Child Health Clinic, Medical Director
Community Care of Wake and Johnston Counties

Helene Zehnder, MSN, RN
Nurse Manager and Magnet Program Director
Rex Health Care

Community & Environment Group

Alice Ammerman, DrPH, RD
Director, Center for Health Promotion and Disease Prevention
Gillings School of Global Public Health
University of North Carolina at Chapel Hill

Abena Asante, MHA
Senior Program Officer
Kate B. Reynolds

Nell Barnes, EdD
Executive Director
Learning Together

Tamara Barnes
Chief, Regulatory Services Section
North Carolina Division of Child Development and Early Education

Lindsey Bennett
Vice President Creative Director
CapStrat

Ron Bradford
Executive Director
Buncombe County Smart Start

Kevin Cain
President and CEO
John Rex Endowment

Nancy Creamer, PhD
Director, North Carolina State Center for Environmental Farming Systems
Distinguished Professor of Sustainable Agriculture and Community Based Food Systems
North Carolina State University

Alice Dean
State Child and Youth Coordinator
North Carolina National Guard Family Programs

Carolyn Dunn, PhD
Professor and Nutrition Specialist
Department of 4-H Youth Development and Family and Consumer Sciences
North Carolina State University

Moses Goldmon, EdD
Interim Director
Institute for Health, Social and Community Research
Assistant Professor
Shaw University Divinity School

Julie Hunkins, PE
Manager, Quality Enhancement Unit
North Carolina Department of Transportation

Emily Jackson
Program Director
Appalachian Sustainable Agriculture Project
Southeast Regional Lead for the National Farm to School Network

Kara D Jones
Executive Director
American Indian Mothers, Inc

Terry Kinney, PhD, LRT/CTRS
Professor
School of Health and Applied Human Sciences
College of Health and Human Services
University of North Carolina at Wilmington

Sarah Langer, MPH
Health Policy Manager
Institute for Emerging Issues
North Carolina State University

Vickie Lipscomb
Child Nutrition Program, Inc.

Mary Etta Moorachian, PhD, RD, LD, CCP, CFCS
Professor, College of Culinary Arts
Johnson and Wales University

Robin Moore, DiplArch, MCP, ASLA
Professor of Landscape Architecture
Director, The Natural Learning Initiative
PhD in Design Faculty, College of Design Adjunct
Professor, Department of Family and Consumer Sciences, College of Agriculture and Life Sciences
North Carolina State University

Jim Morrison
President
United Way of North Carolina

Seth M Noar, PhD
Associate Professor, School of Journalism and Mass Communications
University of North Carolina at Chapel Hill

Richard Rairigh
Director of Programs and Early Childhood Development, Be Active North Carolina

Richard Reich, PhD
Agricultural Services Assistant Commissioner
North Carolina Department of Agriculture and Consumer Services

James Rhodes, AICP
Director
Pitt County Planning

Bob Richardson
Loving Light Community Outreach

Susan Riordan
Vice President of Corporate and Community Relations
YMCA

Alphie Rodriguez
YWCA of Asheville

Meka Sales, MS, CHES
Program Officer
Health Care
The Duke Endowment

Irene Silva-Edwards
Executive Director
Voces Latinas

Florence Siman
Director of Health Programs
El Pueblo

Michelle Wells, MPA, CPRP
Program Director
North Carolina Recreation and Park Association

Henrietta Zalkind
Executive Director
Down East Partnership for Children

Core Group

Deborah Cassidy
Former Director, Division of Child Development
North Carolina Department of Health and Human Services

Diana Dolinsky, MD, MPH
Former Snyderman Fellow in Childhood Obesity Prevention and Personalized Medicine
Medical Instructor, Primary Care Pediatrics
Duke University Health System

Jeffrey Engel, MD
Former State Health Director
North Carolina Division of Public Health

Stephanie Fanjul
President and CEO
Smart Start
North Carolina Partnership for Children, Inc.

David Gardner, MA, DA
Executive Director
North Carolina Center for Health and Wellness
University of North Carolina Asheville

Greg Griggs, MPA, CAE
Executive Vice President
North Carolina Academy of Family Physicians

Gibbie Harris, MPH, BSN, RN
Director, Buncombe County Health Department
President, North Carolina Association of Local Health Directors

Denise L Hewson, RN, BSN, MSPH
Director of Clinical Programs and Quality Improvement
North Carolina Community Care Network

Brenda Jones, RN, BC
Child and Family Health Manager
East Coast Migrant Head Start

Core Group continued

Jonathan Kotch, MD, MPH, FAAP
Carol Remmer Angle Distinguished Professor
Gillings School of Global Public Health
University of North Carolina

Alice Lenihan, RD, MPH
Director
Child and Adult Care Food Program
North Carolina Division of Public Health

Jenni Owen, MPA
Director of Policy Initiatives
Center for Child and Family Policy
Duke University

Eliana M. Perrin, MD, MPH
Associate Professor, Department of Pediatrics
Division of General Pediatrics and Adolescent Medicine
Director, Child Health Program
Cecil G. Sheps Center for Health Services Research
University of North Carolina at Chapel Hill, School of Medicine

Steven E. Shore, MSW
Executive Director
North Carolina Pediatric Society

Janet Singerman
President
Childcare Resources, Inc

Willona Stallings, MPH
Program Associate
North Carolina Council of Churches

Barbara Thompson
Director
Office of Family Policy/Children and Youth
Office of the Secretary of Defense
Military Community and Family Policy

Edgar G. Villanueva, MHA, FACHE
Executive Director
North Carolina American Indian Health Board

Dianne S Ward, MS, EdD
Professor, Department of Nutrition
Gillings School of Global Public Health
University of North Carolina

Public Policy Group

Monique Bethell, PhD
Health Equity Coordinator, Community Transformation Grant Project
North Carolina Division of Public Health
North Carolina Department of Health and Human Services

Veronica Bryant
North Carolina Department of Social Services

Joseph N. Dollar
Representative
North Carolina General Assembly

Beth Lovette, MPH, RN
Health Director
Appalachian District Health Department

Chuck McGrady
Representative
North Carolina General Assembly

Louis Pate
Senator
North Carolina General Assembly

Andrea C. Phillips, JD, MPA
Program Manager
North Carolina Division of Medical Assistance

Gladys Robinson
Senator
North Carolina General Assembly

Steering Committee

Stephanie Fanjul
President and CEO
Smart Start
North Carolina Partnership for Children, Inc.

Jennifer MacDougall, MS
Senior Program Manager
Healthy Active Communities
Blue Cross and Blue Shield of North Carolina Foundation

Pat Hansen, RN, MPH
Shape NC Program Manager
Smart Start
North Carolina Partnership for Children, Inc.

NCIOM Staff

Pam Silberman, JD, DrPH
President and CEO

Adam J. Zolotor, MD, DrPH
Vice President

Kimberly Alexander-Bratcher, MPH
Project Director

Jennifer Hastings, MS, MPH
Project Director

Berkeley Yorkery, MPP
Project Director

Anne Williams
Research Assistant

Adrienne Parker
Director of Administrative Operations
Business Mananger
NCMJ

Thalia Fuller
Administrative Assistant

Kay Downer, MA
Managing Editor
NCMJ

Phyllis Blackwell
Assistant Managing Editor
NCMJ

Krutika Amin
Research Assistant Intern

Libby Betts
Research Assistant Intern

Elizabeth Chen
Research Assistant Intern

Emily McClure, MSPH
Research Assistant Intern

Executive Summary

Obesity has become a leading health issue over recent decades. Obesity complicates existing health problems, creates increased risks for disease and other health conditions, and can substantially reduce length and quality of life. The adverse outcomes of obesity can occur throughout a person's lifetime—from childhood to adulthood. Despite this, there is often little focus on obesity among very young children, ages 0-5 years. Focusing on early childhood obesity prevention can help promote child health and can reduce risk factors that contribute to chronic illnesses among adults. Young children who are obese are more likely to become obese adults. Therefore, reaching this population is not only an opportunity for obesity prevention, but also an opportunity to prevent obesity-associated health problems from occurring in the adult population.

Roughly 3 out of 10 (28.5%) low-income young children ages 2-4 are either overweight or obese in North Carolina.

Obesity often starts in very young children. One in every 10 preschool-aged children in the United States was considered obese in 2010.[1] The North Carolina Pediatric Nutrition Surveillance System, which collects data on low-income children ages 0-5 years, shows that the obesity epidemic affects even the youngest individuals in the state. Roughly 3 out of every 10 (28.5%) young children ages 2-4 years are either overweight or obese in North Carolina. Over the past 30 years, the obesity rate has more than doubled among young children ages 2-4 years in North Carolina, increasing from 6.9% in 1981 to 15.4% in 2011. The percentage of overweight children in this age group also increased during this time from 11.7% in 1981 to 16.2% in 2011.[2]

The potential health impacts caused by being overweight or obese are extensive and can negatively affect nearly all major organ systems. People who are overweight or obese are more likely to develop type 2 diabetes, high blood pressure, heart disease, certain cancers, and stroke.[3] The majority of studies about the adverse health impacts of obesity among children are from studies with older children; however, there are some studies that show the health impacts of obesity in children ages 0-5 years.[4,5] Furthermore, children ages 0-5 years who are overweight or obese are at an increased risk of being overweight later in childhood, and therefore at a greater risk for developing health problems later in childhood.[6-9] Obese children are at increased risk for elevated cholesterol, insulin, and blood pressure; sleep apnea; bone and joint problems; and social and psychological problems.[10,11] Furthermore, children who are obese by age 6 years or overweight by age 12 years have greater than a 50% likelihood of becoming obese adults.[12]

Obesity is a multifactorial health outcome influenced by factors such as lifestyle, family history, community and environment, and genetics. As such, there is no one way to prevent obesity. However, there are many interventions that have been proven effective. Increasing physical activity, improving nutrition practices, reducing screen time, and improving sleep duration are ways to reduce

a young child's risk for obesity. While these are simple interventions in and of themselves, individuals' actual practice of these behaviors is often stymied by environments and communities that are not conducive to healthy behaviors. Other barriers to healthy weight in children ages 0-5 years include, but are not limited to, inadequate screening and treatment for unhealthy weight in the clinical setting, and a lack of education, knowledge, and skill surrounding issues of physical activity and nutrition among caretakers and role models for young children. Finally, the dearth of data for this age group hinders the ability to measure the full extent of the problem of obesity, as well as its risk factors, and, consequently, the ability to measure progress in reducing obesity or lack thereof.

The ECOP Task Force examined the recommendations from other expert groups in order to develop a blueprint for action in North Carolina.

At the request of the Blue Cross and Blue Shield of North Carolina Foundation (BCBSNC Foundation), the North Carolina Institute of Medicine (NCIOM) convened a task force to develop a blueprint to promote healthy weight and to prevent and reduce early childhood obesity. The NCIOM Task Force on Early Childhood Obesity Prevention (ECOP) was a collaborative effort between the BCBSNC Foundation, the North Carolina Partnership for Children (NCPC), and the NCIOM.

The ECOP Task Force was charged with examining recommendations of evidence-based and evidence-informed strategies from prior North Carolina and national task forces that focused on reducing childhood obesity, and developing a blueprint to prevent or reduce early childhood obesity in North Carolina. (Evidence-based strategies are those strategies with the strongest evidence, while evidence-informed are those strategies that are at the emerging or practice level.) To do this, the ECOP Task Force examined the evidence-based or evidence-informed recommendations from other expert groups in order to develop a blueprint for action in North Carolina. In essence, the blueprint for action includes the strategies needed to implement these recommendations. It includes the lead organizations and partners needed to implement the strategies, necessary funding and resources, and performance measures for evaluation. The blueprint is intended to serve as a common guide to focus the work of child care professionals, health professionals, public health professionals, state and local policymakers, nonprofits, and funders at the state, local, and, when appropriate, national level, who are interested in promoting healthy weight among young children in North Carolina.

The Task Force was co-chaired by Kathy Higgins, president, Blue Cross and Blue Shield of North Carolina Foundation, and Olson Huff, MD, former chair, North Carolina Partnership for Children, Inc, and chair, North Carolina Early Childhood Foundation. They were joined by more than 70 other ECOP Task Force members including representatives of state and local policy makers, health professionals, public health professionals, child care providers, nutrition experts, faith community representatives, nonprofit community organizations,

and philanthropic organizations. The ECOP Task Force met 14 times between September 2011 and May 2013 and developed a total of 15 strategies in the clinical, community/environment, and policy areas. These strategies are summarized below.

Clinical Strategies

The clinical setting provides a valuable opportunity for health professionals to assess the weight status of young children, refer patients for additional treatment when appropriate, and provide important information to caregivers about healthy weight, nutrition, physical activity, and community resources. The continuing education of practicing health professionals, as well as the academic preparation of aspiring health professionals, is necessary to ensure they have the knowledge, skills, and self-efficacy to perform these tasks.

Clinical Strategy 1: Increase and enhance the education of health professionals while in training (pre-service) or in residency programs

North Carolina and national funders should fund an inter-educational council to develop a systematic and ongoing plan focused on increasing the education and skills of health professional students and post-graduate trainees in North Carolina around obesity prevention and treatment. The council should include representation from the North Carolina Area Health Education Centers Program (AHEC); public and private schools of nursing, medicine, pharmacy, nutrition, public health, behavioral health, and allied health; and clinicians from across North Carolina. The council should review existing educational curricula and identify gaps or opportunities to strengthen health professional education and clinical training opportunities around early childhood obesity. In addition, health professionals should receive information to share with parents and caregivers about healthy weight at different life stages, as well as obesity prevention strategies.

Clinical Strategy 2: Expand education for practicing health professionals, which could be met through enhanced continuing education opportunities

North Carolina and national funders should provide funding to the Area Health Education Centers (AHEC) program and to CCNC to strengthen and expand the work of the quality improvement consultants to work with pediatric, family medicine, and obstetric practices to incorporate obesity prevention and treatment into clinical practice and systems (e.g. BMI coding and pediatric obesity prevention, assessments, and treatment). AHEC and CCNC should continue to develop a module for Maintenance of Certification (MOC) on early childhood obesity assessment, prevention, and treatment.

Education should occur through learning collaboratives and through work with individual practices. The core curriculum of this educational program should be developed into a high-quality online continuing education (CE) course, which can be used by health professionals through one of the AHECs. To the extent possible, AHEC and CCNC should help practices gain continuing education and MOC credits. In addition, CCNC should ensure that prompts for regular BMI screening are built into the pediatric electronic health records (EHR) and BMI or weight for length percentiles are built into the EHR.

The ACA requires coverage for services related to the prevention or treatment of early childhood obesity, including assessment of weight for height, assessment of BMI percentile, and obesity counseling.[13] However, it does not mandate how insurers pay for these services. Many insurers may be covering this as part of the well-child check-up, and may not be providing additional reimbursement to encourage health professionals to spend the time necessary for obesity counseling.

Clinical Strategy 3: Ensure adherence of insurers/ payers to the Affordable Care Act requirements for coverage of the prevention, diagnosis, and treatment of obesity (and as outlined in the American Academy of Pediatrics' Bright Futures guidelines).

All payers should review their coverage policies, including payment models and benefit design, to ensure that pediatric obesity prevention and treatment can be delivered by the most appropriate and qualified professionals in pediatric, family, ob/gyn, and specialty practices. Insurers should evaluate benefit design and work with employers and others to encourage members to take advantage of healthy lifestyle programs and covered benefits.

Health providers often need to refer patients and their families to supportive and complementary resources. However many do not have ready access to up-to-date, relevant state and local resources.

Clinical Strategy 4: Convene a group to identify and catalog core statewide and local services, resources, and supports for health professionals to refer families and children for additional support or intervention to enhance clinical recommendations

The Local health departments should collaborate with the appropriate partners to identify core services, resources, and supports available statewide. In addition, the North Carolina Association of State Health Directors, in collaboration with North Carolina Partnership for Children, North Carolina Child Care Resource and Referral Council, Community Care of North Carolina, and Eat Smart, Move More North Carolina should work together to create a template to identify the various local services, resources, and supports that are available at the county level to prevent or reduce early childhood obesity. Together, these groups should develop a method that enables health professionals to connect families and children with the identified services, resources, and supports.

Community and Environment Strategies

In North Carolina, there are a few community and environment obesity prevention initiatives that specifically focus on promoting healthy weight among young children ages 0-5 years. Thus, the ECOP Task Force developed three strategies that would reach many young children in the state. Three of the five priority Community/Environment strategies focus on child care programs since most children ages 0-5 years spend part of their early childhood in child care programs. In fact, at any point in time, one in four children in this age group are in a licensed, regulated child care program (see Table 4.1, Chapter 4). Throughout the year, many more children spend time in child care programs, as many families enroll and disenroll.

There has already been considerable effort to implement evidence-based and evidence-informed physical activity and nutrition strategies in child care programs through existing programs such as Shape NC, Nutrition and Physical Activity Self Assessment in Child Care (NAP SACC), Preventing Obesity by Design (POD), and Be Active Kids®. The ECOP Task Force members believed it was both important and practical to support the progress made in improving health and wellness in pilot child care centers, and to then spread the innovations to other child care programs across the state. The ECOP Community/Environment strategies are summarized below.

Community/Environment Strategy 1: Expand the Use of evidence-based and evidence-informed strategies for physical activity and nutrition in pilot child care centers

The Blue Cross and Blue Shield of North Carolina Foundation, along with other funders and state agencies with shared missions and goals, should develop incentives to incorporate evidence-based and evidence-informed obesity prevention strategies into programs and policies in child care centers located in counties with high obesity rates among children. As part of this initiative, child care teachers and directors should be educated and coached about obesity trends and prevention strategies.

Just as there is a need to enhance training for health professionals about strategies to promote healthy weight and ways to reduce early childhood overweight and obesity, there is a similar need to do this for child care professionals, child care consultants, and other support personnel.

Community/Environment Strategy 2: Provide pre-service and In-Service education for child care providers on evidence-based and evidence-informed strategies for physical activity and nutrition

The North Carolina Center for Health and Wellness (NCCHW), in partnership with Eat Smart, Move More North Carolina, should survey administrators in North Carolina's public and private two- and four-year colleges and universities that offer child care and early education degree programs about the existing curricula used to teach upcoming child care and early education professionals about early childhood health and obesity prevention strategies. After the survey, NCCHW should host a summit for North Carolina child care and early education professionals to identify strategies to enhance the curricula. The North Carolina Institute for Child Development Professionals, in collaboration with NCCHW, the North Carolina Child Care Health and Safety Resource Center, and the North Carolina Child Care Resource and Referral Council, North Carolina Pediatric Society, and two- and four-year college and university representatives, should lead the development of education modules and materials that can be pilot-tested and incorporated into existing curricula. These education modules and materials should also be used for continuing education credits offered through the North Carolina Child Care Resource and Referral Council, Smart Start partnerships, child care health consultants' networks, and the North Carolina Child Care Health and Safety Resource Center to certified early educators.

Community/Environment Strategy 3: Cross train all child care consultants and other support personnel on evidence-based and evidence-informed strategies for physical activity and nutrition

All child care consultants and other support personnel who provide training and technical assistance to child care and early education programs should be cross trained in evidence-based and evidence-informed strategies to support early educators in promoting healthy weight among young children. Using the education materials developed in Community/Environment Strategy 2 as a starting point, the North Carolina Child Care Health and Safety Resource Center should take the lead in developing the cross training curricula and promoting it among the different child care consultants including, but not limited to, child care health consultants, Shape NC consultants, Smart Start quality enhancement specialists, Child Care Resource and Referral technical assistance specialists, Head Start consultants, Child and Adult Care Food Program consultants, infant/toddler specialists, and the staff in the North Carolina Division of Child Development and Early Education who provide training and technical assistance to licensed child care programs. In addition, the modules and materials should be deliverable through multiple mediums, and organizations that employ consultants and other support personnel should require this cross training as part of their professional training requirements.

Not all children ages 0-5 years can be reached through child care or early education settings. Thus, the ECOP Task Force developed other strategies to reach young children and their families.

Community/Environment Strategy 4: Increase the focus of Eat Smart, Move More North Carolina on young children and their families

Eat Smart, Move More North Carolina should increase the focus of its community engagement efforts to implement evidence-based and evidence-informed strategies to promote healthy weight among young children and their families. To do this, it should survey member organizations to collect information on existing early childhood initiatives and programs; work with other appropriate organizations to identify and create an inventory of evidence-based and evidence-informed tools, policies, programs, and practices to improve healthy nutrition and physical activity for young children; educate member organizations about the importance of intervening to improve nutrition and physical activity among young children ages 0-5 years and

their families; and promote the availability of evidence-based and evidence-informed tools, policies, programs, and practices across the state.

Community/Environment Strategy 5: Form an ECOP Communications Committee to develop a communications campaign to support policy and behavior change to reduce early childhood obesity

The North Carolina Institute of Medicine should convene an ECOP Communications Committee comprising North Carolina funders; academicians with expertise in obesity; communications professionals; the North Carolina Division of Public Health; Eat Smart, Move More North Carolina; representatives from North Carolina colleges and universities with expertise in communications, obesity, and/or young children; and other appropriate groups such as grocery stores, hospitals, and others to develop a carefully crafted communications campaign to promote healthy weight in very young children. This group should specifically examine opportunities for communications activities that would best support the ECOP Task Force's blueprint.

Policy Strategies

This section of the ECOP Task Force's blueprint focuses primarily on voluntary efforts that the state can take to improve early childhood nutrition, expand physical activity, enhance the outdoor learning environment, and support breastfeeding. These "voluntary" efforts are not typically considered "policies," as policies are generally a regulatory or legislative action that mandates—rather than encourages—actions. However, because these efforts build on an existing regulatory or publicly funded programmatic structure, the ECOP Task Force included these strategies in the policy section. In addition, the ECOP Task Force included strategies aimed at changing Medicaid payment policies, which are considered policy changes in the more traditional use of the term "public policy."

Policy Strategy 1: Create a voluntary recognition program for child care programs and early education programs that meet enhanced physical activity and nutrition standards

The North Carolina Division of Child Development and Early Education (DCDEE), the Child and Adult Care Food Program, the North Carolina

Partnership for Children, the Carolina Global Breastfeeding Initiative, Child Care Resource and Referral Network, and the North Carolina Child Care Health and Safety Resource Center should develop a voluntary recognition program for licensed child care programs, family care homes, Head Start, North Carolina Pre-K, and other child care and early education settings that meet enhanced nutrition, including breastfeeding, physical activity, and naturalized outdoor learning environment standards for infants and young children. These groups should seek public input into the voluntary recognition standards before implementing the program. In addition, DCDEE should seek additional funding to provide financial incentives to child care programs that meet the voluntary standards for enhanced health and wellness recognition.

Policy Strategy 2: Enhance family education about early childhood healthy weight and obesity prevention strategies through existing maternal, infant, and early childhood home visiting and family strengthening programs

The Children and Youth Branch in the North Carolina Division of Public Health (DPH) should train the Nurse Family Partnership (NFP) and Healthy Families America (HFA) parent educators it funds about early childhood physical activity, nutrition, healthy weight, and obesity prevention. This training should include appropriate parent education on healthy weight, breastfeeding, nutrition, physical activity, and sleep into existing home visiting or family strengthening programs. NCPC should collaborate with DPH to ensure Parents as Teachers (PAT) parent educators receive similar training. DPH should examine possibilities to track this information in the home visiting data systems for the programs funded through the DPH.

The concept of healthy community design is based on the tenet that both the physical built environment and the food environment are important ways to respond to the obesity epidemic and related chronic diseases. Increasing access to healthy foods and places to be active is an integral part of a larger strategic plan to help individuals maintain healthy weight and reduce chronic diseases. All North Carolina agencies that make decisions affecting the built environment and food environment should consider the impact their decisions have on the health and well-being of North Carolinians. Ensuring equitable access to opportunities for physical activity, as well as to healthy and affordable food, should also be part of the planning process.

Policy Strategy 3: Expand the focus of state agencies to include early childhood health, physical activity, and nutrition through healthy community design

State agencies should adopt and promote policies and practices that focus on healthy community design to create opportunities for physical activity and access to healthy, affordable foods for families with young children ages 0-5 years, targeting at-risk communities. The 2013 North Carolina Statewide Pedestrian and Bicycle Plan should be used as a standard reference for designing communities with pedestrian mobility in mind. In addition, the American Planning Association's Policy Guide on Community and Regional Food Planning should be used as a standard reference for designing communities with healthy and affordable food access in mind.

Having data to create an understanding of the current health status and behaviors of very young children and their environments is necessary in order to know how best to target interventions and to measure collective success in preventing obesity within this age group.

Policy Strategy 4: Improve the collection and reporting of physical activity and nutrition data in multiple settings to more fully promote healthy weight among young children

The North Carolina Partnership for Children (NCPC), North Carolina Division of Child Development and Early Education, and the Child and Adult Care Food Program within the North Carolina Division of Public Health should collect data on the extent to which child care programs are implementing best practices related to nutrition and physical activity. This information should be shared with NCPC. In addition, the North Carolina State Center for Health Statistics should aggregate data across multiple years on young children, ages 0-5 years, to obtain reliable data on physical activity, nutrition, and other data that would provide information about activities that influence healthy weight.

Policy Strategy 5: Improve the collection of body mass index (BMI) data for young children and make the information available to policymakers, health professionals, and the public to evaluate existing programmatic and policy initiatives and to inform future ones

Community Care of North Carolina should continue to encourage primary care professionals to measure weight and height (to calculate BMI percentile) for all Medicaid recipients at least once annually. In addition, the North Carolina Division of Public Health should explore the possibility of capturing BMI data from electronic health records, and the Kindergarten Entry Assessment (KEA) should capture BMI data for each child entering kindergarten.

Children who have been breastfed are less likely to develop acute disease in childhood or chronic illness such diabetes or heart disease later in life.[14] In addition, breastfeeding may offer modest protection against obesity. Despite the known benefits of breastfeeding exclusively for the first six months of life and continued breastfeeding for the first year of life, mothers' decisions to breastfeed and continue breastfeeding can be influenced by the presence or lack of social support offered by hospital maternity practices, health care professionals, child care settings, and employers.[14]

Policy Strategy 6: Promote breastfeeding for all North Carolina infants

The North Carolina Division of Medical Assistance, in conjunction with Community Care of North Carolina, should promote Baby-Friendly Hospitals; promote breastfeeding as part of the Pregnancy Medical Home program; encourage pediatricians, family physicians, and other health care professionals to work with parents to promote breastfeeding and to provide referrals to lactation consultants, as needed; provide reimbursement to lactation consultants that have IBLCE certification; and pay to rent or purchase breastfeeding equipment.

Conclusion

Because of the multifactorial nature of obesity, there are many potential strategies and opportunities to reduce and prevent it. Multifaceted interventions that use a socioecological model of health interventions to target interventions at the interpersonal, clinical, community, environment, and policy levels have a far greater likelihood of improving population health than any single intervention.[15]

Progress in early childhood obesity prevention cannot be accomplished through one method, one policy, one funder, or any one type of intervention—and it can certainly not be done alone. The ECOP Task Force's blueprint builds on resources and partners already dedicated to improving child health, and it depends heavily on those settings where very young children can best be reached. Furthermore, the blueprint is an invitation to any stakeholder not currently investing resources in early childhood obesity prevention to do so. The early childhood obesity prevention blueprint is an inclusive one; there is a role for everyone to play.

References

1. Centers for Disease Control and Prevention. Overweight and obesity. US Department of Health and Human Services website. http://www.cdc.gov/obesity/index.html. Updated December 21, 2012. Accessed April 5, 2013.

2. Centers for Disease Control and Prevention. Table 1C: 2011 Pediatric Nutrition Surveillance: North Carolina Summary of Demographic Indicators Children Aged <5 Years. http://www.nutritionnc.com/pdfPregPed/PNSS/PedNSS2011StateTables.pdf. Published March 13, 2012. Accessed April 5, 2013.

3. Centers for Disease Control and Prevention. Overweight and obesity: causes and consequences. US Department of Health and Human Services website. http://www.cdc.gov/obesity/adult/causes/index.html. Updated April 27, 2012. Accessed April 5, 2013.

4. Skinner AC, Perrin EM, Steiner MJ. Healthy for now? A cross-sectional study of the comorbidities in obese preschool children in the United States. *Clin Pediatr (Phila)*. 2010;49(7):648-655.

5. Skinner AC, Steiner MJ, Henderson FW, Perrin EM. Multiple markers of inflammation and weight status: cross-sectional analyses throughout childhood. *Pediatrics.* 2010;125(4):801-809.

6. Skinner AC, Mayer ML, Flower K, Perrin EM, Weinberger M. Using BMI to determine cardiovascular risk in childhood: how do the BMI cutoffs fare? *Pediatrics.* 2009;124(5):905-912.

7. Dietz WH. Health consequences of obesity in youth: childhood predictors of adult disease. *Pediatrics.* 1998;101(3 pt 2):518-525.

8. Juonala M, Magnussen CG, Berenson GS, et al. Childhood adiposity, adult adiposity, and cardiovascular risk factors. *N Engl J Med.* 2011;365(20):1876-1885.

9. Lee JM, Gebremariam A, Vijan S, Gurney JG. Excess body mass index-years, a measure of degree and duration of excess weight, and risk for incident diabetes. *Arch Pediatr Adolesc Med.* 2012;166(1):42-48.

10. Dietz WH, Nelson A. Barriers to the treatment of childhood obesity: a call to action. *J Pediatr.* 1999;134(5):535-536.

11. Freedman DS, Mei Z, Srinivasan SR, Berenson GS, Dietz WH. Cardiovascular risk factors and excess adiposity among overweight children and adolescents: the Bogalusa Heart Study. *J Pediatr.* 2007;150(1):12-17.e2.

12. Nader PR, O'Brien M, Houts R, et al; National Institute of Child Health and Human Development Early Child Care Research Network. Identifying risk for obesity in early childhood. *Pediatrics.* 2006;118(3):e594-601.

13. HealthCare.gov Website. Preventive services covered under the Affordable Care Act: 26 covered preventive services for children. US Department of Health and Human Services website. http://www.healthcare.gov/news/factsheets/2010/07/preventive-services-list.html#CoveredPreventiveServicesforChildren. Published September 23, 2010. Updated September 27, 2012. Accessed April 5, 2013.

14. Mims SR, Lisenbee JH. Maternal care practices and breastfeeding in North Carolina: becoming baby-friendly. *N C Med J.* 2013;74(1):44-47.

15. Bernstein RJ. *Praxis and Action: Contemporary Philosophies of Human Activity.* Philadelphia, PA: University of Pennsylvania Press; 1971.

Overview of Early Childhood Obesity and the NCIOM Early Childhood Obesity Prevention Task Force

Chapter 1

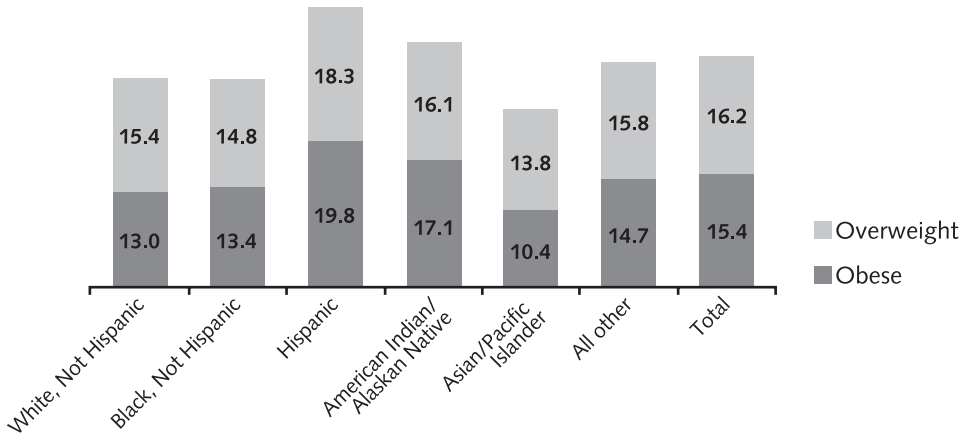
Call to Action

The prevalence of obesity nationwide has increased dramatically over the past two decades.[1] One in three (35.7%) adults in the United States is obese.[2] In North Carolina the proportion is similar, with 29.1% of the adult population obese in 2011 and an additional 36.0% overweight.[3] However, obesity is not a health condition limited to adults or older children. Young children, ages 0-5 years, are not immune to obesity or the various factors that increase the risk for obesity. In fact, 1 in every 10 preschool-aged children in the United States was obese in 2010.[4]

The North Carolina Pediatric Nutrition Surveillance Survey, which collects data on low-income children ages 0-5 years, shows that the obesity epidemic affects even the youngest individuals in the state. Over the past 30 years, the obesity rate has more than doubled among young children ages 2-4 years, rising from 6.9% in 1981 to 15.4% in 2011. The percentage of overweight children in this age group also increased during this time, from 11.7% in 1981 to 16.2% in 2011.[4] Roughly 3 out of every 10 (28.5%) low-income young children ages 2-4 years are either overweight or obese in North Carolina.[5] North Carolina Pediatric Nutrition Surveillance Survey data from 2011 show that a greater percentage of Hispanic children ages 2-4 years are obese (19.8%) compared to white children (13.0%) and black children (13.4%).[5]

Roughly 3 out of every 10 (28.5%) low-income young children ages 2-4 years are either overweight or obese in North Carolina.

Figure 1.1
Percentage of Overweight and Obese Children Ages 2-4 by Race and Ethnicity



Source: NC Pediatric Nutrition Surveillance System, 2011.[a]

a Analyses based on one record per child. Reporting period is January 1 through December 31. Excludes records with unknown data or errors. Based on 2000 CDC growth chart percentiles for children 2-20 years of age; overweight is defined as BMI-for-age >= 85th to < 95th percentile, and obesity is defined as >= 95th percentile.

One caveat to these data is that that they are from children in low-income families. There are no data available at the state level of obesity prevalence for children of higher incomes. Using data from the National Health and Nutrition Examination Survey, cross-sectional analyses of children ages 2-5 years of all incomes showed that a greater percentage of black children were obese (18.9%) versus 16.2% of Hispanic children and 9.2% of white children in 2009-2010.[6] These data indicate that, on a national level, both black and Hispanic children ages 2-5 are at greater risk of being obese.

Children who are overweight or obese are more likely to develop obesity in adolescence or adulthood.[7] The lifelong impact of childhood obesity on health is significant and includes, among other things, a higher risk of chronic disease. Thus, it is important to intervene early in a child's life to prevent overweight and obesity.

For children ages 2-19 years, individual BMI scores are compared to those of other children of similar age and gender to account for children's changing body compositions.

The good news is that there are evidence-based and evidence-informed strategies that can make a difference. It is time to implement such strategies in North Carolina to improve the health of our young children ages 0-5 years in order to prevent the significant immediate and lifelong health consequences of overweight and obesity. This blueprint not only serves as a roadmap that can help us prevent overweight and obesity for young children, but it is a call to action. There is a role for everyone to play in ensuring a healthy start for our youngest children. By working together collectively and implementing multiple strategies simultaneously, we can promote healthy weight and instill positive health behaviors in young children. Positive health behaviors learned in childhood—including healthy eating and increased physical activity—can serve as the basis for a lifetime of healthy behaviors.

Defining Obesity

While the word "obesity" and derivations of it are casually used by the general population, they are actual technical terms used by health care, public health, and medical professionals (among others) to describe a specific body weight status. Obesity is defined differently based on age categories. For individuals ages 2 years or more, an individual body mass index (BMI) is calculated using the following formula: BMI = weight^2/height^2 , where weight is measured in kilograms and height is measured in meters.[1,8] An adult aged 20 years or more whose BMI is 18.5-24.9 is considered to be at "normal" weight, one whose BMI is 25-29.9 is considered "overweight," and an adult's whose BMI is 30 or greater is considered "obese."[9] For children ages 2-19 years, individual BMI scores are compared to those of other children of similar age and gender to account for children's changing body compositions (i.e. body fat differs between girls and boys, and the amount of body fat changes with age) using the Centers for Disease Control and Prevention's Growth Chart (see Appendix A).[9] The percentile ranking indicates the child's weight category. A child whose weight falls in the range of the 5th to the 84th percentile is considered "healthy weight," one whose weight falls in the range of the 85th to the 94th percentile

is considered "overweight," and a child whose BMI is at or above the 95th percentile is considered "obese."

The weight status of children from 0-under 24 months is best determined using the World Health Organization (WHO) Child Growth Standards in Appendix B, which is the clinical practice recommended by the CDC. The WHO Child Growth Standards are recommended because these standards show how children *should* grow, not how they *do* grow. It is important to note that these standards are based upon data from infants in six countries (including the United States) who were optimally nourished, and these standards use the breastfed infant as the standard for growth.[10,11]To use these standards, the weight and length of a child are plotted on the gender-appropriate growth chart. A child or infant whose weight-for-length is higher than the 98th percentile is considered to have abnormal growth and is said to have high weight-for-length.

Recent research showed that children who gained enough weight to increase their BMI percentile by 10 or more percentage points before age 2 (i.e. moved up 2 or more weight-for-length percentiles, e.g. from the 75th to the 85th percentile or from the 50th to the 60th percentile) had increased odds of being obese at 5 and 10 years of age. Interestingly, the prevalence of obesity was highest in those children who went up 10 percentage points in the first 6 months of life.[12]

The evidence clearly shows that obese children are more likely to become obese adults.

Health Consequences of Early Childhood Obesity

The rise in overweight and obesity is alarming, especially because of the potential health consequences. Complications of overweight and obesity can negatively affect most organ systems including the circulatory, cardiovascular, skeletal, respiratory, reproductive, and digestive systems. People who are overweight or obese are more likely to develop type 2 diabetes, high blood pressure, heart disease, and certain cancers, and are also at a higher risk for stroke.[13] Other complications stemming from overweight and obesity include high cholesterol, sleep apnea, osteoarthritis, liver and gall bladder disease, and gynecological problems.[9] Many of these problems affect both adults and children.

The evidence clearly shows that obese children are more likely to become obese adults. According to a longitudinal study of approximately 1,000 children, children who were overweight at ages 24, 36, or 54 months were 5 times more likely to be overweight at age 12 years than children who were not overweight at those ages.[14] Another study of about 800 individuals found that obese children over the age of 6 have a greater than 50% probability of becoming obese adults compared to a 10% probability for non-obese children.[15] Along with this increased risk of being an obese adult comes the increased risk of a multitude of concomitant health problems such as those mentioned above.

Aside from the risk of obese children becoming obese adults, there are more immediate, short-term health impacts of early childhood obesity as well. The majority of studies about the adverse health impacts of obesity in children are

from studies with older children; however, there are some studies showing the health impacts of obesity in children 0-5 years.[16,17] Furthermore, for children ages 0-5 years who are overweight or obese, the increased risk of being overweight later in childhood puts these children at greater health risk.[18-21] Childhood obesity has been associated with serious comorbidities even among young children. A 1999 study in the journal Pediatrics showed that nationally, 65% of obese 5- to 10-year-old children have at least one cardiovascular disease risk factor, and 25% of obese 5- to 10-year-olds have two or more risk factors.[22] In the 2007 report of the Bogalusa Heart Study, almost 70% of obese children ages 5-14 years had at least one additional risk factor for cardiovascular disease, such as elevated cholesterol, insulin, or blood pressure.[23] It has also been shown that children who are obese are at increased risk for other health conditions including sleep apnea, bone and joint problems, and social and psychological problems.[24] Childhood obesity also contributes to type 2 diabetes in children. Type 2 diabetes, once uncommon among children, has been trending upward for the last two decades. This upward trend may be attributable to the rising obesity rates among youth (as well as low physical activity levels).[25]

Lifestyle factors, the environment, family history, and genetics are among the many factors that affect individual weight status.

Preventing Early Childhood Obesity

Obesity has many causes. Lifestyle factors, the environment, family history, and genetics are among the many factors that affect individual weight status. The most common root cause of obesity is an energy imbalance caused by the consumption of more calories than needed (e.g. for basic body processes such as cellular respiration) or more calories than expended (e.g. through regular daily activities and bouts of physical activity).[26]

While this most common underlying cause (energy imbalance) of obesity is well-known and accepted, simply advising people to "eat right" or "be more active" has not been sufficient to address the obesity epidemic. Because of obesity's multifactorial nature, there are many potential strategies and opportunities to reduce and prevent obesity. Multifaceted interventions that use the socioecological model of health to target interventions at the interpersonal, clinical, community, environment, and policy levels, have a far greater likelihood of improving population health than any single intervention.[27]

Obesity prevention and intervention starts with the family *before* the child is born. Children under 10 years old who have obese parents are more than twice as likely to be obese adults as their counterparts.[28] Therefore, maintaining healthy weight is important for parents. In addition, pregnant women and women considering pregnancy should understand the importance of healthy weight gain during pregnancy, as babies born to obese mothers have a greater chance of being obese later in life.[29]

The behaviors of parents, caregivers, and families influence children throughout childhood. Cultural differences in the perception of healthy weight for young children may influence a parent or caregiver's receptivity to changing what the

child eats or how much exercise he or she receives.[30,31] Role modeling, such as being physically active and practicing healthy nutrition behaviors, is integral to a child's lifestyle, education, and practice of these behaviors. Communities, schools, child care settings, health care providers, and others play an influential role in the nutrition and physical activity behaviors of children as well.[24] The characteristics of both the built environments and nutrition environments where children live and play, such as access to spaces that welcome and encourage physical activity and access to healthy foods, also significantly impact children's activity levels and eating habits.[32] As discussed in Chapter 4, child care settings offer a high-impact intervention point for altering the nutrition and built environments of young children to improve access to healthy food and places to be active.

Child care programs provide an optimal location for intervention.

It is important for children's growth to be monitored and for adjustments to be made to help children achieve or maintain a healthy weight. Protective factors for healthy weight include age-appropriate sleep duration, healthy eating and nutrition, and physical activity.[33] Meals eaten away from home are a growing part of the American diet; however, these types of meals have been shown to have higher caloric value, larger portion sizes, and lower nutritional quality, underscoring the value of eating healthy meals at home.[34-36] Sedentary behaviors also contribute to the obesity epidemic; studies show that the more television children watch, the greater their risk for obesity.[37-41] Other forms of "screen time" such as computers and video games also contribute to obesity because these activities displace calorie-expending physical activities.[42] Short sleep duration has also recently been included in the risk factors for childhood overweight.[43]

Many young children spend a significant amount of time away from home. At any point in time, approximately 1 in 4 (25%) children ages 0-5 years is attending a child care program in North Carolina.[44] An even greater percentage of children in this age category spends some time in child care programs. Therefore, child care programs provide an optimal location for intervention. The faith community and other community settings may also play a significant role in helping to prevent and address early childhood overweight and obesity. By encouraging protective factors such as healthy eating, nutrition, and adequate physical activity, community organizations can become advocates for healthy weight and healthy children.

Many national and state organizations have studied the issue of childhood obesity and have developed recommendations for prevention and reduction of this public health problem. Chapter 2 of the report presents the recommendations from these groups that relate to preventing early childhood obesity in children ages 0-5 years.

Existing Recommendations for Preventing Early Childhood Obesity

There have been a number of task forces at the national and state levels that have recommended evidence-based or evidence-informed strategies to reduce obesity in children. Evidence-based strategies are often defined somewhat differently by different groups and, therefore, should be viewed as part of a continuum in this report. On one end sit the evidence-based strategies that are considered the "gold standards," which are supported by rigorous, systematic review. These are strategies that have "reach, feasibility, sustainability, and transferability." On the other end of the evidence-based strategies continuum sit emerging and promising practices, which are evidence-informed. These strategies appear to be effective based upon field-based summaries or evaluations in progress.[45] In this report, both of these terms will be used. Evidence-based strategies will refer to the strategies with the strongest evidence, while evidence-informed will refer to those strategies that are at the emerging or practice level.

Six national and state-level groups have developed recommendations, to prevent or reduce childhood obesity over the past decade.

At least six national and state-level groups have developed recommendations, based on evidence-based and evidence-informed strategies, to prevent or reduce childhood obesity over the past decade, including the Institute of Medicine of the National Academies (IOM) Early Childhood Obesity Prevention Policies Committee (2011),[46] the White House Task Force (WHTF) on Childhood Obesity (2010),[47] the North Carolina Legislative Task Force on Childhood Obesity (2010),[48] the North Carolina Division of Public Health (DPH) (2010),[49] the North Carolina Institute of Medicine (NCIOM) Prevention Task Force (2009),[50] and the North Carolina Health and Wellness Trust Fund Commission (NC HWTF) Study Committee on Childhood Obesity (2005).[51] On the national level, there have been two major initiatives aimed at reducing childhood obesity. First, in 2010, the White House completed a report on early childhood health and examined strategies to reduce early childhood obesity. Then, in 2011, the Institute of Medicine of the National Academies reviewed factors related to overweight and obesity from ages 0-5 years, with a focus on nutrition, physical activity, and sedentary behavior, and recommended actions that health care professionals, caregivers, and policymakers can take to prevent obesity among children in this age group.[46]

The recommendations from the above bodies identified evidence-based or evidence-informed strategies to prevent or reduce childhood obesity. While many of the recommendations focused on school-aged children, there are evidence-based and evidence-informed strategies that can also be implemented to improve the weight status of younger children. In general these recommendations fall into eight categories and include prenatal care, breastfeeding, growth monitoring, sleep, healthy eating behaviors and nutrition, screen time, and physical activity. The last category is referred to as "general" and consists of recommendations that are more crosscutting or broad in nature.

The NCIOM Early Childhood Obesity Prevention Task Force relied on the work

of other task forces and committees that had already put forth the effort to identify evidence-based and evidence-informed strategies. Since the time those reports were published, the strength of the connection between breastfeeding and obesity prevention has been shown to be potentially weaker than previously thought. Results published in *JAMA* (March 2013) from a clinical trial of nearly 14,000 mother-infant pairs found that breastfeeding duration and exclusivity did not prevent overweight or obesity in children. While this is just one study, it was a randomized controlled trial and suggests the link between breastfeeding duration and exclusivity and obesity prevention is less clear.[52] Recent reviews of the literature also suggest that while breastfeeding may offer a modest protective effect, it is no longer considered as major a determinant for healthy weight in children.[53,54] However breastfeeding does provide known benefits for babies, such as improved cognitive development and protection against infection, type 2 diabetes, and asthma.[55] Breastfeeding is also associated with decreased risk for maternal diabetes and maternal cardiovascular disease.[56-58] The NCIOM Task Force on Early Childhood Obesity Prevention elected to retain the work it had done in developing strategies to implement the breastfeeding-related recommendations from the other task forces and committees for two reasons: 1) a modest protective factor may in fact exist and future scientific research will help elucidate the association, if there is one, and 2) the many known benefits of breastfeeding to infants and their mothers are clear and consistent.

The Task Force was charged to developing a blueprint to prevent or reduce early childhood obesity in North Carolina.

NCIOM Task Force on Early Childhood Obesity Prevention

At the request of the Blue Cross and Blue Shield of North Carolina Foundation (BCBSNC Foundation), the NCIOM convened a task force to develop a multifaceted plan to prevent and reduce early childhood obesity. The NCIOM Task Force on Early Childhood Obesity Prevention (ECOP) was a collaborative effort between the BCBSNC Foundation, the North Carolina Partnership for Children (NCPC), and the NCIOM.

The ECOP Task Force was charged with:

1. Examining evidence-based and evidence-informed strategies from prior North Carolina and national task forces that focus on reducing childhood obesity.

2. Developing a blueprint to prevent or reduce early childhood obesity in North Carolina.

A specification for the blueprint was that it needed to include specific strategies for action, partners, and resources necessary to implement the recommendations of prior state and national task forces that have examined evidence-based and evidence-informed strategies for preventing or reducing early childhood obesity. In addition, the blueprint included performance measures to ensure that the strategies, as implemented, were achieving their intended purposes.

The ECOP Task Force recognized that there was no single intervention that can "solve" the problem of early childhood overweight and obesity. Rather, multilevel interventions are needed at the clinical, community and environment, and policy levels to support behavioral change. To ensure that the ECOP Task Force included a broad cross-section of stakeholders and experts, the ECOP Task Force consisted of four different workgroups. One workgroup, referred to as the "core group," consisted of 19 ECOP Task Force members who were requested to attend all topic group meetings. This smaller core group included representatives of the BCBSNC Foundation and NCPC as well as other key stakeholders such as representatives of state and local agencies, health professional associations, foundations, and consumer groups. In addition, we also invited other stakeholders and content experts to participate in the three other workgroups which focused on either clinical, community and environment, or public policy strategies.

The ECOP Task Force's blueprint offers 15 strategies to improve the health of young children ages 0-5 years across North Carolina.

The NCIOM Task Force on Early Childhood Obesity Prevention was co-chaired by Kathy Higgins, president, Blue Cross and Blue Shield of North Carolina Foundation; and Olson Huff, MD, former Chair, Board of Directors, North Carolina Partnership for Children, Inc., and Chair, Board of Directors, North Carolina Early Childhood Foundation. They were joined by more than 70 other ECOP Task Force members including core group members, and clinical, community/environment, and policy workgroup members. The ECOP Task Force met 14 times between September 2011 and May 2013.

The ECOP Task Force's blueprint offers 15 strategies to improve the health of young children ages 0-5 years across North Carolina that can occur through a concerted effort of state and community partners at multiple levels of the socioecological model. This blueprint is intended to serve as a guide for foundations, state and local government, health professional associations, and other community groups interested in improving the health of young children ages 0-5 years. The blueprint can be used to both foster new interventions, and align existing interventions around evidence-based or evidence-informed strategies that have the greatest likelihood of promoting healthy weight among young children. Over time, the blueprint may need to be modified as we gain a better understanding of what works to promote healthy weight for young children. Further, outside events may influence implementation—such as changes in the funding or structure of our current health care or child care delivery systems. Thus, the blueprint should be viewed as a "living document" which can be modified, as needed, to achieve the goals of preventing early childhood overweight and obesity.

The blueprint contains five chapters, with this chapter serving as an introduction to the work of the ECOP Task Force and the problem and consequences of early childhood obesity. Chapter 2 reviews previous recommendations by other expert groups to address and prevent early childhood obesity. Chapter 3 focuses on the ECOP Task Force's clinical strategies to enhance and expand continuing

education opportunities for health professionals, among other goals. Chapter 4 presents the ECOP Task Force's community and environment strategies aimed at improving child care programs and other health-promoting initiatives. Finally, chapter 5 discusses the ECOP Task Force's policy strategies to promote healthy behaviors, expand the state's focus on early childhood health, and improve data collection. The report also contains five appendices: Appendix A shows a Centers for Disease Control and Prevention Growth Chart recommended for use with children ages 2-20 years; Appendix B provides the World Health Organization Child Growth Standards recommended for use with children 0-23 months; Appendix C presents the full list of strategies developed by the ECOP Task Force; Appendix D reports the full list of related recommendations from the six expert state and national groups reviewed by the ECOP Task Force; and Appendix E presents additional community and environment strategies developed by the ECOP Task Force, but not included in this report as priority strategies.

The blueprint should be viewed as a "living document" which can be modified, as needed, to achieve the goals of preventing early childhood overweight and obesity.

References

1. Division of Nutrition, Physical Activity and Obesity, National Center for Chronic Disease Prevention and Health Promotion. Overweight and Obesity: Basics About Childhood Obesity. Centers for Disease Control and Prevention website. http://www.cdc.gov/obesity/childhood/basics.html. Published April 27, 2012. Accessed April 5, 2013.

2. Ogden CL, Carroll MD, Kit BK, Flegal KM. National Center for Health Statistics, Centers for Disease Control and Prevention. Prevalence of Obesity in the United States, 2009–2010. http://www.cdc.gov/nchs/data/databriefs/db82.pdf. Published January 2012. Accessed April 5, 2013.

3. Centers for Disease Control and Prevention. Adult Obesity Facts. http://www.cdc.gov/obesity/data/adult.html. Published August 13, 2012. Accessed May 23, 2013.

4. Division of Nutrition, Physical Activity, and Obesity, National Center for Chronic Disease Prevention and Health Promotion. Overweight and Obesity. http://www.cdc.gov/obesity/index.html. Published December 21, 2012. Accessed April 5, 2013.

5. Centers for Disease Control and Prevention. Nutrition Services Branch, Women's and Children's Health, NC Division of Public Health, NC Department of Health and Human Services. 2011 Pediatric Nutrition Surveillance: North Carolina Summary of Demographic Indicators Children Aged < 5 Years. http://www.nutritionnc.com/pdfPregPed/PNSS/PedNSS2011StateTables.pdf. Published March 13, 2012. Accessed April 5, 2013.

6. Ogden CL, Carroll MD, Kit BK, Flegal KM. Prevalence of obesity and trends in body mass index among US children and adolescents, 1999-2010. *JAMA.* 2012;307(5):483.

7. Singh AS, Mulder C, Twisk JW, Mechelen W, Chinapaw, M. Tracking of childhood overweight into adulthood: A systematic review of the literature. *Obesity Reviews.* 2008;9(5):474-88.

8. Flegal KM, Shepherd JA, Looker AC, et al. Comparisons of percentage body fat, body mass index, waist circumference, and waist-stature ratio in adults. *Am. J. Clin. Nutr.* 2009;89(2):500-508.

9. Division of Nutrition, Physical Activity, and Obesity, National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention. About BMI for Adults. http://www.cdc.gov/healthyweight/assessing/bmi/adult_bmi/index.html. Published September 13, 2011. Accessed April 5, 2013.

10. Division of Nutrition, Physical Activity, and Obesity, National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention. Advantages of Using the WHO Growth Charts to Assess the Growth of Children from Birth to Aged 2 Years. http://www.cdc.gov/nccdphp/dnpao/growthcharts/who/recommendations/advantage.htm. Published December 19, 2012. Accessed April 5, 2013.

11. Division of Nutrition, Physical Activity, and Obesity, National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention. WHO Growth Standards Are Recommended for Use with Children Younger Than Aged 2 Years in the United States. http://www.cdc.gov/nccdphp/dnpao/growthcharts/who/recommendations/index.htm. Published December 19, 2012. Accessed April 5, 2013.

12. Taveras EM, Gortmaker SL, Hohman KH, et al. Randomized controlled trial to improve primary care to prevent and manage childhood obesity: The high five for kids study. *Arch. Pediatr. Adolesc. Med.* 2011;165(8):714-722.

13. Division of Nutrition, Physical Activity and Obesity, National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention. Overweight and Obesity: Causes and Consequences. http://www.cdc.gov/obesity/adult/causes/index.html. Published April 27, 2012. Accessed April 5, 2013.

14. Nader PR, O'Brien M, Houts R, et al. Identifying risk for obesity in early childhood. *Pediatrics.* 2006;118(3):e594-601.

15. Whitaker RC, Wright JA, Pepe MS, Seidel KD, Dietz WH. Predicting obesity in young adulthood from childhood and parental obesity. *N. Engl. J. Med.* 1997;337(13):869-873.

16. Skinner AC, Steiner MJ, Henderson FW, Perrin EM. Multiple markers of inflammation and weight status: Cross-sectional analyses throughout childhood. *Pediatrics.* 2010;125(4):1.

17. Skinner AC, Steiner MJ, Perrin EM. Healthy for now? A cross-sectional study of the co-morbidities in obese preschool children in the united states. *Clin Pediatr.* 2010;49(7):648.

18. Skinner AC, Mayer ML, Flower K, Perrin EM, Weinberger M. Using BMI to determine cardiovascular risk in childhood: How do the BMI cutoffs fare? *Pediatrics.* 2009;124(5):905.

19. Dietz WH. Health consequences of obesity in youth: Childhood predictors of adult disease. *Pediatrics.* 1998;101(3):518.

20. Juonala M, Magnussen CG, Berenson GS, et al. Childhood adiposity, adult adiposity, and cardiovascular risk factors. *N Engl J Med.* 2011;365(20):1876.

21. Lee JM, Gebremariam A, Vijan S, Gurney JG. Excess body mass index-years, a measure of degree and duration of excess weight, and risk for incident diabetes. *Arch Pediatr Adolesc Med.* 2012;166(1):42.

22. Dietz WH, Nelson A. Barriers to the treatment of childhood obesity: A call to action. *J. Pediatr.* 1999;134(5):535-536.

23. Freedman DS, Mei Z, Srinivasan SR, Berenson GS, Dietz WH. Cardiovascular risk factors and excess adiposity among overweight children and adolescents: The bogalusa heart study. *J. Pediatr.* 2007;150(1):12-17.e2.

24. Centers for Disease Control and Prevention. Childhood Obesity Facts. http://www.cdc.gov/healthyyouth/obesity/facts.htm. Published February 19, 2013. Accessed April 5, 2013.

25. Centers for Disease Control and Prevention. Children and Diabetes — More Information. http://www.cdc.gov/diabetes/projects/cda2.htm. Published April 3, 2012. Accessed April 5, 2013.

26. National Institutes of Health. What Causes Overweight and Obesity? http://www.nhlbi.nih.gov/health/health-topics/topics/obe/causes.html. Published July 13, 2012. Accessed April 5, 2013.

27. Bernstein R. *Praxis and Action.* Ed. Anonymous Philadelphia: University of Pennsylvania Press; 1971.

28. Whitaker RC, Wright JA, Pepe MS, Seidel KD, Dietz WH. Predicting obesity in young adulthood from childhood and parental obesity. *N. Engl. J. Med.* 1997;337(13):869-873.

29. Academy of Nutrition and Dietetics. Healthy Weight during Pregnancy. http://www.eatright.org/Public/content.aspx?id=10933. Published January 2013. Accessed April 5, 2013.

30. Rich SS, DiMarco NM, Huettig C, Essery EV, Anderson E, Sanborn CF. Perceptions of health status and play activities in parents of overweight hispanic toddlers and preschoolers. *Family & Community Health.* 2005;28(2):130.

31. Kumanyika S. Environmental influences on childhood obesity: Ethnic and cultural influences in context. *Physiol Behav.* 2008;94(1):61.

32. Sallis JF, Glanz K. The role of built environments in physical activity, eating, and obesity in childhood. *Future Child.* 2006;16(1):89-108.

33. Pate RR, O'Neill JR. Physical activity guidelines for young children: An emerging consensus. *Arch. Pediatr. Adolesc. Med.* 2012;166(12):1095-1096.

34. Todd J, Mancino L, Lin BH. Economic Research Report No. (ERR-90) 24. The Impact of Food Away From Home on Adult Diet Quality. http://ers.usda.gov/publications/err-economic-research-report/err90.aspx#.UVXp7qs4U1w. Published February 2010. Accessed April 5, 2013.

35. Mancino L,Todd JE, Guthrie J, Lin BH. Economic Research Service, United StatesDepartment of Agriculture. How Food Away From Home Affects Children's Diet Quality. http://www.ers.usda.gov/media/136261/err104_3_.pdf. Published October 2010. Accessed April 5, 2013.

36. Centers for Disease Control and Prevention. Research to Practice Series, No. 6. Incorporating Away-From-Home Food into a Healthy Eating Plan. http://www.cdc.gov/nccdphp/dnpa/nutrition/pdf/r2p_away_from_home_food.pdf. Accessed April 5, 2013.

37. Rey-Lopez JP, Vicente-Rodriguez G, Biosca M, Moreno LA. Sedentary behaviour and obesity development in children and adolescents. *Nutr Metab Cardiovasc Dis.* 2008;18:242.

38. Boone JE, Gordon-Larseon P, Adair LS, Popkin BM. Screen time and physical activity during adolescence: Longitudinal effects on obesity in young adulthood. *Int J Behav Nutr Phys Act.* 2007;4:26.

39. Henderson VR. Longitudinal associations between television viewing and body mass index among white and black girls. *J Adolesc Health.* 2007;41:544.

40. O'Brien M, Nader PR, Houts RM, et al. The ecology of childhood overweight: A 12-year longitudinal analysis. *Int J Obes.* 2007;31:1469.

41. Danner FW. A national longitudinal study of the association between hours of TV viewing and the trajectory of BMI growth among US children. *J Pediatr Psychol.* 2008;33:1100.

42. Obesity Prevention Source Web site. Television Watching and "Sit Time". Harvard School of Public Health website. http://www.hsph.harvard.edu/obesity-prevention-source/obesity-causes/television-and-sedentary-behavior-and-obesity/. Accessed April 5, 2013.

43. Taveras EM, Rifas-Shiman SL, Oken E, Gunderson EP, Gillman MW. Short sleep duration in infancy and risk of childhood overweight. *Arch. Pediatr. Adolesc. Med.* 2008;162(4):305-311.

44. North Carolina Department of Child Development and Early Education. North Carolina Population by Age, 2010-2019. http://www.osbm.state.nc.us/ncosbm/facts_and_figures/socioeconomic_data/population_estimates/demog/statesingleage_2010_2019.html. Published 28 Jan 2013. Accessed April 5, 2013.

45. North Carolina Institute of Medicine. Chapter 2: The role of evidence-based strategies in public health. In: *Improving North Carolina's Health: Applying Evidence for Success.* 2012.

46. Institute of Medicine (IOM). The National Academies Press. Early Childhood Obesity Prevention Policies. Washington, DC. http://www.iom.edu/Activities/Nutrition/YoungChildObesity/2011-JUN-23.aspx. Published 2011. Accessed April 5, 2013.

47. White House Task Force on Childhood Obesity. Executive Office of the President of the United States. Solving the Problem of Childhood Obesity Within a Generation. http://www.letsmove.gov/white-house-task-force-childhood-obesity-report-president. Published May 2010. Accessed April 5, 2013.

48. North Carolina General Assembly. Task Force on Childhood Obesity. Raleigh, NC. http://www.ncleg.net/documentsites/committees/LTFCO/2010%20Task%20Force%20on%20Childhood%20Obesity%20Final%20Report%20.pdf. Published 2010. Accessed April 5, 2013.

49. North Carolina Enhanced Nutrition Standards for Child Care Final Report to the General Assembly. North Carolina Division of Public Health. http://ncchildcare.dhhs.state.nc.us/pdf_forms/child_nutrition_study.pdf. Published 2010. Accessed April 5, 2013.

50. North Carolina Institute of Medicine. Prevention for the Health of North Carolina: Prevention Action Plan. http://www.nciom.org/wp-content/uploads/NCIOM/projects/prevention/finalreport/PreventionReport-July2010.pdf. Published October 2009. Accessed April 5, 2013.

51. NC Health and Wellness Trust Fund (HWTF). Childhood Obesity in North Carolina. http://www.healthwellnc.com/hwtfc/pdffiles/FitFamilies-StudyCommitteeReport05.pdf. Published 2005. Accessed April 5, 2013.

52. Martin RM, Patel R, Kramer MS, et al. Effects of promoting longer-term and exclusive breastfeeding on adiposity and insulin-like growth factor-I at age 11.5 years: A randomized trial. *JAMA.* 2013;309(10):1005-1013.

53. Casazza K, Fontaine KR, Astrup A, et al. Myths, presumptions, and facts about obesity. *N. Engl. J. Med.* 2013;368(5):446-454.

54. Casazza K, Fernandez JR, Allison DB. Modest protective effects of breast-feeding on obesity: Is the evidence truly supportive? *Nutrition Today.* 2012;47(1):33-38.

55. Office on Women's Health, Office of the Assistant Secretary for Health, US Department of Health and Human Services. Why breastfeeding is important. http://www.womenshealth.gov/breastfeeding/why-breastfeeding-is-important/index.html. Published August 04, 2010. Accessed May 1, 2013.

56. Groer MW, Jevitt CM, Sahebzamani F, Beckstead JW, Keefe DL. Breastfeeding status and maternal cardiovascular variables across the postpartum. *J Womens Health.* 2013;22(5):453.

57. Stuebe AM, Mantzoros C, Kleinman K, Gillman MW, Rifas-Shiman S, Gunderson EP, Rich-Edwards J. Duration of lactations and materinal adipokines at 3 years postpartum. *Diabetes.* 2011;60(4):1277.

58. Schwarz EB, Brown JS, Creasman JM, Steube A, McClure CK, Van Den Eeden SK, Thom D. Lactation and maternal risk of type 2 diabetes: A population-based study. *Am J Med.* 2010;123(9):863.

Existing Recommendations

Chapter 2

As previously mentioned, the issue of childhood obesity prevention has been studied by multiple national and state-level groups, including the Institute of Medicine of the National Academies (IOM) Early Childhood Obesity Prevention Policies Committee (2011),[1] the White House Task Force (WHTF) on Childhood Obesity (2010),[2] the North Carolina Legislative Task Force on Childhood Obesity (2010),[3] the North Carolina Division of Public Health (DPH) (2010),[4] the North Carolina Institute of Medicine (NCIOM) Prevention Task Force (2009),[5] and the North Carolina Health and Wellness Trust Fund Commission (NC HWTF) Study Committee on Childhood Obesity (2005)[6]. These groups identified evidence-based strategies or best and promising practices aimed at reducing childhood obesity and developed recommendations to incorporate them. Some of the recommendations were focused on older children; others were focused on infants and young children ages 0-5 years. Rather than reinvent the work of these various task forces, the NCIOM Task Force on Early Childhood Obesity Prevention examined the existing recommendations targeted at reducing childhood obesity among infants and young children ages 0-5 years in order to develop a strategic implementation plan for the state of North Carolina. This chapter provides a brief overview of the focus of each of these six reports, as well as common strategies to prevent or reduce early childhood obesity.

The Task Force examined the existing recommendations targeted at reducing childhood obesity among infants and young children ages 0-5 years in order to develop a strategic implementation plan for the state of North Carolina.

Overview of Prior Reports

Institute of Medicine's of the National Academies (IOM) Early Childhood Obesity Prevention Policies Committee (2011)

The IOM's Early Childhood Obesity Prevention Policies Committee was given the charge to gather primary and secondary evidence and provide recommendations on obesity prevention policies for young children ages 0-5 years. The committee focused on nutrition, physical activity, and sedentary behavior policies, and addressed differences in obesity prevention policies for children ages 0-2 years and ages 2-5 years. The committee gathered evidence-based strategies that have shown a direct impact on childhood obesity prevention, and also drew on the experience and expert opinions of the committee members. In addition to families who take care of children, the IOM recommendations were targeted toward individuals who support parents, such as health care professionals, educators, and government agencies, as well as individuals who influence children's environments outside of the home, such as child care providers, local governments, and policymakers.[1]

White House Task Force (WHTF) on Childhood Obesity (2010)

The WHTF on Childhood Obesity was created at the request of President Barack Obama. The Task Force reviewed research and consulted experts to produce a set of recommendations to reduce overweight and obesity in the United States. The WHTF recommendations focused on reducing overweight and obesity by empowering parents and caregivers, improving healthy food in schools, increasing access to healthy affordable foods, and increasing physical activity.[2]

North Carolina Legislative Task Force on Childhood Obesity (2010)

The North Carolina Legislative Task Force on Childhood Obesity was created by the North Carolina General Assembly (NCGA) in the 2009 session. This Task Force was charged with providing recommendations to the NCGA on strategies to prevent childhood obesity. Recommendations centered around nutrition and physical activity standards in child care centers; screening at-risk children for unhealthy weight; and supporting state employees who choose to breastfeed. The North Carolina Legislative Task Force report focused on child care centers, the North Carolina Medicaid and Healthy Choice programs, and the State Personnel Commission.[3]

All of these reports included recommendations to prevent and reduce childhood obesity for children ages 0-5 years.

North Carolina Division of Public Health (DPH) (2010)

Enhanced Nutrition Standards for Child Care: Final Report to the General Assembly is a product of DPH in association with the North Carolina Division of Child Development. The Task Force focused on healthy eating, physical activity, early childhood interventions, and the role of child care facilities. The report recommended implementation of nutrition standards for licensed child care facilities.[4]

North Carolina Institute of Medicine (NCIOM) Prevention Task Force (2009)

At the request of North Carolina foundations including the Blue Cross and Blue Shield of North Carolina Foundation, The Duke Endowment, the Kate B. Reynolds Charitable Trust, and the North Carolina Health and Wellness Trust Fund, the NCIOM was asked to convene the Prevention Task Force in 2005. The Task Force first identified the leading causes of death and disability in the state, as well as the preventable risk factors that contribute to these causes. The Task Force then identified evidence-based strategies and best or promising practices aimed at reducing the preventable risk factors, including poor nutrition and physical inactivity.[5] For ages 0-5 years, the NCIOM recommended increasing physical activity and improving nutrition in child care programs and after-school programs.

North Carolina Health and Wellness Trust Fund (NC HWTF) Study Committee on Childhood Obesity (2005)

The NC HWTF was created by the NCGA from the Tobacco Master Settlement Agreement. The NC HWTF was charged with the task of implementing and investing in programs to improve the health of North Carolinians. The NC HWTF previously funded initiatives on tobacco prevention and cessation, obesity prevention, health disparities elimination, and prescription assistance.[7] One of the NC HWTF initiatives was the creation of a study committee on the prevention of childhood obesity. The purpose of the committee was to examine the causes and status of childhood obesity in North Carolina and to make policy recommendations to the NCGA and appropriate state agencies to change

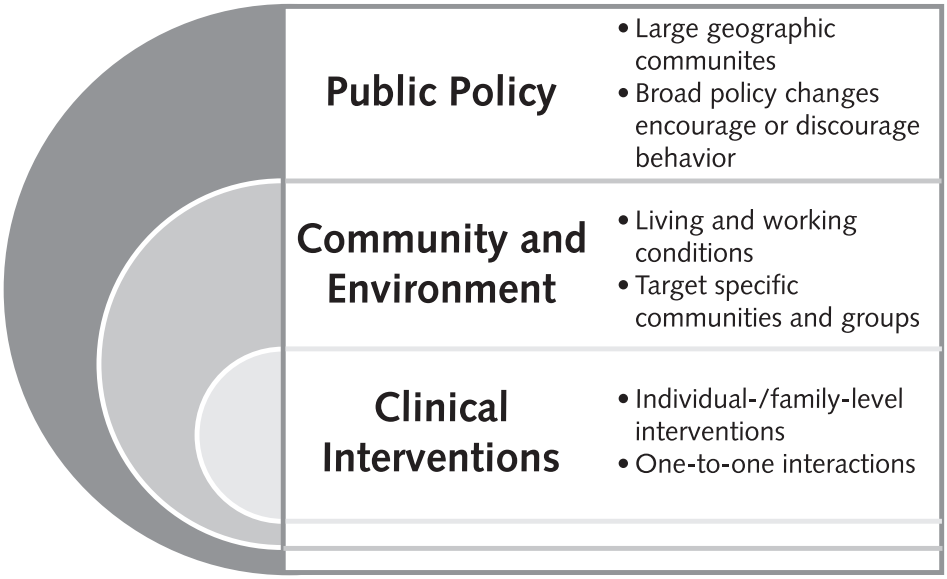
the course of childhood obesity.[6] The NC HWTF recommendations focused on educating health professionals and educators; encouraging providers and educators to measure BMI; and improving nutrition and physical activity in faith-based organizations and child care programs.

All of these reports included recommendations to prevent and reduce childhood obesity for children ages 0-5 years. These recommendations contained evidence-based strategies and best or promising practices. The NCIOM Task Force on Early Childhood Obesity Prevention used these recommendations as the starting point for its blueprint. Generally, the recommendations provided in the six reports fall into eight categories, including prenatal care, breastfeeding, growth monitoring, sleep, healthy eating behaviors and nutrition, screen time, physical activity, and those that are crosscutting or more general in nature. The full recommendations from these six expert groups are listed in Appendix D.

The Task Force focused its intervention strategies on three of the levels of the socioecological model: clinical, community and environment, and public policy.

The NCIOM Early Childhood Obesity Prevention (ECOP) Task Force members recognized the necessity to implement strategies targeting multiple settings or levels of intervention, rather than to implement one specific strategy or focus on one particular level of intervention. Thus, the ECOP Task Force's blueprint for health interventions is adopted from the socioecological model of health behavior. Individuals' behaviors and health are influenced by levels that extend from the individual and family, to the individuals' community and local group affiliations, and, at the broadest level, to the systemic policies and structures. The socioecological model recognizes that multifaceted interventions that include clinical, community and environment, and public policy changes have a better chance of affecting individual behavior than an intervention at any one specific level (see Figure 2.1).[8] The Task Force focused its intervention strategies on three of the levels of the socioecological model: clinical, community and environment, and public policy. Clinical interventions are based on one-on-one interactions with health professionals at the individual or family level, and address the specific needs of the individuals and their families. Community and environment level interventions are constructed around local communities and social groups, including but not limited to workplaces, schools, and places of worship, to target behavior change. Public policy changes are the highest level of interventions that encourage or discourage behaviors through large sectors such as the environment, transportation, health care regulation, and urban planning.[8]

Figure 2.1
Socioecological Model of Health Interventions



Source: Adapted from Ockene JK, Edgerton EA, Teutsch SM, et al. Integrating evidence-based clinical and community strategies to improve health. *Am J Prev Med.* 2007;32(3):244-252.

North Carolina has demonstrated success in changing behaviors to improve population health through the implementation of a multifaceted strategy using all levels of the socioecological model.

North Carolina has demonstrated success in changing behaviors to improve population health through the implementation of a multifaceted strategy using all levels of the socioecological model. For example, this type of approach has effectively reduced levels of tobacco use in North Carolina. Starting in 2003, North Carolina funded the NC HWTF, which implemented a marketing campaign, Tobacco. Reality. Unfiltered (TRU), that targeted individual behaviors and provided quitline services through Quitline NC (now operated by DPH) to support individuals wanting to quit using tobacco. At the community level, private funders supported initiatives to reduce tobacco use in the community through the 100% tobacco-free schools and hospitals initiatives. Additionally, the NCGA initiated broad-level policy interventions such as increasing the tobacco tax and mandating that all public schools be 100% tobacco-free. Prior to these strategies, the adult smoking rate had remained at 25% in North Carolina from 1995 to 2003. Since implementing these multifaceted strategies targeting all levels of the socioecological model, the percentage of adults smoking decreased from 24.7% in 2003[9] to 21.8% in 2011;[10] high school use declined from 24.8% in 2003[11] to 17.7% in 2011;[12] and middle school use dropped from 12.8% in 2003[13] to 7.6% in 2011.[14] Based upon the success of multifaceted approaches in improving the public's health, the ECOP Task Force recategorized the recommendations from the existing reports into three broad categories: clinical, community and environment, and public policy. These are summarized below. The collection of these recommendations by category and level in the socioecological model are shown in Table 2.1.

Table 2.1
Recommendations from National and State-level Groups to Reduce Early Childhood Obesity (Organized Around Clinical, Community and Environment, and Policy Interventions)

	Clinical	Community and Environment	Policies
Prenatal Care	Educate women on healthy weight gain during pregnancy (WHTF)	Education and outreach through creative public campaigns on prenatal care (WHTF)	
Breastfeeding	Hospitals and health care providers should encourage mothers to breastfeed (WHTF) Health care providers and insurers should provide information to pregnant women and new mothers on breastfeeding (WHTF) Local health departments and community-based organizations should develop peer support programs for breastfeeding (WHTF) Early childhood settings, health care providers, and government agencies should support breastfeeding (WHTF, NC Legislative Task Force)	Adults who work with infants and their families should promote and support exclusive breastfeeding for six months and breastfeeding in conjunction with complementary foods for one year or more (IOM) Local health departments and community-based organizations should develop peer support programs for breastfeeding. (WHTF) Early childhood settings, health care providers, and government agencies should support breastfeeding (WHTF, NC Legislative Task Force)	Early childhood settings, health care providers, and government agencies should support breastfeeding (WHTF, NC Legislative Task Force)
Growth Monitoring	Health care professionals should measure children's height and weight as part of every well-child visit (IOM) Health care professionals should consider the BMI of the child and parents as risk factors (IOM, NC HWTF)		Community Care of North Carolina, in collaboration with local agencies, should require BMI screening for at-risk children (NC Legislative Task Force)
Sleep	Health and education professionals should be trained to counsel parents about their child's age-appropriate sleep duration (IOM)		Child care regulatory agencies should require child care providers to adopt practices that promote age-appropriate sleep duration (IOM)

	Clinical	Community and Environment	Policies
Healthy Eating and Nutrition	Health and education professionals should be trained in ways to help improve children's eating habits and should counsel parents about diet (IOM)	Physical activity and nutritious food options in child care programs should be expanded (NCIOM) DPH and North Carolina Partnership for Children should expand dissemination of evidence-based approaches to improve physical activity and nutrition in child care and preschool using the Nutrition and Physical Activity Self Assessment for Child Care (NAP SACC) (NCIOM) Church and faith-based organizations should serve healthy and nutritious snacks, serve as community locations for physical activity, emphasize the significance of family meals, and explore ways to open their proprietary recreational facilities to their member children/families (NC HWTF) Foundations should give preference to applicants that demonstrate high standards of physical activity and nutrition (NC HWTF) Communications and media associations should include broadcasts/campaigns to promote healthy eating and physical activity (NC HWTF) North Carolina hospitals and medical centers should offer healthy food and beverage choices and physical activity opportunities (NC HWTF)	The federal government should provide guidelines to states, providers, and families on how to increase physical activity, improve nutrition, and reduce screen time in early child care settings (WHTF) States should strengthen licensing standards and quality rating and improvement systems in early education and child care settings (WHTF) US DHHS and US Department of Agriculture should establish dietary guidelines for children ages 0-2 years (IOM) Government agencies should promote access to affordable healthy foods for infants and young children ages 0-5 years by maximizing participation in federal nutrition assistance programs and increasing access to healthy foods (IOM) The Federal Trade Commission, US Department of Agriculture, CDC, and FDA should continue work on uniform voluntary national nutrition and marketing standards for food and beverages marketed to children (IOM) Child care regulatory agencies should require that all meals, snacks, and beverages that are served be consistent with the Child and Adult Care Food Program meal patterns, and that safe drinking water is available and accessible to children (IOM)

	Clinical	Community and Environment	Policies
Healthy Eating and Nutrition			Child care regulatory agencies should require child care providers and early childhood educators to practice responsive feeding (IOM) North Carolina Lt. Governor and Co-Chairs of the study committee should send letters to the packaged food industry in North Carolina commending those that have developed and distributed age-appropriate portion sizes for snack foods and beverages (NC HWTF) North Carolina Lt. Governor and Co-Chairs of the study committee should send letters to North Carolina congressional representatives to consider limits on youth-targeted advertising of unhealthy foods and beverages (NC HWTF) The North Carolina Star Rated License system of child care programs should be examined as a possible point of intervention by placing more emphasis on physical activity and nutrition criteria (NC HWTF) Enhanced child nutrition standards established should be implemented in two phases (NC DPH) North Carolina Child Care Commission should assess the process to include healthy eating and physical activity as quality indicators in North Carolina's Star Rated License (NCIOM)

	Clinical	Community and Environment	Policies
Screen Time	Health care professionals should counsel parents on screen time (IOM) American Academy of Pediatrics guidelines on screen time should be made more widely available; encourage children to limit screen time (WHTF)	Adults working with children should limit screen time to less than two hours per day (IOM) American Academy of Pediatrics (AAP) guidelines on screen time should be made more widely available; encourage children to limit screen time (WHTF) State and local government agencies providing training, tools, and technical assistance to child care providers and early education program teachers should provide training on how to counsel parents on the importance of reducing screen time for young children (IOM)	The federal government should provide guidelines to states, providers, and families on how to increase physical activity, improve nutrition, and reduce screen time in early child care settings (WHTF) States should strengthen licensing standards and quality rating and improvement systems in early education and child care settings (WHTF)
Physical Activity	Health and education professionals should be trained in methods to increase children's physical activity and reduce their sedentary behavior (IOM)	The community and its environment should promote physical activity (IOM) Physical activity and nutritious food options in child care programs should be expanded (NCIOM) DPH and North Carolina Partnership for Children should expand dissemination of evidence-based approaches to improve physical activity and nutrition in child care and preschool using NAP SACC (NCIOM) Church and faith-based organizations should serve healthy and nutritious snacks, serve as community locations for physical activity, emphasize the significance of family meals, and explore ways to open their proprietary recreational facilities to their member children/ families (NC HWTF)	Child care regulatory agencies should require child care providers and early childhood educators to provide opportunities for children to be physically active throughout the day (IOM) Child care regulatory agencies should allow children to move freely (IOM) The federal government should provide guidelines to states, providers, and families on how to increase physical activity, improve nutrition, and reduce screen time in early child care settings (WHTF) States should strengthen licensing standards and quality rating and improvement systems in early education and child care settings (WHTF)

	Clinical	Community and Environment	Policies
Physical Activity		Foundations should give preference to applicants that demonstrate high standards of physical activity and nutrition (NC HWTF) Communications and media associations should include broadcasts/campaigns to promote healthy eating and physical activity (NC HWTF) NC hospitals and medical centers should offer healthy food and beverage choices and physical activity opportunities (NCHWTF)	DPH should develop physical activity guidelines for ages 0-2 years and promote the program to child care programs (NC HWTF) North Carolina Child Care Commission should assess the process to include healthy eating and physical activity as quality indicators in North Carolina's Star Rated License system (NCIOM) The NC Star rating system of childcare centers should be examined as a possible point of intervention by placing more emphasis on physical activity and nutrition criteria (NCHWTF)
General	Instruction in health professional schools on prevention: healthy eating, physical activity, and effective behavior counseling (NC HWTF) Educate North Carolina providers on obesity prevention and weight management (NC HWTF) State Health Plan, Medicaid, Health Choice, and special health services coverage in North Carolina should increase funding for services that promote healthy lifestyles (NC HWTF)	North Carolina Association for the Education of Young Children and other statewide associations that promote the education and health of young children in North Carolina should consider policies that promote proper nutrition and increased physical activity (NC HWTF) NC HWTF and BCBSNC Foundation should continue the FitTogether television series and website beyond the three year plan (NC HWTF) US DHHS and other partners should establish a social marketing campaign to provide pregnant women and caregivers of children ages 0-5 years information on risk factors for obesity and strategies for prevention (IOM)	NCDOI should study the fiscal impact of prevention and treatment of childhood obesity (NC HWTF) State Health Plan, Medicaid, Health Choice, and Special Health Services coverage in North Carolina should increase funding for services that promote healthy lifestyles (NC HWTF) Insurers should adopt policies that incentivize healthier lifestyles (NC HWTF) Researchers in North Carolina should be commended and encouraged to research links between nutrition/ physical activity and academic performance (NC HWTF)

Clinical Interventions

Clinical interventions for reducing early childhood obesity among children ages 0-5 years focused on two broad areas: enhanced training for health professionals, and the clinical guidance health professionals should give to both their patients and the parents of their patients.

The IOM and NC HWTF recommended that health professionals receive enhanced training about evidence-based strategies to prevent early childhood obesity. Information in the training should include, but not be limited to: the link between breastfeeding and the reduced risk of childhood obesity or overweight; the importance of measuring BMI; healthy eating, sleeping, and physical activity strategies (including reduced screen time); and effective behavior counseling. Health professionals should receive this training in school as part of their clinical rotations, in residency training, and as part of continuing education.

Clinical interventions focused on two broad areas: enhanced training for health professionals, and the clinical guidance health professionals should give to both their patients and the parents of their patients.

The IOM and WHTF also recommended that health professionals advise their patients about strategies to prevent and/or reduce early childhood obesity. Health professionals should routinely educate pregnant women and women planning pregnancy about the link between the mother's preconception weight, healthy weight gain during pregnancy, and breastfeeding in reducing the risk of childhood obesity. In addition, health providers, hospitals, and health systems should encourage mothers to breastfeed for at least six months. Health insurers can support this effort by paying for lactation consultation and support to help women breastfeed their infants. Additionally, health professionals should counsel patients and parents on limiting screen time.

Pediatricians and other health professionals should routinely measure the child's weight and height as part of every well-child visit. They should consider the BMIs of the child and the parents in the risk assessment for overweight and obesity. Health professionals should advise parents about healthy weight gain during infancy and young childhood. They should also advise parents about the need for physical activity and reduced screen time as other strategies to reduce early childhood obesity. In addition, health professionals should counsel parents about children's age-appropriate sleep durations.

Community and Environment Interventions

The community and environment interventions focused on encouraging community organizations and settings to promote best practices to reduce early childhood obesity, and foundations and payers to support best practices.

The NC HWTF, IOM, NC Legislative Task Force, and WHTF recommended that hospitals and medical centers, educators (including early child care settings), and faith-based organizations promote proper nutrition, healthy food, and healthy beverage choices; implement physical activity opportunities; and limit screen time. Insurers can support these efforts by incentivizing healthier lifestyles. Foundations should incentivize community organizations by giving

funding preferences to organizations that demonstrate high standards for physical activity and nutrition. Early childhood settings, the North Carolina State Personnel Commission, and community-based organizations should develop programs to support breastfeeding for at least the first six months of life.

The WHTF and NC HWTF recommended that local public campaigns be implemented to promote prenatal care, healthy eating, and physical activity. The NC HWTF and BCBSNC Foundation should continue funding the FitTogether television series and website.

Public Policy Interventions

Changing public policies can also affect health. In the context of this report, we are using a broad definition of the term "public policies." Public policies include legislation and regulatory actions. We also include voluntary standards, established by governmental agencies, as public policies. Voluntary standards can help affect large scale change if they are widely recognized and adopted by multiple organizations.

Community and environment interventions focused on encouraging community organizations and settings to promote best practices to reduce early childhood obesity and foundations and payers to support best practices.

The evidence-based and evidence-informed public policy interventions primarily focused on public education campaigns, more specific regulations for child care programs and government agencies, and increased standards for the food and beverage industry.

The WHTF, IOM, and NC HWTF recommended that government agencies provide information to states, providers, and families on strategies to increase physical activity, improve nutrition, and reduce screen time. In addition, information should be provided about the links connecting prenatal care and breastfeeding to childhood obesity, and about the links between nutrition, physical activity, and academic performance. Education and creative public campaigns should be used to improve awareness.

The WHTF, NCIOM, NC HWTF, NC Legislative Task Force, DPH, and IOM recommended that states should strengthen licensing standards and quality rating improvement systems in early education and child care settings, including standards on physical activity, nutrition, and age-appropriate sleep duration. DPH, the US Department of Health and Human Services, and the US Department of Agriculture can support this effort by creating guidelines for children ages 0-5 years. North Carolina should use the North Carolina Star Rated License system of child care programs to improve standards in early child care programs. Regulatory agencies can support efforts by ensuring regulations allow children to move freely whenever possible, and by requiring that food and beverages served are consistent with federal Child and Adult Care Food Program standards.

The IOM and NC HWTF recommended that government entities, including the US Federal Trade Commission, US Department of Agriculture, Centers for

Disease Control and Prevention (CDC), and US Food and Drug Administration (FDA), and political leaders encourage nutrition and marketing standards for food and beverages marketed to young children and promote access to affordable healthy foods. Private industry should be encouraged to market and produce foods and beverages with improved nutritional value for children ages 0-5 years.

Changing public policies can also affect health.

References

1. Institute of Medicine (IOM). The National Academies Press. Early Childhood Obesity Prevention Policies. Washington, DC. http://www.iom.edu/Activities/Nutrition/YoungChildObesity/2011-JUN-23.aspx. Published 2011. Accessed April 5, 2013.

2. White House Task Force on Childhood Obesity. Executive Office of the President of the United States. Solving the Problem of Childhood Obesity Within a Generation. http://www.letsmove.gov/white-house-task-force-childhood-obesity-report-president. Published May 2010. Accessed April 5, 2013.

3. North Carolina General Assembly. Task Force on Childhood Obesity. Raleigh, NC. http://www.ncleg.net/documentsites/committees/LTFCO/2010%20Task%20Force%20on%20Childhood%20Obesity%20Final%20Report%20.pdf. Published 2010. Accessed April 5, 2013.

4. North Carolina Enhanced Nutrition Standards for Child Care Final Report to the General Assembly. North Carolina Division of Public Health. http://ncchildcare.dhhs.state.nc.us/pdf_forms/child_nutrition_study.pdf. Published 2010. Accessed April 5, 2013.

5. North Carolina Institute of Medicine. Prevention for the Health of North Carolina: Prevention Action Plan. http://www.nciom.org/wp-content/uploads/NCIOM/projects/prevention/finalreport/PreventionReport-July2010.pdf. Published October 2009. Accessed April 5, 2013.

6. NC Health and Wellness Trust Fund (HWTF). Childhood Obesity in North Carolina. http://www.healthwellnc.com/hwtfc/pdffiles/FitFamilies-StudyCommitteeReport05.pdf. Published 2005. Accessed April 5, 2013.

7. NC Health and Wellness Trust Fund (HWTF). ABOUT US: Who We Are. http://www.healthwellnc.com/AboutUs.aspx. Accessed April 5, 2013.

8. Sallis JF, Owen N, Fisher EB. Chapter 20: Ecological models for health behavior. In: Glanz K, Rimer BK, Viswanath K, ed. *Health Behavior and Health Education: Theory, Research, and Practice.* 4th Edition ed. 2008:465.

9. State Center for Health Statistics, Division of Public Health, North Carolina Department of Health and Human Services. Trends in Key Health Objectives for North Carolina and the Nation. http://www.schs.state.nc.us/schs/pdf/2010_Trends_Report_20120814.pdf. Published July 2012. Accessed April 5, 2013.

10. North Carolina State Center for Health Statistics. 2011 BRFSS Survey Results: North Carolina, Tobacco Use. http://www.schs.state.nc.us/SCHS/brfss/2011/nc/all/_rfsmok3.html. Published 14 Sep 2012. Accessed April 5, 2013.

11. State Board of Education, NC Department of Public Instruction. NC Healthy Schools. Youth Risk Behavior HIGH SCHOOL 2003 SURVEY RESULTS. http://www.nchealthyschools.org/docs/data/yrbs/2003/report/highschool.pdf. Published 2003. Accessed April 5, 2013.

12. State Board of Education, NC Department of Public Instruction. NC Healthy Schools. 2011 Youth Risk Behavior Survey: North Carolina High School Survey. http://www.nchealthyschools.org/docs/data/yrbs/2011/statewide/highschool/summary-graphs.pdf. Accessed April 5, 2013.

13. State Board of Education, NC Department of Public Instruction. Youth Risk Behavior MIDDLE SCHOOL 2003 SURVEY RESULTS. http://www.nchealthyschools.org/docs/data/yrbs/2003/report/middleschool.pdf. Accessed April 5, 2013.

14. State Board of Education, NC Department of Public Instruction. North Carolina Youth Risk Behavior Survey: MIDDLE SCHOOL 2011 SURVEY RESULTS. http://www.nchealthyschools.org/docs/data/yrbs/2011/statewide/middle-school.pdf. Accessed April 5, 2013.

Clinical Strategies

Chapter 3

Health professionals should be well trained in the principles of evidence-based practice. Principles of evidence-based practice help health professionals select the right intervention for the right person at the right time. When implemented with fidelity, evidence-based practice yields the greatest return on the investment of time, money, and other scarce resources in clinical settings. Additionally, using evidence to inform practice can help practitioners avoid ineffective or harmful interventions.

As noted previously, the NCIOM Early Childhood Obesity Prevention (ECOP) Task Force was charged with developing strategies to implement the recommendations of prior state and national task forces that have examined evidence-based and evidence-informed strategies for preventing or reducing early childhood obesity. The clinical recommendations from these previous groups focused on two approaches. First, they recommended that health professionals measure a child's height and weight in order to calculate body mass index (BMI) as a part of every well-child visit, and that they should consider the parents' BMI in identifying potential risk factors. Second, they focused on the advice and information that health professionals should give parents and caretakers of young children to promote healthy weight. Information that should be provided includes counseling pregnant women on healthy weight gain, educating both pregnant women and new mothers on the importance of breastfeeding, and providing information to parents and other caretakers about healthy weight gain for infants and young children, age appropriate sleep durations, healthy eating and nutrition, the importance of physical activity, and eliminating or reducing screen time.

The strategies identified here increase the likelihood and ability of health professionals to focus on early childhood obesity prevention.

The ECOP Task Force acknowledged that there are many competing demands on health professionals' time, which makes it difficult to focus heavily on obesity prevention strategies. However the ECOP Task Force believes the strategies identified here increase the likelihood and ability of health professionals to focus on early childhood obesity prevention.

The clinical section of the ECOP Task Force's blueprint focuses on four strategies. These strategies are not presented in any priority order. Rather, Task Force members believed that all of these strategies would lead to greater involvement of clinicians in reducing overweight and obesity among young children.

Clinical Strategy 1: Increase and enhance the education of health professionals while in training (pre-service) or in residency programs.

Clinical Strategy 2: Expand education for practicing health professionals, which could be met through enhanced continuing education opportunities.

Clinical Strategy 3: Ensure adherence of insurers/payers to the Affordable Care Act requirements for coverage of the prevention, diagnosis, and treatment of obesity (and as outlined in the American Academy of Pediatrics' Bright Futures guidelines).

Clinical Strategy 4: Convene a group to identify and catalog core statewide and local services, resources, and supports for health professionals to refer families and children for additional support or intervention to enhance clinical recommendations.

Clinical Strategy 1: Increase and enhance the education of health professionals while in training (pre-service) or in residency programs

Obesity and overweight are multifaceted problems that should be addressed by many types of health professionals.

Health Professional Pre-Service Education

Changing clinical practice will target the education of health professionals who are in training as well as those who have completed training. Obesity and overweight are multifaceted problems that should be addressed by many types of health professionals. The most successful programs that documented decreases in BMI percentiles and sustained changes over time have incorporated a variety of health providers including medical professionals, nutritionists, exercise professionals, and mental health clinicians.[1] In addition, research has shown that it often takes multiple interventions by different types of health professionals to support complex forms of health behavior change.[2] As we train the next generation of health professionals, education in the prevention and treatment of obesity and overweight is paramount. For the purposes of this discussion, we consider resident physicians to be pre-service health professionals because their training and curriculum is under relative control by their hospital, health system, or department.

Pregnancy Weight Gain

Pregnancy weight gain is clearly associated with newborn weight, and newborn weight is associated with that individual's BMI throughout childhood.[3] It is important for health professionals who are in training or in practice to learn about ideal weight gain during pregnancy and how to share weight gain recommendations and information with pregnant women in a sensitive and culturally appropriate way. One study demonstrated that pregnancy associated weight gain was associated with birth weight; for every additional pound of weight gain during pregnancy, birth weight increased by about an eighth of an ounce.[3] Though the incremental average increase is small, women who gained more than 52 pounds during pregnancy (compared to those that gained 18-22 pounds) were more than twice as likely to have babies weighing more than 9 pounds.[3] Ideal pregnancy weight gain, which is based on a woman's pre-pregnancy BMI, can be determined at an initial visit or during the preconception period (see Table 3.1).

Table 3.1
Pre-pregnancy BMI and Associated Recommended Weight Gain

BMI Category	Recommended Weight Gain, in Pounds
Underweight (<18.5)	28-40
Normal weight (18.5-24.9)	25-35
Overweight (25.0-29.9)	15-25
Obese (≥30.0)	11-20

Source: Academy of Nutrition and Dietetics. Healthy weight during pregnancy. Academy of Nutrition and Dietetics website. http://www.eatright.org/Public/content.aspx?id=10933. Published January 2013. Accessed April 5, 2013.

Universal Screening

BMI screening is necessary in order to identify those who are overweight or obese.

BMI screening is necessary in order to identify those who are overweight or obese and is the first step toward intervention. Clinicians and parents are poor judges of overweight, especially among younger children.[4,5] The use of appropriate screening tools enhances the identification of children at unhealthy weights. In addition, it increases the number of children and families that receive information and brief interventions, as well as the number of children who are referred for more intensive services.[6]

Family History

Obesity is often a family problem, with predisposing factors related to genetic history and familial behavior patterns around nutrition and physical activity. Studies have consistently demonstrated that parental overweight, obesity, and diabetes are strong risk factors for pediatric obesity. In fact, parental BMI has been demonstrated to explain as much as 70% of the variance in child BMI.[7,8] There are many reasons for this association; however, the majority of this association was shown to be genetic in a study that compared twins separated at birth with twins raised together.[9] Though a genetic predisposition may increase an individual's risk of becoming obese, access to healthy foods, learned behaviors such as portion control, and an active lifestyle may decrease the genetically inferred risk.[10] Therefore, behavioral interventions may be more important in children and families at risk for obesity because of their genetic risk.[11]

A family's history may be reason for concern when it comes to the long-term health of a child. For example, if a child had a grandparent who lost a leg to diabetes, the family might be more motivated to work on obesity prevention or treatment. Some family behaviors, such as eating a majority of meals away from home or eating fast food several times a week, may also prompt specific prevention interventions from providers.

Developmentally Appropriate Information

Parents need developmentally appropriate obesity prevention information, and clinicians of all types need to understand this information to best help families. Dietary recommendations, sleep needs, appropriate physical activity levels,

and weight gain/loss goals need to be individualized based on the child's age and current BMI percentile. This includes information about age appropriate portions and decreased fat intake, as well as guidance on satiety cues and alternative forms of comfort and soothing for young children. Many studies have also shown an association between shorter sleep duration and higher BMI percentiles among children including young children.[12] Parents need age-specific information on sleep duration, as well as advice on best practices for sleep, bedtime routines, and sleep environments.

Clinical Prevention Tools

Parents need developmentally appropriate obesity prevention information, and clinicians of all types need to understand this information to best help families.

Many brief intervention tools have been developed to assist clinicians in supporting behavior change around pediatric nutrition. The underlying concept is that the tools allow the provider at the point of care to deliver a brief, tailored, age appropriate message about nutrition and weight. As stand-alone interventions, demonstrating effectiveness is challenging. However, as part of a comprehensive clinical, school-based, and community-based effort to prevent pediatric overweight and obesity, these interventions should help providers support change in an efficient and effective manner. One tool contains color-coded BMI charts that plot a child's BMI according to a stoplight motif (red, yellow, green) based on the child's level of risk for overweight. This tool is based on the CDC recommendation chart for children ages 2 and older included in Appendix A.[13,14] Another tool, "5-3-2-1-Almost None," developed and promoted by Eat Smart, Move More North Carolina is a prescription-style hand-out with five simple pediatric obesity prevention messages: five or more servings of fruits and vegetables daily; three structured meals daily—eat breakfast, less fast food, and more meals prepared at home; two hours or less of TV or video games daily; one hour or more of moderate to vigorous physical activity daily; and limit sugar-sweetened drinks to "almost none." It can be handed out during check-ups or sick visits with almost no impact on visit time.[15] Such tools should be used in conjunction with screening and referral for children with more severe problems and follow-up for children who are at risk of being overweight or obese.

Motivational Interviewing

Motivational interviewing refers to a set of skills that can be taught and practiced with a relatively small investment in training. It has increasingly become the mainstay of behavior change interventions related to a variety of health risks including substance abuse, non-adherence to treatment, and obesity.[16-18] Motivational interviewing seeks to elicit intrinsic motivation for change, and it seeks to help patients understand and address ambivalence to change, understand their motivation or resistance to change, and understand how their behaviors affect their ability to achieve goals. Motivational interviewing has been studied for the prevention and treatment of pediatric obesity and shows promising results.[19,20]

Community Resources

Practitioners should be educated in identifying and utilizing community resources. Not all types of clinical practices will have the same in-house access to all kinds of services (medical nutrition therapy, exercise therapy, and behavioral therapy to name a few). However, many community-based resources are available and more are becoming available each year. These may include programs at schools, community centers, community agencies, and public health departments. In addition to partnering with community agencies, it is important that local communities identify resources available to them, including statewide resources such as the Eat Smart, Move More North Carolina website.[21]

Breastfeeding

As previously noted, the ECOP Task Force relied upon the work of six previous entities that focused on obesity prevention to guide its work. These efforts included those of the Institute of Medicine of the National Academies (IOM) Early Childhood Obesity Prevention Policies Committee (2011),[22] the White House Task Force (WHTF) on Childhood Obesity (2010),[23] the North Carolina Legislative Task Force on Childhood Obesity (2010),[24] the North Carolina Division of Public Health (DPH) (2010),[25] the North Carolina Institute of Medicine (NCIOM) Prevention Task Force (2009),[26] and the North Carolina Health and Wellness Trust Fund Commission (NC HWTF) Study Committee on Childhood Obesity (2005).[27] The recommendations from these bodies identified evidence-based or evidence-informed strategies to prevent or reduce childhood obesity. As noted in Chapter 1, the connection between breastfeeding duration and exclusivity and obesity prevention may not be as strong as was once thought. However, it may offer modest protection against obesity, and the literature on the general benefits of breastfeeding is clear and consistent. Breastfeeding protects babies from a variety of poor health conditions including, but not limited to, respiratory infections, otitis media, gastrointestinal tract infections, necrotizing enterocolitis, sudden infant death syndrome, and allergic diseases such as asthma and eczema.[28] Due to the many benefits of breastfeeding and the possible modest protection against obesity that breastfeeding offers,[29] health professional students should be educated on the extensive benefits of breastfeeding and how to best promote and support breastfeeding.

Practitioners should be educated in identifying and utilizing community resources.

Clinical Strategy 1: Increase and enhance the education of health professionals while in training (pre-service) or in residency programs

a) North Carolina and national funders should fund an inter-educational council to develop a systematic and ongoing plan focused on increasing the education and skills of health professional students and post-graduate trainees in North Carolina around obesity prevention and treatment. The council should include representation from the North Carolina Area

Health Education Centers Program (AHEC); public and private schools of nursing, medicine, pharmacy, nutrition, public health, behavioral health, and allied health; and clinicians from across North Carolina. The council should review existing educational curricula and identify gaps or opportunities to strengthen health professional education and clinical training opportunities around early childhood obesity. The council needs to be broadly representative of health disciplines, geography, race/ethnicity, and gender. This education should include, but not be limited to:

1) **The importance of charting the child's weight on a regular basis using the WHO Child Growth Standards for children ages 0-23 months, and CDC growth charts for ages 2-5 years during each well-child check; and information about measurement techniques and best practices, and the best way to communicate results of weight for height percentile and BMI percentile results (the use of color coded charts is one example of an effective communication tool).**

2) **Information about the role of family health history/behaviors, especially obesity and obesity related diseases, on children's risk of obesity and its consequences.**

3) **Available obesity prevention clinical tools such as "5-3-2-1-Almost None."**

4) **The importance of healthy weight gain during pregnancy and the benefits of breastfeeding.**

5) **Culturally sensitive information to support and educate new mothers in breastfeeding and exclusive breastfeeding.**

6) **Motivational interviewing.**

7) **Evidence-based prevention, assessment, and treatment options.**

b) **Health professionals should receive information to share with parents and caregivers about healthy weight at different stages of the child's life, satiety cues, healthy eating and nutrition, appropriate sleep durations, the importance of eliminating or limiting screen time (including televisions, computers, and other digital media devices), and strategies to increase physical activity.**

Lead organization and partners: AHEC should take the lead in the development of the inter-agency council. AHEC should work with academic and community-based health professionals and health departments in the development of the inter-educational council and the curricula.

Funding and new resources required: This new inter-agency council and associated work, including AHEC administrative and curricular support and small grants to stakeholder schools, departments, and programs, would cost approximately $250,000 annually and should be raised from North Carolina funders.

The inter-agency academic council should examine other curricula to identify model curricula that could be included in health professional educational courses. The inter-agency council should focus on the critical elements needed to implement these new curricula within existing health professional training programs.

Performance measures and evaluation: Within five years of initial funding, North Carolina should have created an inter-agency council, and this council should have developed the model curricula. The curricula should have been implemented in 25% of schools or degree granting programs within two years of rolling out the different modules (e.g. nursing, medical students, nutritionists, etc.). Knowledge gained would be measured through pre- and post-curricula delivery and/or through nutrition counseling delivered to standardized patients in clinical performance exams. Results of local program evaluation should be reported to the inter-educational council and used to inform refinements in curriculum.

Clinical Strategy 2: Expand education for practicing health professionals, which could be met through enhanced continuing education opportunities

North Carolina received a five-year Children's Health Insurance Program Reauthorization Act (CHIPRA) grant that is focused on quality improvement for children's health care. There are a number of different initiatives included in this grant—several of which focus on childhood obesity prevention. For example, the CHIPRA grant is helping to fund 14 part-time quality improvement consultants in the 14 Community Care of North Carolina (CCNC) networks. As part of their work, they will be helping pediatric practices improve clinical care including BMI coding and pediatric obesity prevention. The CCNC practices receive a toolkit with color-coded BMI charts, lists of resources to help address obesity, treatment guides, and handouts to help families understand healthy choices and assess their progress. These conversations with patients and families are challenging due to the complexity of the topics and time constraints. Thus, some practices needed additional support to address

A number of different initiatives included in Children's Health Insurance Program Reauthorization Act (CHIPRA) focus on childhood obesity prevention.

overweight and obesity among their patients and families. The CHIPRA grant is also helping to fund 26 practices in 8 CCNC networks to participate in a more intensive learning collaborative. Learning collaboratives have been used in North Carolina to improve population management and enhance the primary care medical home.[30] These practices will receive training on a number of different topics including childhood obesity prevention. Currently CCNC has six registered dietitians working in networks and hopes to expand to all networks. These dietitians have developed low-literacy training materials based on motivational interviewing techniques for use with patients and families. The National Initiative for Children's Healthcare Quality has a similar initiative called Collaborate for Healthy Weight.[a] In addition, North Carolina and Pennsylvania have been funded, as part of their CHIPRA grants, to work with the Centers for Medicare and Medicaid Services, Agency for Healthcare Research and Quality, the American Academy of Pediatrics (AAP), and other partners to help implement and evaluate a pediatric electronic health record format.[31] The CHIPRA grant activities are not focused specifically on obesity prevention for young children (ages 0-5 years); instead the overall CHIPRA grant is aimed at improving care for children from ages 0-20 years.

Health professionals are eligible for incentive grants from Medicare or Medicaid for implementing electronic health records and for using these systems in a meaningful way. The federal government has defined "meaningful use" as follows: in Stage 1 of meaningful use (through 2013), health professionals must measure and record BMI for 50% of their patients, at least once per year; in Stage 2 of meaningful use (2014 and beyond), health professionals must measure and record BMI for at least 80% of their patients at least once per year.[32]

Clinical Strategy 2: Expand education for practicing health professionals, which could be met through enhanced continuing education opportunities

a) North Carolina and national funders should provide funding to the Area Health Education Centers (AHEC) program and to CCNC to strengthen and expand the work of the quality improvement consultants to work with pediatric, family medicine, and obstetric practices to incorporate obesity prevention and treatment into clinical practice and systems (e.g. BMI coding and pediatric obesity prevention, assessments, and treatment). AHEC and CCNC should continue to develop a module for Maintenance of Certification (MOC) on early childhood obesity assessment, prevention, and treatment. Education should occur through learning collaboratives and through work with individual practices. The core curriculum of this educational program should be developed into a high-quality online continuing education (CE)

a http://www.collaborateforhealthyweight.org/About.aspx

course, which can be used by health professionals through one of the AHECs. To the extent possible, AHEC and CCNC should help practices gain continuing education and MOC credits. The practice-level goals should include, but not be limited to, education, skills, use of evidence-based or evidence-informed tools, work flow, toolkits, innovative delivery models, reimbursement options, and system changes (practice redesign) necessary to support practitioners in providing evidence-based or evidence-informed prevention, assessment, and treatment. This includes:

1) **Educating women of childbearing age and pregnant women about healthy weight gain during pregnancy and the health benefits of breastfeeding.**

2) **Encouraging pregnant women and new mothers to breastfeed and helping women understand infant satiety cues.**

3) **Performing universal screening and understanding the importance of charting the child's weight on a regular basis using the World Health Organization (WHO) Child Growth Standards for children ages 0-23 months, and CDC Growth Charts for children ages 2-5 years during each well-child check (and using color-coded BMI charts).**

4) **Educating parents and caregivers about healthy weight at different stages of a child's life; healthy eating; appropriate sleep durations; the importance of eliminating or limiting screen time including televisions, computers, and other digital media devices; and strategies to increase physical activity.**

5) **Providing evidence-based/evidence-informed prevention, assessment, and treatment options.**

6) **Using motivational interviewing.**

b) **In addition, CCNC should ensure that prompts for regular BMI screening are built into the pediatric electronic health records (EHR) and BMI or weight for length percentiles are built into the EHR.**

Lead organization and partners: (a) AHEC and CCNC should take the lead, and should partner with health professional associations (including but not limited to the North Carolina Pediatric Society, North Carolina Academy of Family Physicians, North Carolina Obstetrical and Gynecological Society, North Carolina Council of Nurse Practitioners, North Carolina Academy of Physician Assistants, North Carolina Affiliate of the American College of Nurse

Midwives, and North Carolina Dietetic Association), lactation consultants, payers/insurers, EHR vendors such as Epic and Allscripts, North Carolina Foundation for Advanced Health Programs, North Carolina Hospital Association, North Carolina Division of Public Health, and the Perinatal Quality Collaborative of North Carolina. AHEC and CCNC should continue to develop a module for MOC on early childhood obesity prevention/treatment.

(b) CCNC should continue its work on implementing a pediatric EHR format. The pediatric EHR should include prompts to measure weight, height, and BMI percentile on at least an annual basis. In addition, the EHR should include decision prompts to ensure that families receive counseling about healthy weight.

Within five years of initial funding, more than 80% of primary care practitioners should record a BMI percentile or weight for height percentile.

Funding and new resources required: To accomplish this increased use of quality improvement consultants and the expansion of learning collaboratives and other training opportunities, North Carolina AHEC and CCNC will require approximately $250,000 in one-time funding from state and national funders.

AHEC will require an additional estimated $10,000 one-time from state or national foundations to develop high-quality, enduring, online CMEs focused on early childhood obesity.

Performance measures and evaluation: Within five years of initial funding, North Carolina educational institutions and professional societies should offer at least two new MOC modules targeting childhood obesity, including early childhood obesity prevention and treatment. Within five years, 10% of family practitioners or pediatricians would have completed a MOC that includes a focus on childhood obesity.

In addition to MOCs, physicians and other health professionals have continuing education requirements. AHEC reports credit for 1,942 CE contact-hours related to childhood obesity in 2011–2012. This includes 758 credits to registered nurses, 329 to physicians, 133 to pharmacists, and 119 to dietitians. The North Carolina Pediatric Society also maintains information about their continuing education offerings. They offered a 0.5 CME credit session at its 2011 annual meeting to 192 physicians and 62 other health professionals and, more recently, a 1.5 hour CME credit session to 40 physicians and 14 other health professionals at the 2013 Spring Open Forum. However, similar data is not maintained for other health professional organizations that offer continuing education courses, such as the NC Nurses Association, NC Academy of Physician Assistants, or the NC Academy of Family Physicians. Although available data on continuing education are limited, the North Carolina Institute of Medicine should periodically inventory AHEC and the North Carolina Pediatric Society in order to determine what CE courses have been offered in the state that address early childhood obesity prevention and treatment. Within five years, there should be a 25% increase in the number of health professionals who attend CE courses that focus on childhood obesity.

Within five years of initial funding, more than 80% of primary care practitioners should record a BMI percentile or weight for height percentile (for 0-2 year olds) or a BMI percentile at least once per year for children age 3 or older in electronic health records (see Policy Strategy 5). The electronic health record should include documentation of nutrition or physical activity counseling. To facilitate clinical planning, decision supports should be incorporated into the electronic health record.

Clinical Strategy 3: Ensure adherence of insurers/ payers to the Affordable Care Act requirements for coverage of the prevention, diagnosis, and treatment of obesity (and as outlined in the American Academy of Pediatrics' Bright Futures guidelines)

Given the high rates of early childhood overweight and obesity and the limited resources for prevention and treatment available in most communities, it is clear that most children will need to be served, at least initially, in the primary care medical home. The ECOP Task Force recognized a staged approach to this problem, which should start with universal screening and messaging about healthy diet and physical activity. Families of children who are overweight or obese and not yet committed to change should be offered more extended services within the medical home. Children with more severe problems, problems that cannot be addressed in limited medical office-based interventions, and children in those families committed to change should be referred to nutrition and lifestyle-based interventions.

The ACA requires coverage for services related to the prevention or treatment of early childhood obesity.

The ECOP Task Force recognized that one of the problems with the universal and selected approaches is that pediatric and family physicians have limited time with patients and much to accomplish. Additional recommendations or requirements for well-child visits for unreimbursed services may be met with resistance by providers. However, the Affordable Care Act (ACA) will change the landscape of required preventive health services for children. The ACA requires coverage for services related to the prevention or treatment of early childhood obesity include assessment of weight for height and BMI percentile and obesity counseling as well as breastfeeding equipment and lactation support. Other related services that must be covered include screening for high blood pressure and high cholesterol.[33] While the ACA requires that these services be covered, it does not mandate how insurers pay for these services. Many insurers may be covering this as part of the well-child check-up, and may not be providing additional reimbursement to encourage health professionals to spend the time necessary for obesity counseling.

Clinical Strategy 3: Ensure adherence of insurers/ payers to the Affordable Care Act requirements for coverage of the prevention, diagnosis, and treatment of obesity (and as outlined in the American Academy of Pediatrics' Bright Futures guidelines)

a) All payers should review their coverage policies to ensure that pediatric obesity prevention and treatment can be delivered by the most appropriate and qualified professionals in pediatric, family, ob/gyn, and specialty practices. Coverage policies should cover individual and group visits, and adequate time to assess, educate, diagnosis, counsel, and/or treat parents or caregivers about breastfeeding, healthy weight gain, nutrition, exercise, sleep, and reduced screen time; lactation counseling from a trained lactation consultant; and nutritional counseling visits, when medically necessary, from a registered dietitian.

b) In addition, all members of the North Carolina Association of Health Plans, as well as public insurers, should design payment models that allow providers to treat patients effectively and efficiently when treatment relates to obesity prevention and treatment.

c) Insurers should evaluate benefit design and work with employers and others to encourage members to take advantage of healthy lifestyle programs and covered benefits.

Lead organization and partners: The nonprofit organization North Carolina Prevention Partners (NCPP) should take the lead in collecting, reviewing, and reporting health plan services related to early childhood obesity prevention and treatment. NCPP is uniquely positioned to undertake this effort given its experience in collecting preventive benefits information from health insurers in the state over the course of many years.

Funding and new resources required: The amount of one-time funding required is approximately $125,000 from state funders. This amount would cover the cost of gathering formative input from insurers, consumers, and other stakeholders; redesigning the instrument to be in accordance with ACA requirements and existing evidence-based prevention strategies; and automating the collection system (the previous data collection system was paper-based) through the creation of an interactive web-based application and database. (Note: The funding would cover the collection of information on a comprehensive set of preventive health benefits, not just childhood obesity.)

Performance measures and evaluation: The successful implementation of this strategy would be measured by the number of insurers that pay for primary care-based obesity prevention and treatment services, medical nutrition therapy, exercise and lifestyle or behavioral health-based programs, and multidisciplinary intensive programs (which include teams of physicians, dietitians, and behavioral health specialists) focused on early childhood at baseline, two, and four years after initial funding.

Clinical Strategy 4: Convene a group to identify and catalog core statewide and local services, resources, supports for health professionals to refer families and children for additional support or intervention to enhance clinical recommendations

One of the barriers identified during ECOP Task Force meetings was the lack of community referral resources. Physicians may not have sufficient expertise in either nutrition information or behavioral counseling, and time with patients is usually limited by practice constraints. Physicians noted that they were reluctant to focus on physical activity or nutrition, especially for low-income and other at-risk populations, when there were limited resources available in the family's immediate community that could support efforts to promote healthy eating and physical activity.

The Task Force recommended that local health departments identify and disseminate information about state and local services, resources, and supports that physicians can use to promote healthy eating and physical activity.

Local health departments, as part of their accreditation process, are required to identify community resources that help promote health. In addition, most of the health departments in the state are involved in implementing the Community Transformation Grant, a federally funded initiative that supports multifaceted interventions to support healthy eating and active living, among other prevention activities. As part of the CTG grant, local health departments are monitoring the number of organizations that allow access to physical activity facilities. The ECOP Task Force therefore recommended that local health departments identify and disseminate information about state and local services, resources, and supports that physicians can use to promote healthy eating and physical activity. The Kids in Parks program, which maintains an inventory of family-friendly trails in Western North Carolina is an example of a resource that could be included where available. The program is funded by the Blue Ridge Parkway Foundation, the Blue Ridge Parkway, and the Blue Cross and Blue Shield of North Carolina Foundation. As part of the National Park Service's Call to Action's "Take a Hike and Call Me in the Morning" initiative, the Kids in Parks program has begun pilot testing pediatrician office trailheads that are placed in the lobbies of pediatrician offices where large networks of TRACK Trails are present locally. These pediatrician office trailheads provide information about local TRACK Trails, helping inform kids and parents about

family friendly opportunities to get active outdoors near their home. This effort has been endorsed by the American Academy of Pediatrics and will become a focus of the program as the networks of trails expand into more regions.[b]

Clinical Strategy 4: Convene a group to identify and catalog core statewide and local services, resources, and supports for health professionals to refer families and children for additional support or intervention to enhance clinical recommendations

a) The Local Health Departments should collaborate with the appropriate partners to identify core services, resources, and supports available statewide. These should include, but not be limited to, organizations that provide evidence-based and evidence-informed nutrition and physical activity services, resources, and supports including parenting education to help prevent and reduce young childhood obesity. Examples include Women, Infants, and Children (WIC) program services; North Carolina Cooperative Extension services; information from Eat Smart, Move More North Carolina; and YMCAs/YWCAs.

b) The North Carolina Association of State Health Directors , in collaboration with the North Carolina Partnership for Children, North Carolina Child Care Resource and Referral Council, Community Care of North Carolina, and East Smart Move More should work together to create a template to identify the various local services, resources, and supports that are available at the county level to prevent or reduce early childhood obesity. Together, they should develop a method that enables health professionals to connect families and children with the identified services, resources, and supports.

Lead organization and partners: The North Carolina Association of Local Health Directors should take the lead in implementing this strategy, working with the appropriate partners.

Funding and new resources required: There is no additional cost for this project.

Performance measures and evaluation: Within two years of initial funding, Local Health Departments should have identified state and local services, resources, and supports within the service areas, as well as a system for health professionals to easily refer patients and their families to the array of services. If successful, the approach should be used throughout the state.

b MacDougall, J. Healthy Active Communities Senior Program Officer, Blue Cross and Blue Shield of North Carolina. Written communication. May 31, 2013

References

1. Whitlock EP, O'Connor EA, Williams SB, Beil TL, Lutz KW. Effectiveness of weight management interventions in children: A targeted systematic review for the USPSTF. *Pediatrics.* 2010;125(2):e396-418.
2. US Department of Health and Human Services. Treating Tobacco Use and Dependence: 2008 Update. http://www.ahrq.gov/clinic/tobacco/treating_tobacco_use08.pdf. Published May 2008.
3. Ludwig DS, Currie J. The association between pregnancy weight gain and birthweight: A within-family comparison. *Lancet.* 2010;376(9745):984-990.
4. He M, Evans A. Are parents aware that their children are overweight or obese? do they care? *Can. Fam. Physician.* 2007;53(9):1493-1499.
5. Hamilton JL, James FW, Bazargan M. Provider practice, overweight and associated risk variables among children from a multi-ethnic underserved community. *J. Natl. Med. Assoc.* 2003;95(6):441-448.
6. Gilbert MJ, Fleming MF. Use of enhanced body mass index charts during the pediatric health supervision visit increases physician recognition of overweight patients. *Clin. Pediatr. (Phila).* 2007;46(8):689-697.
7. Vandewater EA, Huang X. Parental weight status as a moderator of the relationship between television viewing and childhood overweight. *Arch. Pediatr. Adolesc. Med.* 2006;160(4):425-431.
8. Locard E, Mamelle N, Billette A, Miginiac M, Munoz F, Rey S. Risk factors of obesity in a five year old population. parental versus environmental factors. *Int. J. Obes. Relat. Metab. Disord.* 1992;16(10):721-729.
9. Stunkard AJ, Harris JR, Pedersen NL, McClearn GE. The body-mass index of twins who have been reared apart. *N. Engl. J. Med.* 1990;322(21):1483-1487.
10. Knip M, Veijola R, Virtanen SM, Hyoty H, Vaarala O, Akerblom HK. Environmental triggers and determinants of type 1 diabetes. *Diabetes.* 2005;54(2):125.
11. Gortmaker SL, Peterson K, Wiecha J, et al. Reducing obesity via a school-based interdisciplinary intervention among youth: Planet health. *Arch. Pediatr. Adolesc. Med.* 1999;153(4):409-418.
12. Liu J, Zhang A, Li L. Sleep duration and overweight/obesity in children: Review and implications for pediatric nursing. *J. Spec. Pediatr. Nurs.* 2012;17(3):193-204.
13. Perrin EM, Jacobson Vann JC, Lazorick S, Ammerman A, Teplin S, Flower K, Wegner SE, Benjamine JT. Bolstering confidence in obesity prevention and treatment counseling for resident and community pediatricians. *Patient Educ Couns.* 2008;73:179.
14. Woolford SJ, Clark SJ, Strecher VJ, Gebremariam A, Davis MM. Physicians' perspectives on increasing the use of BMI charts for young children. *Clin Pediatr.* 2008;47(6):573.
15. Eat Smart, Move More NC. Pediatric Obesity Clinical Tools. http://www.eatsmartmovemorenc.com/PediatricObesityTools/PediatricObesityTools.html. Accessed April 5, 2013.
16. Britt E, Hudson SM, Blampied NM. Motivational interviewing in health settings: A review. *Patient Educ. Couns.* 2004;53(2):147-155.
17. Mbuagbaw L, Ye C, Thabane L. Motivational interviewing for improving outcomes in youth living with HIV. *Cochrane Database Syst. Rev.* 2012;9:CD009748.
18. Barnett E, Sussman S, Smith C, Rohrbach LA, Spruijt-Metz D. Motivational interviewing for adolescent substance use: A review of the literature. *Addict. Behav.* 2012;37(12):1325-1334.
19. Resnicow K, Davis R, Rollnick S. Motivational interviewing for pediatric obesity: Conceptual issues and evidence review. *J. Am. Diet. Assoc.* 2006;106(12):2024-2033.
20. Schwartz RP, Hamre R, Dietz WH, et al. Office-based motivational interviewing to prevent childhood obesity: A feasibility study. *Arch. Pediatr. Adolesc. Med.* 2007;161(5):495-501.

21. Eat Smart, Move More NC. Community. http://www.eatsmartmovemorenc.com/Community.html. Accessed April 5, 2013.

22. Institute of Medicine (IOM). The National Academies Press. Early Childhood Obesity Prevention Policies. Washington, DC. http://www.iom.edu/Activities/Nutrition/YoungChildObesity/2011-JUN-23.aspx. Published 2011. Accessed April 5, 2013.

23. White House Task Force on Childhood Obesity. Executive Office of the President of the United States. Solving the Problem of Childhood Obesity Within a Generation. http://www.letsmove.gov/white-house-task-force-childhood-obesity-report-president. Published May 2010. Accessed April 5, 2013.

24. North Carolina General Assembly. Task Force on Childhood Obesity. Raleigh, NC. http://www.ncleg.net/documentsites/committees/LTFCO/2010%20Task%20Force%20on%20Childhood%20Obesity%20Final%20Report%20.pdf. Published 2010. Accessed April 5, 2013.

25. North Carolina Enhanced Nutrition Standards for Child Care Final Report to the General Assembly. North Carolina Division of Public Health. http://ncchildcare.dhhs.state.nc.us/pdf_forms/child_nutrition_study.pdf. Published 2010. Accessed April 5, 2013.

26. North Carolina Institute of Medicine. Prevention for the Health of North Carolina: Prevention Action Plan. http://www.nciom.org/wp-content/uploads/NCIOM/projects/prevention/finalreport/PreventionReport-July2010.pdf. Published October 2009. Accessed April 5, 2013.

27. NC Health and Wellness Trust Fund (HWTF). Childhood Obesity in North Carolina. http://www.healthwellnc.com/hwtfc/pdffiles/FitFamilies-StudyCommitteeReport05.pdf. Published 2005. Accessed April 5, 2013.

28. Section on Breastfeeding. Breastfeeding and the use of human milk. *Pediatrics.* 2012;129(3):e827-41.

29. Gillman MW. Commentary: Breastfeeding and obesity--the 2011 scorecard. *Int. J. Epidemiol.* 2011;40(3):681-684.

30. North Carolina AHEC Website. AHEC Practice Support Services. Center for Health Care Quality website. http://www.ncipip.org/. Accessed April 5, 2013.

31. Community Care of North Carolina. CCNC Pediatrics (including the CHIPRA Quality Demonstration Grant): CHIPRA – A Quality Demonstration Grant. https://www.communitycarenc.org/population-management/ccnc-pediatrics-including-chipra-quality-demonstra/. Published 2013. Accessed April 5, 2013.

32. Anonymous Meaningful Use—Introduction. http://www.cdc.gov/ehrmeaningfuluse/introduction.html. Published October 11, 2012. Accessed May 7, 2013.

33. HealthCare.gov Website. 27 Covered Preventive Services for Children. US Department of Health & Human Services website. http://www.healthcare.gov/news/factsheets/2010/07/preventive-services-list.html#CoveredPreventiveServicesforChildren. Published September 23, 2010. Published September 27, 2012. Accessed April 5, 2013.

Community and Environment Strategies **Chapter 4**

This chapter focuses on strategies that can be implemented at the community and environment levels to promote healthy weight among young children ages 0-5 years. North Carolina has many evidence-based and evidence-informed initiatives underway; however, most are primarily aimed at older children and adults in the population. Some of these initiatives such as Eat Smart, Move More North Carolina (ESMM) have a broad population reach through various channels, while others have a more narrow reach and focus on very specific segments of the population. For example, the North Carolina Council of Churches' Partners in Health and Wholeness reaches individuals connected within the faith community, and the Appalachian Sustainable Agriculture Project reaches individuals residing in the Western region in the state. While broad reaching efforts are needed, such efforts are more effective when combined with similarly aligned efforts that are tailored to reach specific segments of the population.

In North Carolina, there are a few initiatives that specifically focus on promoting healthy weight among young children ages 0-5 years.

In North Carolina, there are a few initiatives that specifically focus on promoting healthy weight among young children ages 0-5 years. The Blue Cross and Blue Shield of North Carolina Foundation (BCBSNC Foundation) has funded different initiatives including Shape NC, Be Active Kids®, and Preventing Obesity by Design (POD) to improve nutrition, increase physical activity, and promote the outdoor learning environment in child care programs. Many of these initiatives have been implemented in collaboration with the North Carolina Partnership for Children (NCPC) and local Smart Start partnerships. Another effort to reach very young children comes from North Carolina's Race to the Top — Early Learning Challenge (RTT-ELC) grant. In December 2011, the state received a four-year RTT-ELC federal grant totaling $70 million, for which the North Carolina Early Childhood Advisory Council is the lead agency. The purpose of this grant is to help ensure that all young children entering kindergarten are ready to succeed. RTT-ELC is designed to address the school readiness gap that exists between children with high needs and their peers at the time they enter kindergarten. The grant aims to improve early learning and development programs for young children by increasing the number and percentage of low-income and disadvantaged infants, toddlers, and preschoolers who are enrolled in high-quality early learning programs. The grant also aims to implement an integrated system of high-quality early learning programs and services including high-quality health care, positive social and emotional development, and support for strong family development. In addition to the statewide efforts geared toward improving the quality of child care programs and other priorities, grant funding will be used to provide intensive technical assistance to build capacity and develop comprehensive approaches in a "Transformation Zone" comprised of four counties in Northeastern North Carolina, including Beaufort, Bertie, Chowan, and Hyde. In coordination with these efforts, Bertie County will participate in Shape NC, a health-promoting obesity prevention initiative for young children (discussed in Community/

Environment Strategy 1). Funding from the RTT-ELC grant will be used to enhance child care health consultant services as a means of improving school success. The lessons learned in the Transformation Zone will be shared and used to inform efforts statewide.[a,1,2]

The NCIOM Task Force on Early Childhood Obesity Prevention (ECOP) reviewed many of the current initiatives in the state, such as those mentioned above. It also identified barriers that prevent community organizations, child care programs, families, and others from implementing the recommendations of the previous task forces and expert committees that were discussed in Chapter 2. Ultimately, the ECOP Task Force identified 20 community and environment strategies (Appendix E)—5 of which were identified as priority strategies—that could help support implementation of these recommendations. The ECOP Task Force identified priority strategies as those strategies with the potential to reach the greatest number of children and have the greatest effect.

The ECOP Task Force identified priority strategies as those strategies with the potential to reach the greatest number of children and have the greatest effect.

The Community/Environment section of the ECOP Task Force's blueprint focuses on five strategies:

Community/Environment Strategy 1: Expand the use of evidence-based and evidence-informed strategies for physical activity and nutrition in pilot child care centers.

Community/Environment Strategy 2: Provide pre-service and in-service education for child care providers on evidence-based and evidence-informed strategies for physical activity and nutrition.

Community/Environment Strategy 3: Cross train all child care consultants and other support personnel on evidence-based and evidence-informed strategies for physical activity and nutrition.

Community/Environment Strategy 4: Increase Eat Smart, Move More North Carolina's focus on young children and their families.

Community/Environment Strategy 5: Form an ECOP Communications Committee to develop a communications campaign to support policy and behavior changes to reduce early childhood obesity.

The other Community/Environment strategies are included in Appendix E.

Three of the five priority Community/Environment strategies focus on child care programs since most children ages 0-5 years spend part of their early childhood in child care programs. In fact, at any point in time, one in four children in this age group are in a licensed, regulated child care program (see

a Bryan A. Early Childhood Advisory Council, NC Race to the Top-Early Learning Challenge. Oral Communication. March 19, 2013.

Table 4.1). Throughout the year, many more children spend time in child care programs, as many families enroll and disenroll throughout the year. This turnover results in more children experiencing some time in early education settings. According to the Early Childhood Longitudinal Study (ECLS-B), 83% of children were in non-parental early care and education arrangements, and 63.8% of these children spent some time in formal early care and education settings the year prior to entering kindergarten. Formal settings include early learning centers, preschools, nurseries, and Head Start programs.[3] Programs like NC Pre-K (formerly More at Four) and before and after-school care for older children are often licensed as child care centers. Because some of these programs operate in school settings, and/or serve older children, these child care strategies aimed at promoting health weight can also have an impact on older children. In addition, some five year olds are already in kindergarten. The Task Force recognized that it was important to continue similar strategies for school-aged children (partnering with the North Carolina Department of Public Instruction), but focused on child care for ages 0-5 because there has not been as much focus historically on this age group.

At any point in time, one in four children ages 0-5 years are in a licensed, regulated child care program.

As of January 2013, there were 7,572 licensed, regulated child care facilities in North Carolina. Of these, 4,809 were child care centers and 2,763 were family child care homes.[4] Collectively, child care centers and child care homes are referred to as *child care programs* in this report. One strategy identified by the ECOP Task Force addresses child care centers only, while others geared toward the child care setting address child care programs (i.e. both child care centers and family child care homes).

Table 4.1
Number of Children in Licensed, Regulated Care, by Age (July 2011)

Age	<1	1	2	3	4	5	Total
Number of Children in Care[a]	13,422	23,751	31,505	39,374	52,660	25,994	186,706
Population, July 2011[b]	120,929	123,009	125,015	127,545	128,959	128,233	753,690
Percentage of Population in Child Care	11.1%	19.3%	25.2%	30.9%	40.8%	20.3%	24.8%

Sources: [a]North Carolina Partnership for Children (NCPC). NCPC 2013 data analysis of North Carolina Department of Child Development and Early Education data for July 2011.
[b]North Carolina Office of State Budget and Management. July 1, 2011 Country total – single year ages. North Carolina Office of the Governor website. http://www.osbm.state.nc.us/demog/countytotals_singleage_2011.html. Accessed October 15, 2012.

It should be noted that there has already been considerable effort to implement evidence-based and evidence-informed physical activity and nutrition strategies in child care programs (see Community/Environment Strategy 1). The ECOP Task Force members believed it was both important and practical to support the progress made in improving health and wellness in pilot child care centers, and

to then spread the innovations to other child care programs across the state. Although efforts to spread these strategies target licensed child care centers directly, non-licensed programs also benefit. Many of the non-licensed child care programs, including part-day programs such as preschools, follow North Carolina licensure standards even though they are not required to do so (as meeting the standards assists them with qualifying for insurance coverage). Often these types of programs also hire trained child care professionals. Thus, strategies to train child care professionals, to improve the nutritional quality of foods and beverages, and to increase the amount of age appropriate physical activity in child care programs will inure to the benefit of children in non-licensed child care programs.

While interventions aimed at licensed, regulated child care programs can reach many young children in the state and their families, they cannot reach all young children. Thus, the ECOP Task Force also included community and environment strategies aimed at reaching broader audiences, including one that involves the existing Eat Smart, Move More North Carolina initiative and another regarding a broad communications campaign.

Community/Environment Strategy 1: Expand the use of evidence-based and evidence-informed strategies for physical activity and nutrition in pilot child care centers

Over the years, the Blue Cross and Blue Shield of North Carolina Foundation (BCBSNC Foundation) has invested in various initiatives to prevent and reduce obesity in child care programs. One such initiative is Shape NC, a $3 million, three-year grant to the North Carolina Partnership for Children (NCPC), to promote healthy weight and combat early childhood obesity by enhancing nutrition and physical activity in select Smart Start partnerships across the state. Shape NC unites three initiatives in child care programs that have proven to be effective: 1) Nutrition and Physical Activity Self-Assessment in Child Care (NAP SACC), to assess nutrition and physical activity policy and practice, 2) POD, to focus on the built environment and outdoor play and learning, and 3) Be Active Kids®, to focus on programming and training.[5,6] More information about each of these programs follows.

NAP SACC is a research-tested program developed by the UNC Center for Health Promotion and Disease Prevention at the University of North Carolina at Chapel Hill (UNC-Chapel Hill). The goal of NAP SACC is to enhance policies, practices, and the child care environment to improve nutrition, the amount and quality of physical activity, and staff-child interactions. An organizational assessment of the child care program is an integral component of NAP SACC. This assessment identifies strengths and weaknesses by assessing

14 areas of nutrition and physical activity policy, practices, and environments. A NAP SACC consultant then uses this assessment and works with child care program staff on goal setting and action planning for change, and also provides the child care staff with continuing education, skills-building opportunities, technical assistance, and follow-up.[7] More than 400 programs in the state have participated in NAP SACC through Smart Start support.[8]

Preventing Obesity by Design (POD) is a program of the Natural Learning Initiative at North Carolina State University. The POD program has been supported through partnerships with the BCBSNC Foundation (POD, POD-2, and POD[3]), the John Rex Endowment (POD-Wake), and NCPC. The goal of POD is to address the obesity epidemic in young children by improving child care outdoor environments and transforming them into naturalized, active, and productive sites (that include fruits and vegetables).[9] Research has shown that diverse, natural environments are associated with gross motor development and diverse play activities.[10-13] In addition, there is generally a higher level of physical activity associated with outdoor learning environments than with indoor environments.[14-16] Physical activity and skills development is enhanced with balls, portable equipment, and manipulative objects.[14,17-19] Vegetable and fruit gardening is associated with children's acceptance of diverse vegetable and fruit tastes, with increased frequency of vegetable consumption, and is regarded as a positive strategy to support healthy eating.[20-25] Best practice indicators include aspects such as shade; curvy, broad pathways; diversity of trees and shrubs; grassy areas that are big enough for a group of children to play; designated vegetable gardens; natural materials; outdoor toys; and settings for a variety of gross motor activities.[26]

Shape NC promotes healthy weight and combats early childhood obesity by enhancing nutrition and physical activity in select Smart Start partnerships across the state.

The BCBSNC Foundation's involvement with POD has changed over time. The Foundation's first involvement with the Natural Learning Initiative was in 2007. Initial funding was used to test the feasibility of implementing POD in three pilot child care centers (POD-1). Due to the success of the pilots, the BCBSNC Foundation partnered with NCPC in 2008 and invested additional funds to expand POD to 30 local Smart Start partnerships across the state (POD-2). The results of POD-2 include the following: 27 child care centers redesigned their outdoor play environments, more than 1,800 children (at the POD sites) increased physical activity/active play during outdoor time, more than 20 independent POD sites impacting at least 600 children developed as an offshoot of this work, 68% of the POD site teachers reported positive behavior changes from children as a result of improved outdoor engagement, and 40% of centers installed gardens and reported increased access to and consumption of fresh produce for their children during their time in care.[b] In addition, the North Carolina Division of Child Development and Early Education (NC DCDEE) supported the training of 250 licensing consultants and assessors

b Hansen, P. Project Manager, Shape NC, The North Carolina Partnership for Children, Inc. Written (email) communication. January 18, 2013.

to support the development of naturalized outdoor play spaces in child care. POD's ability to change the built environment and increase physical activity and active play has led to further growth of the program and investment from the BCBSNC Foundation in 2012. POD[3]'s goal is to make the tenets of POD common practice among early childhood educators, providers, regulators, and landscape designers. A regional approach to expanding POD will include training institutes, workshops, education modules, and web-based technical assistance. Anticipated outcomes include, but are not limited to, creating 100 new POD sites, training 900 child care providers, and 90 Smart Start/Child Care Resource and Referral technical assistance consultants.

To date, only 1.2% (60 of 4,809) of child care centers in the state have implemented the POD program.[c] In 2011, the NC DCDEE surveyed child care licensing consultants and environmental rating assessors to determine the quality of the outdoor learning environment in regulated child care centers. Nine out of 10 respondents reported that the outdoor learning environment was either "poor" (36%) or "average" (54%). Only 7.5% rated the outdoor learning environment as "good" and 1.2% as "very good." None ranked the outdoor learning environment as "excellent." [26] Thus, more work is still needed to increase the quality of outdoor learning environments in child care centers throughout the state.

Children who master motor skills such as running, jumping, leaping, and hopping are more likely to be physically active.

Be Active Kids® is a signature program of the BCBSNC Foundation. Originally developed in 1998 to promote physical activity, nutrition, and food safety for preschoolers ages 4 and 5 years, Be Active Kids® staff trained approximately 6,000 child care providers in 1,300 child care programs across the state.[8] As evidence evolved related to movement and active play in the early childhood setting, Be Active Kids® staff noted the need to change the content of the program to address physical inactivity in child care. Studies have shown that preschool children are largely sedentary for the majority of the preschool day.[27,28] Further, while children are more active outside than they are inside, they still do not engage in moderate to vigorous physical activity when outside and are more sedentary than not.[28] Research has also shown that children who master motor skills such as running, jumping, leaping, and hopping are more likely to be physically active.[29] Thus, in 2011 the BCBSNC Foundation provided a grant to the Frank Porter Graham Child Development Institute (FPG) at UNC-Chapel Hill to revamp Be Active Kids®, to focus on physical activity movement and active play, and to create curricula for age appropriate physical activity for younger children in child care settings (starting at birth). With this grant, staff at FPG developed teacher training, a physical activity curriculum, and a set of inexpensive materials to use in lesson plans to encourage age appropriate physical activity. The lesson plans encourage teacher and child participation in fun activities that help children learn skills, and build strength, stamina, and

c Cosco N. The Natural Learning Initiative, College of Design, North Carolina State University. Written (email) communication. April 24, 2013.

flexibility. The lesson plans also include academic content and social skills along with physical activity. These lessons were piloted in three child care programs, with the goal of offering these new resources statewide, as well as incorporating the model into Shape NC.[d]

Shape NC combines these three effective programs (NAP SACC, POD, and Be Active Kids®) for implementation in child care centers. It is using its funding in multiple ways to meet the goal of improved health for North Carolina's youngest people, including:

- Identifying 86 best practices in nutrition, physical activity, and outdoor learning environments.
- Supporting up to 100 early childhood professionals working with child care professionals in four Smart Start regional hubs covering Alamance, Alexander, Anson, Bertie, Buncombe, Carteret, Chatham, Cherokee, Clay, Edgecombe, Graham, Guilford, Haywood, Iredell, Jackson, Macon, McDowell, Mecklenburg, Mitchell, Nash, New Hanover, Onslow, Orange, Polk, Randolph, Rutherford, Swain, Wayne, and Yancey counties.[30]
- Augmenting the existing NAP SACC assessment tool to create an integrated tool that incorporates more than 30 new indicators around physical activity (building on Be Active Kids®) and the outdoor learning environment (e.g. POD).
- Supporting training and technical assistance of up to 2,000 child care teachers and directors and giving them the education and curricula needed to support enhanced inside and outside physical activity practices, improved nutrition, and healthier outdoor learning environments.
- Supporting community partnerships and action plans to reduce early childhood obesity in 19 communities and child care programs.
- Creating up to 19 model child care centers, reaching over 750 children, where best practices in nutrition, physical activity, and outdoor learning environments will be implemented. Ultimately these centers will serve as resources for other centers in their communities.

Shape NC combines these three effective programs to meet the goal of improved health for North Carolina's youngest people.

The ECOP Task Force wanted to build on the success of Shape NC by expanding this effort to include other child care centers. As noted earlier, Shape NC is being piloted in 19 child care centers across the state. Early results of the impact of Shape NC on the first 18 child care centers are impressive. The first cohort (Cohort 1) of eight participating child care centers enrolled in March 2011. These early adopters were generally higher achievers at the start; having adopted, on average, 42 of the 86 best practices before participating in Shape

d MacDougall J. Healthy Active Communities, Blue Cross and Blue Shield of North Carolina Foundation. Written (email) communication. March 28, 2013.

NC. After participating in Shape NC for 18 months, these centers had adopted 64 of the 86 recommended best practices.[31] The second cohort of 10 child care centers (Cohort 2) began in September 2011. These centers experienced more dramatic improvements. These centers had implemented, on average, 27 best practices before participating in Shape NC. This increased to 54 best practices after one year of participation.

Hub specialists measured heights and weights, and calculated BMI percentiles for the 4-year-old children in each of the participating child care centers. Height and weight were measured, and BMI was calculated on three occasions: September 2011, June 2012, and September 2012. The evaluation of Shape NC did not show a statistically significant change in the percentage of children at a healthy weight. This may be due, in part, to child turnover in these centers. Among the children enrolled in child care centers for six months or longer, there was a slight decrease in BMI between September 2011 and June 2012; but a very slight increase between June 2012 and September 2012. Neither of these changes was statistically significant. However, significant changes in BMI likely take longer than one year to develop. Therefore, continued monitoring is needed to determine if these interventions are having a positive impact on increasing the number of young children at a healthy weight.

After participating in Shape NC for 18 months, these centers had adopted 64 of the 86 recommended best practices.

While the data did not show a statistically significant change in the proportion of children at healthy weight, Shape NC did have a strong positive impact on the number of child care centers that have adopted best practices for physical activity and nutrition; participating child care centers increased the level of physical activity among children and the percentage of healthy foods served (see Table 4.2).

Table 4.2
Shape NC Child Care Centers Increased Physical Activity and Healthy Foods Offered

	Cohort 1 (percentage increase from baseline to evaluation)	Cohort 2 (percentage increase from baseline to evaluation)
Provided 90 minutes or more of physical activity daily	87% to 100%	14% to 72%
Served fruit two or more times per day	57% to 100%	9% to 54%
Served nutrient-dense vegetables daily	40% to 85%	16% to 61%
Served beans or lean meats one or more times per day	17% to 68%	0% to 38%

The increase in the number of child care centers that adopted best practices for physical activity and nutrition within an 18-month period is impressive. However Shape NC has only reached 19 centers and, as noted earlier, there are more than 4,809 child care programs in North Carolina. Thus, more work

is needed to expand this effort to additional child care centers across the state. The ECOP Task Force recommended that North Carolina funders and others disseminate Shape NC to other child care centers in the four Shape NC hubs, one of which covers northeastern North Carolina (the Transformation Zone that is part of North Carolina's Race to the Top — Early Learning Challenge grant).

Community/Environment Strategy 1: Expand the use of evidence-based and evidence-informed strategies for physical activity and nutrition in pilot child care centers

a) The BCBSNC Foundation, along with other funders and state agencies with shared missions and goals, should develop incentives to incorporate evidence-based and evidence-informed obesity prevention strategies into programs and policies in child care centers located in counties with high obesity rates among children. This effort should be coordinated with, and expand the ongoing efforts of, the four Shape NC hubs including the obesity prevention work that will occur in Bertie County as part of the Transformation Zone.

b) As part of this initiative, child care teachers and directors should be educated and coached about obesity trends, healthy food preparation, best nutrition practices, age appropriate physical activity strategies, the outdoor learning environment, limited or no screen time, and the importance of breastfeeding and infant feeding.

Lead organizations and partners: The BCBSNC Foundation, along with other interested funders, should continue its partnership with NCPC to expand the existing Shape NC effort aimed at promoting healthy weight and reducing the risk of overweight and obesity among infants and young children. These two organizations should collaborate with a broader coalition of groups at the state and local level, which includes, but is not limited to, local Smart Start partnerships, NC DCDEE, DPH, the Early Childhood Advisory Council (which oversees the Race to the Top — Early Learning Challenge Grant), the North Carolina Department of Public Instruction, State Board of Education, local health departments working on the Community Transformation Grant effort, the Center for Health Promotion and Disease Prevention at UNC-Chapel Hill (which helped develop NAP SACC), the Natural Learning Initiative at North Carolina State University (which helped develop POD), Be Active Kids®, Carolina Global Breastfeeding Initiative, North Carolina Center for Health and Wellness at the University of North Carolina at Asheville, child care programs, Head Start, North Carolina Child Care Health Consultants Association, North

Carolina Child Care Resource and Referral Council, North Carolina funders convergence, and the broader faith community.

Funding and new resources required: BCBSNC Foundation's current grant helps to fund the Shape NC activities for four regional Smart Start partnerships. The funding also supports Shape NC services in the Transformation Zone, but that funding will end in 2013. Additional planning is needed to determine how to further expand this effort into additional counties.

Performance measures and evaluation: Contingent upon funding, by 2018 at least 500 child care programs should have increased the quality of nutrition and physical activity available to young children (including healthier meals and snacks, reduced screen time, enhanced outdoor learning environments, increased physical activity, and breastfeeding support) as measured by an appropriate tool such as the Shape NC Assessment.[e]

Community/Environment Strategy 2: Provide pre-service and in-service education for child care providers on evidence-based and evidence-informed strategies for physical activity and nutrition

Just as there is a need to enhance training for health professionals about strategies to promote healthy weight and reduce early childhood overweight and obesity, there is a similar need to do this for child care professionals. The intention of this strategy is to enhance the training offered and required for students enrolled in early childhood education and child care education programs at the university, college, and community college levels.

Child care professionals need to have a broad understanding of healthy weight again, as well as unhealthy weight gain and its precipitating factors (such as poor nutrition and lack of physical activity) in the young child population. Their knowledge should include an understanding of obesity trends among infants and young children and that this condition can lead to significant health problems in the short-term (e.g. type 2 diabetes in childhood) and in the long-term (e.g. heart disease in adulthood). They should also know how to improve the nutritional profile of the foods and beverages served in child care settings, which includes the purchasing and preparing of such items. Child care professionals need to understand effective strategies to enhance the amount of time children spend engaged in age appropriate physical activity. Last but not least, child care providers are role models and, as such, should know how to reach and maintain their own optimal body weight through healthy behaviors.

e Shape NC is currently being implemented in child care centers, but may be in child care programs within the next five years; therefore the performance measure unit is child care programs. (Child care programs includes child care centers.)

The education level of child care program staff is varied. Lead teachers within a facility must have, at a minimum, a high school diploma or GED and a North Carolina Early Childhood Credential, which is offered by all 58 campuses in the community college system. Assistant teachers must have, at a minimum, a high school diploma or GED, while program administrators must have at least a Level 1 North Carolina Early Childhood Administration Credential. North Carolina Pre-K (formerly More at Four) teachers must have a bachelor's degree and have—or be working toward—the Birth-to-Kindergarten (BK) licensure. North Carolina Pre-K assistant teachers must hold a high school diploma or GED and be working toward an associate's degree. Head Start teachers must have an associate degree at a minimum; as of September 2013, 50% of Head Start teachers will be required to have a bachelor's or advanced degree.[1] All 58 colleges in the community college system have a statewide degree program that is based on a common course catalog. In addition, many of the private and public four-year colleges and universities offer degree programs for early childhood education.[32,33]

Child care professionals need to have a broad understanding of healthy weight and unhealthy weight gain in the young child population.

The ECOP Task Force agreed that incorporating this information into the existing education system is paramount to preventing and reducing childhood obesity among very young children. Therefore, the ECOP Task Force agreed that a better understanding of how physical activity and nutrition education are (or are not) included in the various curricula offered through North Carolina's two- and four-year education programs is needed. Once that initial assessment is complete, steps can be taken as outlined below to ensure this type of information is included in curricula offered across the state. In addition, there are opportunities for professional development during which child care program staff of all education levels can learn more about health, wellness, and obesity. Therefore, the educational content developed through this process should also be used to develop an in-service continuing education course, awarding at least 0.5 CEUs (5 hours), which can be offered through organizations such as the North Carolina Child Care Resource and Referral Council, Smart Start partnerships, child care health consultants' networks, and the Child Care Health and Safety Resource Center.

Community/Environment Strategy 2: Provide pre-service and in-service education for child care providers on evidence-based and evidence-informed strategies for physical activity and nutrition

a) To expand the availability of pre-service education for child care providers on evidence-based and evidence-informed strategies to promote healthy weight for young children, the North Carolina Center for Health and Wellness (NCCHW), in partnership with Eat Smart, Move More North Carolina, should survey administrators in North Carolina's public and private two- and four-year colleges and universities that offer child care

and early education degree programs about the existing curricula used to teach upcoming child care and early education professionals about early childhood health and obesity prevention strategies.

1) **The survey should seek information about whether the current curricula conveys information on topics such as, but not necessarily limited to, the following:**

   i) **Obesity trends among infants and young children**

   ii) **The impact of obesity on health**

   iii) **Infant feeding and signs of satiety**

   iv) **Healthy food and beverage procurement and preparation and best nutrition practices**

   v) **Strategies to promote healthy and appropriate sleep duration**

   vi) **The importance of reducing screen time**

   vii) **Age appropriate movement and physical activity**

   viii) **Outdoor learning environments and edible landscapes**

   ix) **Breastfeeding support**

   x) **Staff wellness to support role modeling**

   xi) **Effective strategies to educate parents and other caregivers about best practices to implement at home in order to promote healthy weight**

2) **The survey should seek information both on the content, the amount of time spent on the topics, teaching methods, whether information is integrated throughout the curricula (both in classroom and in-service learning), and whether the students are tested to ensure competency in the content area. In addition, the survey should collect information on the curricula used to teach prospective child care and early education professionals about educating parents about early childhood obesity prevention practices. NCCHW should evaluate the existing curricula to identify best practices and, if necessary, seek curricula from other colleges and universities outside of North Carolina.**

b) NCCHW should host a summit for North Carolina child care and early education professionals to identify strategies to enhance the curricula offered at community colleges, colleges, and universities for prospective early childhood professionals about health and wellness for young children ages 0-5 years, and obesity prevention strategies such as those listed earlier.

c) Using the findings from the survey and the summit, the North Carolina Institute for Child Development Professionals, in collaboration with NCCHW, the North Carolina Child Care Health and Safety Resource Center, the North Carolina Child Care Resource and Referral Council, North Carolina Pediatric Society, and two and four-year college and university representatives, should lead the development of education modules and materials that can be incorporated into existing curricula. The education materials should be pilot-tested in select higher education institutions. If they are successful in enhancing workforce and student knowledge about obesity in this age group and skills using evidence-based and evidence-informed strategies to reduce early childhood overweight and obesity, the curricula should be disseminated across the state.

d) To expand the availability of evidence-based and evidence-informed training for existing child care professionals, these education modules and materials should also be used for continuing education credits offered through the North Carolina Child Care Resource and Referral Council, Smart Start partnerships, child care health consultants' networks, and the North Carolina Child Care Health and Safety Resource Center to certified early educators.

Lead organizations and partners: NCCHW, in collaboration with Eat Smart, Move More North Carolina, along with a planning group comprised of representatives from college, university, and community college programs; the North Carolina Division of Child Development and Education; North Carolina Institute for Child Development Professionals; North Carolina Department of Public Instruction; Johnson and Wales University; North Carolina Child Care Health and Safety Resource Center; and the National Association for the Education of Young Children should take the lead in collecting the data on existing curricula, and in developing the one-day symposium. The North Carolina Institute for Child Development Professionals should take the lead in developing the educational materials and modules for use in pre-service and in-service education of child care professionals.

Funding and new resources required: NCCHW would need an estimated one-time funding amount of $50,000 to implement strategies 2a and 2b, above. This funding would cover the cost of survey instrument development, administration,

and analysis, as well as the cost of the one-time summit. The North Carolina Institute for Child Development Professionals estimates a one-time funding amount of $20,000 would be needed for 2c above, in order to develop and pilot-test the modules in select colleges and universities. The initiative should be funded by the North Carolina or national funders.

Performance measures and evaluation: The study by NCCHW would provide baseline information about the availability of coursework on early childhood health and wellness, including obesity prevention strategies. The data collection, identification of best practices, and summit should be completed within two years of initial funding. Within two years after completion of the summit (a maximum of four years past initial funding), at least 10% of two- and four-year colleges and universities should use the model curricula.

Community/Environment Strategy 3: Cross train all child care consultants and other support personnel on evidence-based and evidence-informed strategies for physical activity and nutrition

The goal is to help the state reach the "tipping point" in the number of child care facilities that are incorporating evidence-based and evidence-informed strategies to improve health outcomes.

The goal of this effort is to fortify the existing consultant infrastructure to help the state reach the "tipping point" in the number of child care facilities that are incorporating evidence-based and evidence-informed strategies to enhance physical activity and nutrition to ultimately improve health outcomes. Among the nutrition and physical activity topics that consultants should be knowledgeable of are nutrition basics, obesity trends, healthy food preparation, infant feeding/ breastfeeding basics, movement/physical activity basics, screen time consequences/considerations, and outdoor learning environments.

A variety of consultants regularly work with child care programs. Various agencies in North Carolina provide funding and training for these consultants. Each type of consultant fills a particular need in the child care setting infrastructure of North Carolina, some of which are described here. For example, child care health consultants from the North Carolina Child Care Health and Safety Resource Center focus on promoting health and safety in the child care environment, while licensing consultants from the North Carolina Division of Child Development and Early Education (NC DCDEE) assist programs with meeting licensure requirements. NC DCDEE also funds other consultants including infant/toddler specialists who specialize in the best quality of care for this age group, as well as social-emotional consultants (behavioral specialists). The Child and Adult Care Food Program (CACFP) of the Nutrition Services Branch within DPH provides consultants to assist programs in complying with CACFP standards and guidelines. Head Start provides consultants to assist Head Start programs in meeting requirements for its program, and local Smart Start partnerships (through NCPC) fund quality improvement staff consultants who

work with the facility on various quality improvement measures that go beyond licensure. In addition, there are Child Care Resource and Referral technical assistance specialists and professional development providers who help programs start up, improve their practice, provide professional development opportunities, and maintain compliance with licensing standards.

Many consultants hold specific degrees or certifications. For example, child care health consultants are certified and many are also registered nurses. Each type of consultant has job training and ongoing education, which presents an opportunity to ensure all consultants—regardless of type and primary purpose—are knowledgeable about overweight and obesity, nutrition, and physical activity. The ECOP Task Force recognized that the responsibilities of these consultants are great, but also recognized that they all have the potential opportunity to emphasize nutrition and physical activity in the work they do with child care programs.

Each consultant has a specific task within the child care system; however, ensuring that all consultants have a basic understanding and knowledge about childhood overweight and obesity and prevention strategies means child care staff members have regular contact with reliable sources of information about these topics. Educating the existing consultants will lead to the repetition and consistency of health information and messages and will also provide constant support and access to resources. This cross training increases the likelihood of successfully changing child care program environments and practices, as well as health outcomes for young children. Collaboration among existing agencies that currently influence child care programs will need to occur in order for this to come to fruition.

Community/Environment Strategy 3: Cross train all child care consultants and other support personnel on evidence-based and evidence-informed strategies for physical activity and nutrition

All child care consultants and other support personnel who provide training and technical assistance to child care and early education programs should be cross trained in evidence-based and evidence-informed strategies to support early educators in promoting healthy weight among young children. Using the education modules and materials developed in Community/Environment Strategy 2 as a starting point, the North Carolina Child Care Health and Safety Resource Center should take the lead in developing the cross training curricula and promoting it among the different child care consultants including, but not limited to, child care health consultants, Shape NC consultants, Smart Start quality enhancement specialists, Child Care Resource and Referral technical assistance specialists, Head Start consultants, Child and Adult Care Food Program consultants, infant/toddler specialists, and the staff at NC DCDEE who provide training and technical assistance to licensed child care programs.

a) Training should cover, but not be limited to, the following topics:

1) Obesity trends among infants and young children

2) The impact of obesity on health

3) Infant feeding and signs of satiety

4) Healthy food and beverage procurement and preparation and best nutrition practices

5) Strategies to promote healthy and appropriate sleep duration

6) The importance of reducing screen time

7) Age appropriate movement and physical activity

8) Outdoor learning environments and edible landscapes

9) Breastfeeding support

10) Staff wellness to support role modeling

11) Effective strategies to educate parents and other caregivers about best practices to implement at home to promote healthy weight

b) The modules and materials for this cross training should be developed and/or modified if need be such that they can be delivered through multiple mediums, including but not limited to computer-based webinars, training curricula that can be included as part of ongoing trainings and packaged learning modules. The training should be incorporated into existing trainings and updated as new information and evidence become available.

c) Organizations that employ consultants and other support personnel should require this cross training as part of their professional training requirements.

Lead organizations and partners: The North Carolina Child Care Health and Safety Resource Center should take the lead working with the North Carolina Institute for Child Development Professionals, Child and Adult Care Food Program in the Nutrition Services Branch, Women and Children's Health Section, and the Environmental Health Section in DPH, as well as NC DCDEE,

NCPC, North Carolina Child Care Health Consultant Association, North Carolina Child Care Resource and Referral Council, North Carolina Cooperative Extension, the Natural Learning Initiative at North Carolina State University, and the North Carolina Pediatric Society in developing the cross-training teaching modules and seeking to implement it into existing training and professional development requirements.

Funding and new resources required: The modules and materials discussed in Community/Environment Strategy 2 can be modified for use in consultant training. The total cost would be approximately $125,000 to develop, pilot, train, and deliver the cross-training of the consultants, specialists, and technical assistance providers in the first year including associated travel and materials. This funding would come from state or national funders.

Cross training consultants increases the likelihood of successfully changing child care program environments and practices, as well as health outcomes for young children.

In subsequent years, the training could be delivered quarterly for new providers entering the child care system. The information compiled as part of Clinical Strategy 4 about state and community resources that support healthy eating and physical activity should also be shared with child care professionals and consultants.

Performance measures and evaluation: As part of this process, the North Carolina Child Care Health and Safety Resource Center should conduct a pre- and post-intervention survey to assess the changes in the knowledge and skills of child care consultants and technical assistance staff about obesity trends, obesity prevention strategies, and effective parent engagement strategies. The survey should also capture actual practice in child care programs. As a result of the training, underlying knowledge about obesity trends, evidence-based or evidence-informed obesity prevention strategies, and effective parent/caretaker engagement strategies should be enhanced for all participants. In addition, within five years of initial funding, training should be included in all training programs for technical assistance staff on an annual basis. This strategy should contribute to the goal identified in Community/Environment Strategy 1, which is to implement evidence-based and evidence-informed strategies in at least 500 child care programs by the end of five years.

Community/Environment Strategy 4: Increase the focus of Eat Smart, Move More North Carolina on young children and their families

Many of the ECOP Task Force's strategies focused on implementing strategies in child care programs because, as noted earlier in this chapter, at least one in four children ages 0-5 years in North Carolina is, at any given time, in licensed, regulated care. However not all children from ages 0-5 years can be reached

through child care or early education settings. Thus, the ECOP Task Force was interested in exploring other options to reach young children and their families.

Eat Smart, Move More North Carolina is a coalition of more than 80 organizations working to promote "increased opportunities for healthy eating and physical activity wherever people live, learn, earn, play, and pray.

Eat Smart, Move More North Carolina (ESMM) is a coalition of more than 80 organizations working to promote opportunities for healthy eating and physical activity in the community in order to help people achieve a healthy weight.[34] ESMM provides evidence-based or evidence-informed nutrition and physical activity strategies, programs, and information for communities, child care settings, schools, after-school programs, policymakers, the faith community, worksites, families, and health care professionals. The overall goal of ESMM is to promote "increased opportunities for healthy eating and physical activity wherever people live, learn, earn, play, and pray."[35]

In addition to the 80-plus organizations that are part of the statewide leadership team, there are community coalitions in 78 counties across the state. Of these, virtually all have some focus on healthy weight among children, youth, and young adults. Recently, ESMM conducted a survey of the local coalitions to identify their policy focus and priority areas. The survey sought to obtain information about youth programs or initiatives, but little information was collected about activities in local communities targeting young children (ages 0-5 years) and their families.

ESMM already has significant partnerships with community groups across the state, including the faith community, child care providers, schools, families, policymakers, and other community-based organizations. However, to date, most ESMM coalitions have not focused on reducing obesity among young children and their families. As noted in Chapter 1, the evidence shows that obese children are more likely to become obese adults. Thus, early intervention is important if the state is to reverse its growing obesity trend. Prevention is also critical to stemming associated comorbidities that can occur even in childhood, such as elevated blood pressure, high cholesterol, and bone and joint problems, just to name a few.

Community/Environment Strategy 4: Increase the focus of Eat Smart, Move More North Carolina on young children and their families

a) Eat Smart, Move More North Carolina (ESMM) should increase the focus of its community engagement efforts to implement evidence-based and evidence-informed strategies to promote healthy weight among young children and their families.

1) ESMM should survey member organizations to collect information on existing early childhood initiatives and programs.

2) ESMM should also work with other appropriate organizations, including but not limited to, the Physical Activity and Nutrition Branch, Women and Children's Health Section, and Nutrition Services Branch within the North Carolina Division of Public Health; as well as local health departments, Center for Training and Research Translation at the University of North Carolina at Chapel Hill, Shape NC, the Carolina Global Breastfeeding Institute, and the Natural Learning Initiative at North Carolina State University, to identify and create an inventory of evidence-based and evidence-informed tools, policies, programs, and practices to improve healthy nutrition and physical activity for young children.

b) ESMM should educate member organizations about the importance of intervening to improve nutrition and physical activity among young children ages 0-5 years and their families, and should promote the availability of evidence-based and evidence-informed tools, policies, programs, and practices across the state. Specifically, ESMM should help connect member organizations and others who use their resources with additional information on:

1) Obesity trends among infants and young children

2) The impact of obesity on health

3) Infant feeding and signs of satiety

4) Healthy food preparation and best nutrition practices

5) Strategies to promote healthy sleep

6) The importance of reducing screen time

7) Age appropriate movement and physical activity

8) Outdoor learning environments and edible landscapes

9) Effective strategies to educate parents and other caregivers about best practices to implement at home in order to promote healthy weight

10) Breastfeeding support

Lead organizations and partners: Eat Smart, Move More North Carolina should take the lead, but also work with other coalition partners, including but not

limited to, the North Carolina Partnership for Children, state and local public health agencies, the broader faith community (including Faithful Families and Partners in Health and Wholeness), parks and recreation, Head Start Body Start, El Pueblo, National Association for the Advancement of Colored People, North Carolina Commission on Indian Affairs, North Carolina American Indian Health Board, North Carolina Child Care Resource and Referral Council, and the North Carolina Cooperative Extension, and other groups interested in promoting healthy weight among young children.

Funding and new resources required: An estimated one-time $100,000 would be needed to implement this strategy from North Carolina and national funders. This would cover the costs of a member survey; inventory and compilation of evidence-based tools, policies, and programs; implementation of an education initiative using the ESMM website; materials and communications; and evaluation. The information about state and community resources that support healthy eating and physical activity, compiled as part of Clinical Strategy 4, should also be shared with Eat Smart, Move More North Carolina and other community members.

Performance measures and evaluation: Within two years of initial funding, ESMM should have developed a resource of evidence-based and evidence-informed tools, policies, programs, and practices that have been shown to promote healthy weight and prevent obesity among young children and their families. The materials should be available on the ESMM website and should be promoted among local ESMM coalitions. Traffic on the website should be monitored to assess whether the materials are being used and, to the extent possible, to determine if they are being broadly distributed across the state. Within two years after these materials are developed, ESMM should survey local ESMM coalitions to determine if the materials have been used, and conduct a similar survey of health care, child care, and other providers to determine if the materials have been used.

Community/Environment Strategy 5: Form an ECOP Communications Committee to develop a communications campaign to support policy and behavior change to reduce early childhood obesity

In addition to the education and outreach to pediatricians, families, and child care program staff and consultants described in other strategies within this plan, the ECOP Task Force recognized the value of using an additional strategy such as a communications campaign to reach individuals and entities who have an impact on the weight of very young children. The intention of this strategy is to use the power of a well-crafted communications campaign to extend and enhance the collective impact of the other strategies contained in this plan.

This strategy, Community/Environment Strategy 5, is similar to a strategy used in North Carolina's strategic plan to prevent and reduce tobacco use. The North Carolina tobacco use prevention and cessation campaign, TRU (Tobacco. Reality. Unfiltered.), is a mass media campaign launched in 2004. A 2011 independent evaluation called the TRU campaign "an integral and successful component of North Carolina's teen tobacco prevention initiative."[36] This evaluation found that the campaign raised awareness about the consequences of tobacco use, reached youth at higher risk for tobacco use, and inspired conversation among youth and between young people and family members who smoked. The evaluation also showed that the campaign has increased the percentage of youth who believe cigarettes are addictive and who believe that regular use is likely to damage health.[36] This campaign, combined with other initiatives such as the smoke-free schools and tobacco tax increases, have helped reduce tobacco use in North Carolina.

Health communications campaigns, whether written or verbal, are designed to influence the behavior of a large number of people and can be combined with other efforts to enhance them.[37] They can be effective in changing behavior although the effects are small.[38] However, the impact of such campaigns can be important as part of a concerted effort or larger strategic plan. Large numbers of people can be reached through mass communications, so even though effect size may be small, the sheer number of people affected can be quite large.[38] An example of a campaign designed to reach a large target audience through mass media is the TRU campaign mentioned above. Health communications campaigns may use multiple communications channels, such as posters, handouts, and presentations to reach influential individuals, build individual capacity to change, and to increase exposure to the campaign in general. Greater exposure is associated with greater behavior change.[f]

Obesity-related social marketing and communications campaigns have demonstrated small but positive effects on health behavior that can translate into large population impacts.

Obesity-related social marketing and communications campaigns have demonstrated small but positive effects on health behavior that can translate into large population impacts.[39] Snyder (2007) showed a positive impact of campaigns on influencing the purchase of fruits and vegetables[40]; Reger and colleagues (1999) and Maddock and colleagues (2007) demonstrated success in campaigns encouraging individuals to switch to lower fat milk;[41,42] Huhman and colleagues (2010) showed the VERB campaign was successful in increasing physical activity behaviors among tweens[43]; and Noar and colleagues (2007, 2011) have shown that other computer-tailored materials can be effective in reducing fat intake and possibly increasing fruit and vegetable intake.[44,45]

Developing a successful communications campaign requires multiple steps:

1. conducting formative research,
2. using theory to inform the campaign,

f http://www.sciencedirect.com/science/article/pii/S1499404606006543

3. segmenting the audience,
4. designing the message to the target audience,
5. identifying the channels and message placement,
6. evaluating the process, including media exposure, and
7. evaluating outcomes.

These steps are critical and, to ensure success, should be followed in the development and execution of any campaign.[39]

Experts in communications, health, obesity, and very young children, as well as other partners should come together to determine an optimal communications campaign to build upon the momentum of early childhood obesity prevention strategies being implemented throughout the state. One example of a partner is the Alliance of YMCAs that has funding from the Robert Wood Johnson Foundation to advocate at the state level on behalf of childhood obesity prevention.[g]

Community/Environment Strategy 5: Form an ECOP Communications Committee to develop a communications campaign to support policy and behavior change to reduce early childhood obesity

a) The North Carolina Institute of Medicine (NCIOM) should convene an ECOP Communications Committee comprising North Carolina funders; communications professionals; the North Carolina Division of Public Health; Eat Smart, Move More North Carolina; representatives from North Carolina colleges and universities with expertise in communications, obesity, and/or young children; and other appropriate groups such as grocery stores, hospitals, and others to develop a carefully crafted communications campaign to promote healthy weight in very young children. This group should specifically examine opportunities for communications activities that would best support the ECOP Task Force's blueprint.

1) Once these activities have been determined, North Carolina health funders should provide support to the School of Journalism and Mass Communication at the University of North Carolina at Chapel Hill to conduct an analysis of the relevant peer-reviewed and "gray" literature to determine what messages have been effective in influencing individuals, organizations, or policymakers to make changes needed to

g Vodicka, S. Executive Director, North Carolina State Alliance of YMCAs. Oral communication. May 30, 2012.

reduce the risk of overweight and obesity among very young children. Other states' efforts that are similar should be reviewed as well.

2) **The ECOP Communications Committee's campaign development process should follow the seven steps to developing a successful communications campaign and should specifically consider audience segmentation, channel selection, and opportunities for partnering with existing efforts (e.g. farmers markets accepting EBT cards, existing school efforts) to boost overall campaign effectiveness, minimize costs, and ensure that the campaign is culturally and linguistically appropriate.**

Lead organizations and partners: The NCIOM will take the lead on convening the ECOP Communications Committee for the initial conversation. If funding is provided for development of the plan, the NCIOM, or another group chosen by the participating organizations, will reconvene the group.

Funding and new resources required: There is no cost to initially convene the group for the purposes of holding the preliminary discussion. If there is interest in pursuing this further, resources would be needed to develop the plan. Additional resources, which would be contingent on the communications campaign that is developed, would be needed to implement the campaign.

Performance measures and evaluation: Evaluation metrics should be determined as the plan is developed. Potential metrics include an increase in public awareness of campaign messages and community response or action following the release of certain stages of the campaign.

Partners should come together to determine an optimal communications campaign to build upon the momentum of early childhood obesity prevention strategies being implemented throughout the state.

References

1. North Carolina Institute of Medicine. Growing Up Well: Young Children's Social-Emotional Development Mental Health in North Carolina. Morrisville, NC. http://www.nciom.org/wp-content/uploads/2012/08/Early-Childhood.pdf. Published 2012. Accessed April 5, 2013.

2. The National Implementation Research Network, FPG Child Development Institute, University of North Carolina. Portfolio Updates: North Carolina Early Learning Challenge Transformation Zone. http://nirn.fpg.unc.edu/news/portfolio-updates-north-carolina-early-learning-challenge-transformation-zone. Published November 1, 2012.

3. US Department of Education. The Children Born in 2001 at Kindergarten Entry: First Findings From the Kindergarten Data Collections of the Early Childhood Longitudinal Study, Birth Cohort (ECLS-B). http://nces.ed.gov/pubs2010/2010005.pdf. Published October 2009.

4. Division of Child Development and Early Education. Division of Child Development and Early Education Monthly Statistical Summary: Information About Child Care Facilities Regulated by the Division. http://ncchildcare.dhhs.state.nc.us/pdf_forms/January_2013_Statistical_Report.pdf. Published January 2013. Accessed April 25, 2013.

5. Smart Start and The North Carolina Partnership for Children, Inc. SHAPE NC: Healthy Starts for Young Children. Blue Cross and Blue Shield of North Carolina Foundation website. http://www.bcbsncfoundation.org/shapenc. Accessed April 5, 2013.

6. Hansen P. Overview of shape NC. Presented to: Task Force on Early Childhood Obesity Prevention - Community Meeting; January 20, 2012; Morrisville, NC. http://www.nciom.org/wp-content/uploads/2011/11/ECOP_Hansen_2012-1-20.pdf. Accessed April 5, 2013.

7. Center for Training and Research Translation (Center TRT). UNC Center for Health Promotion and Disease Prevention. Nutrition and Physical Activity Self-Assessment for Child-Care (NAP SACC): Implementation. http://centertrt.org/?p=intervention&id=1091&section=6. Published 2013. Accessed April 13, 2013.

8. Hansen P. Obesity prevention in child care: Overview of intervention points, barriers and gaps. Presented to: Task Force on Early Childhood Obesity Prevention - Community Meeting; February 17, 2012; Morrisville, NC. http://www.nciom.org/wp-content/uploads/2011/11/Overview-of-Intervention-Points.pdf. Accessed April 5, 2013.

9. Natural Learning Initiative. Preventing Obesity by Design (POD-2). NC State University website. http://www.naturalearning.org/content/preventing-obesity-design-pod-2. Published February 2009. Accessed April 5, 2013.

10. Kuo F. National Recreation and Park Association. Parks and Other Green Environments: Essential Components of a Healthy Human Habitat. http://www.nrpa.org/uploadedFiles/nrpa.org/Publications_and_Research/Research/Papers/MingKuo-Summary.PDF. Published 2010. Accessed April 10, 2013.

11. Boldemann C, Blennow M, Dal H, et al. Impact of preschool environment upon children's physical activity and sun exposure. *Prev. Med.* 2006;42(4):301-308.

12. Fjørtoft I. Landscape as playscape: The effects of natural environments on children's play and motor development. *Children Youth and Environments.* 2004;14(2):21-44.

13. Taylor AF, Kuo FE, Sullivan WC. Coping with ADD the surprising connection to green play settings. *Environ. Behav.* 2001;33(1):54-77.

14. Boldemann C, Dal H, Mårtensson F, et al. Preschool outdoor play environment may combine promotion of children's physical activity and sun protection. further evidence from southern sweden and north carolina. *Science & sports.* 2011;26(2):72-82.

15. Brown WH, Pfeiffer KA, McIver KL, Dowda M, Addy CL, Pate RR. Social and environmental factors associated with preschoolers' nonsedentary physical activity. *Child Dev.* 2009;80(1):45-58.

16. Benham-Deal T. Preschool children's accumulated and sustained physical activity. *Percept. Mot. Skills.* 2005;100(2):443-450.

17. Nicaise V, Kahan D, Sallis JF. Correlates of moderate-to-vigorous physical activity among preschoolers during unstructured outdoor play periods. *Prev. Med.* 2011;53(4-5):309-315.

18. Ward DS. Physical activity in young children: The role of child care. *Med. Sci. Sports Exerc.* 2010;42(3):499-501.

19. Hinkley T, Crawford D, Salmon J, Okely AD, Hesketh K. Preschool children and physical activity: A review of correlates. *Am. J. Prev. Med.* 2008;34(5):435-441.

20. Cabalda AB, Rayco-Solon P, Solon JA, Solon FS. Home gardening is associated with filipino preschool children's dietary diversity. *J. Am. Diet. Assoc.* 2011;111(5):711-715.

21. Kalich KA, Bauer D, McPartlin D. Early sprouts. *Establishing Healthy Food Choices for Young Children. Young Children.* 2009;64(4):49-55.

22. Neelon S, Evans K. Brief 4: Farm to preschool and preschool garden strategies to combat early childhood obesity. In: Owen J, Rosch J, Smith S, eds. *Preventing Childhood Obesity: Policy and Practice Strategies for North Carolina.* 2011.

23. Meinen A, Friese B, Wright W, Carrel A. Youth gardens increase healthy behaviors in young children. *Journal of Hunger & Environmental Nutrition.* 2012;7(2-3):192-204.

24. Story M, Kaphingst KM, Robinson-O'Brien R, Glanz K. Creating healthy food and eating environments: Policy and environmental approaches. *Annu. Rev. Public Health.* 2008;29:253-272.

25. Kos M, Jerman J. Preschool children learning about the origin of food, on local farms and in the preschool garden. *Nutr. Food Sci.* 2012;42(5):324-331.

26. Cosco,N, Bieber,B, Little,S, et al. Shape NC intervention component – outdoor learning environment (OLE). Presented to: North Carolina Institute of Medicine Task Force on Early Childhood Obesity Prevention; January 20, 2011; Morrisville, NC. http://www.nciom.org/wp-content/uploads/2011/11/NCIOM_ShapeNC_MOORE_012012_A.pdf. Accessed April 13, 2013.

27. Oliver M, Schofield GM, Kolt GS. Physical activity in preschoolers: Understanding prevalence and measurement issues. *Sports Med.* 2007;37(12):1045-1070.

28. Brown WH, Pfeiffer KA, McIver KL, Dowda M, Addy CL, Pate RR. Social and environmental factors associated with preschoolers' nonsedentary physical activity. *Child Dev.* 2009;80(1):45-58.

29. Williams HG, Pfeiffer KA, O'Neill JR, et al. Motor skill performance and physical activity in preschool children. *Obesity (Silver Spring).* 2008;16(6):1421-1426.

30. Smart Start and The North Carolina Partnership for Children, Inc. The Blue Cross and Blue Shield of North Carolina Foundation. SHAPE NC: Healthy Starts for Young Children. http://www.smartstart.org/wp-content/uploads/2010/10/ShapeNC_FactSheet_1_6_2012.pdf. Accessed April 15, 2013.

31. Vaughn A, Murphy K, Hales S. UNC Center for Health Promotion and Disease Prevention. Shape NC Annual Report. http://www.smartstart.org/wp-content/uploads/2012/08/Shape-NC-2012-Annual-Reporl.pdf. Published November 2011. Accessed April 15, 2013.

32. NC Division of Child Development, NC Department of Health and Human Services. NC Colleges & Universities Approved Birth-Kindergarten Teacher Education & Licensure Programs. http://ncchildcare.dhhs.state.nc.us/pdf_forms/NCPre-K_ApprovedBKProgramsNC.pdf. Published March 12, 2012. Accessed May 2, 2013.

33. Child Care Services Association (CCSA). Provider Services | North Carolina Community Colleges. http://www.childcareservices.org/schools/index.php. Accessed May 2, 2013.

34. Eat Smart, Move More NC. Leadership Team. http://www.eatsmartmovemorenc.com/ESMMLeadership/ESMMLeadership.html. Published April 15, 2013.

35. Eat Smart, Move More NC. The Movement. http://www.eatsmartmovemorenc.com/AboutUs/TheMovement.html. Published April 15, 2013.

36. Tobacco Prevention and Evaluation Program, University of North Carolina at Chapel Hill, School of Medicine. 2011 Evaluation of the North Carolina TRU Media Campaign: Preliminary Report. http://www.tpep.unc.edu/reports/2011%20TRU%20Report%20Final%20Prelim%20Report%206%2030%2011.pdf. Published June 30, 2011. Accessed April 15, 2013.

37. The Guide to Community Preventive Services. Health Communication & Social Marketing: Health Communication Campaigns That Include Mass Media & Health-Related Product Distribution. http://www.thecommunityguide.org/healthcommunication/campaigns.html. Published December 15 2011. Accessed April 15, 2013.

38. Snyder LB, Hamilton MA, Mitchell EW, Kiwanuka-Tondo J, Fleming-Milici F, Proctor D. A meta-analysis of the effect of mediated health communication campaigns on behavior change in the united states. *J. Health Commun.* 2004;9 Suppl 1:71-96.

39. Noar,S. Health communication campaigns to promote healthy behaviors: A primer. Presented to: Task Force on Early Childhood Obesity Prevention; June 15, 2013; Morrisville, NC. http://www.nciom.org/wp-content/uploads/2011/11/Noar-NCIOM.pdf. Accessed April 15, 2013.

40. Snyder L. Health communication campaigns and their impact on behavior. *Journal of Nutrition Education and Behavior.* 2007;39(2):S32-S40.

41. Reger B, Wootan MG, Booth-Butterfield S. Using mass media to promote healthy eating: A community-based demonstration project. *Prev. Med.* 1999;29(5):414.

42. Maddock J, Maglione C, Barnett JD, Cabot C, Jackson S, Reger-Nash B. Statewide implementation of the 1% or less campaign. *Health Education & Behavior.* 2007;34(6):953-963.

43. Huhman ME, Potter LD, Nolin MJ, et al. The influence of the VERB campaign on children's physical activity in 2002 to 2006. *Journal Information.* 2010;100(4).

44. Noar SM, Benac CN, Harris MS. Does tailoring matter? meta-analytic review of tailored print health behavior change interventions. *Psychol. Bull.* 2007;133(4):673-693.

45. Noar SM, Harrington NG, Van Stee SK, Aldrich RS. Tailored health communication to change lifestyle behaviors. *American Journal of Lifestyle Medicine.* 2011;5(2):112-122.

Public Policy Strategies

Chapter 5

As noted in Chapter 2, most of the prior task forces and expert panels recommended making regulatory changes to improve early child nutrition, opportunities for physical activity, and breastfeeding support. Some of the prior policy recommendations were targeted to the federal level, such as establishing national dietary guidelines, or developing marketing and advertising standards for foods marketed to children. Others were targeted at states, such as changing state licensure rules to improve nutrition, enhance physical activity, support breastfeeding, and expand the outdoor learning environment in child care settings.

The NCIOM Early Childhood Obesity Prevention (ECOP) Task Force focused on those strategies that could be implemented at the state level, either through state regulatory or voluntary policy initiatives. An example of successful state legislative action to promote health is that which encourages the creation of joint use agreements between local boards of education and local governments.[1] Joint use agreements establish partnerships between schools and communities and permit the use of existing school recreational facilities for non-school use, use after school hours, and use by individuals not affiliated with the school. Physical activity can be promoted within a community by opening up these spaces to the community at large for non-school use.[2] Before the North Carolina General Assembly (NCGA) took action, communities around the state were hesitant to enter into joint use agreements due to concern over liability. However, the NCGA enacted legislation to encourage local school boards to enter into joint use agreements, and to give local boards of education the authority to adopt rules governing joint use of school property.[a] In addition, the NCGA enacted legislation that clarified that local school boards would not be liable for any personal injury that occurred on school property pursuant to the joint use agreement.

The Task Force focused on strategies that could be implemented at the state level, either through state regulatory or voluntary policy initiatives.

In the past, North Carolina has had a lot of success in improving the quality of care provided in child care programs by creating standards to be reached through voluntary efforts. For example, when the state began the North Carolina Star Rated License system in 1999, all licensed child care programs automatically received a rating of 1 star. Higher ratings (2-5, with 5 being the highest) could only be obtained through voluntary efforts. Since higher ratings are linked to financial incentives, most licensed child care programs now qualify as 4 or 5 star licensed programs.

In addition to the voluntary star rating system, North Carolina currently has multiple initiatives aimed at improving nutritional standards, increasing physical activity, enhancing outdoor learning environments, and supporting breastfeeding in child care programs. Some of these initiatives were discussed in Chapter 4. The ECOP Task Force wanted to build on these voluntary initiatives.

a NCGS §§115C-12, 115C-524

The goal is to reach the "tipping point" so that these enhanced standards are the rule, not the exception.

Therefore, this chapter focuses primarily on voluntary efforts that the state can make to improve early childhood nutrition, increase physical activity, enhance the outdoor learning environment, and support breastfeeding. These "voluntary" efforts are not typically considered "policies," as policies are generally a regulatory or legislative action that mandates—rather than encourages—actions. However, because these efforts build on an existing regulatory or publicly funded programmatic structure, the ECOP Task Force included these strategies in the policy section.

This chapter focuses primarily on voluntary efforts that the state can make to improve early childhood nutrition, increase physical activity, enhance the outdoor learning environment, and support breastfeeding.

In addition, the ECOP Task Force included strategies aimed at changing insurance payment policies. Changes in Medicaid or North Carolina Health Choice for Children (North Carolina's State Children's Health Insurance Program) would be considered policy changes, in the more traditional use of the term "public policy."

The policy section of the ECOP Task Force's blueprint focuses on six strategies:

Policy Strategy 1: Create a voluntary recognition program for child care programs and early education programs that meet enhanced physical activity and nutrition standards.

Policy Strategy 2: Enhance family education about early childhood healthy weight and obesity prevention strategies through existing maternal, infant, and early childhood home visiting and family strengthening programs.

Policy Strategy 3: Expand the focus of state agencies to include early childhood health, physical activity, and nutrition through healthy community design.

Policy Strategy 4: Improve the collection and reporting of physical activity and nutrition data in multiple settings to more fully promote healthy weight among young children.

Policy Strategy 5: Improve the collection of body mass index (BMI) data for young children and make the information available to policymakers, health professionals, and the public to evaluate existing programmatic and policy initiatives and to inform future ones.

Policy Strategy 6: Promote breastfeeding for more North Carolina infants through Medicaid.

Policy Strategy 1: Create a voluntary recognition program for child care programs and early education programs that meet enhanced physical activity and nutrition standards

The ECOP Task Force felt that the creation of a voluntary recognition program was the ideal approach to encourage child care programs to further improve the nutrition of food served in the programs, increase breastfeeding support, increase the amount of age appropriate physical activity, and expand the naturalized outdoor learning environment. This recognition system would be voluntary, not mandatory, (more like a "Good Housekeeping Seal of Approval") and could lead to system change over time. This is similar to the process that the state used in developing the star rating system (using a 1-5 rating system, with 5 being the highest) for child care programs. As mentioned previously, when this program was first developed, all licensed child care programs were assigned a star rating of 1 as part of licensure, and meeting higher quality standards was voluntary for programs, but necessary in order to obtain a higher star rating. However, programs were given financial incentives such as grants and increased payments for improving quality. More recently, in the 2011-2012 state budget, the North Carolina General Assembly limited child care subsidies only to those programs that had achieved a 3, 4, or 5 star rating. With this system, which combines voluntary quality improvement, public recognition (as measured through the star rating system), and financial incentives, 70% of all children in early education in North Carolina currently attend a 4 or 5 star program, compared to just 33% in 2001.

Creation of a voluntary recognition program could lead to system change over time.

Last year, the North Carolina Child Care Commission adopted new nutrition standards for licensed child care facilities. These enhanced nutrition standards were based, in part, on recommendations that the Division of Public Health (DPH) made to the Legislative Task Force on Childhood Obesity on strategies to reduce early childhood overweight and obesity. DPH recommended that the standards be implemented in two phases. Phase one of its recommendations was included in the most recent set of North Carolina Child Care Commission nutrition rules. The new standards ensure that meals and snacks served to children in child care settings comply with the Meal Patterns for Children in Child Care Programs from the United States Department of Agriculture (10 A NCAC 09.0901, .1706). Programs must comply with these rules if they receive subsidies to help pay for meals and snacks through the Child and Adult Care Food Program (CACFP). The new licensure rules also limit the types of beverages served in child care programs to breast milk, formula, water, unflavored milk, and six ounces of 100% fruit juices per day. The rules also require child care programs to provide accommodations for women while they are breastfeeding or expressing milk. Parents can opt out of these nutrition standards if they

provide all meals, snacks, and drinks to be served to their children at appropriate times. Parents can also bring special foods and beverages for medical, religious, or cultural reasons. Phase two of DPH's recommended early childhood nutrition standards would limit the number of grains served that contain added sugars, increase the number served that contain whole grains, and limit foods high in fat and salt. Phase two has not yet been implemented, as these changes require additional collaboration between DPH and the North Carolina Division of Child Development and Early Education (NC DCDEE) to develop training materials and resources, as well as additional work with food vendors to ensure availability of healthy options.

The existing child care licensure rules also encourage physical activity and limited screen time (10A NCAC 09.1718). The rules require a minimum of one hour of outdoor play throughout the day, if weather permits. They also limit screen time to two and a half hours per week for children who are two years old or older. Child care facilities should have appropriate space for vigorous activities both outdoors and indoors.

North Carolina has demonstrated past success with voluntary quality improvement efforts through the North Carolina Star Rated Licence system.

Expert panels suggest that children should receive more than one hour a day of moderate to vigorous physical activity. Recommendations for increased physical activity are based on studies that report substantial physical activity is necessary for young children's motor development and studies that demonstrate young children are active for an average of 15 minutes per hour of observation.[3] The Institute of Medicine of the National Academies (IOM) recommends that young children have an opportunity for physical activity for at least 15 minutes per hour.[3] This recommendation doubles the current licensure requirement to an average of two hours in a given eight hour day.

The existing state child care licensure rules provide a solid basis on which to promote healthy weight for infants and young children. Yet more can be done to further improve nutrition, support breastfeeding, and expand opportunities for vigorous physical activity—both indoors and in appropriate outdoor learning environments. As discussed in Chapter 4, Preventing Obesity by Design (POD), a project of the Natural Learning Initiative at North Carolina State University, helps promote improved outdoor learning environments in child care programs to encourage more active play.

North Carolina has demonstrated past success with voluntary quality improvement efforts through the North Carolina Star Rated Licence system. In addition, efforts have already been made to begin a voluntary certification program for child care programs that develop breastfeeding-friendly environments. The Carolina Global Breastfeeding Institute (CGBI) received grant funding to research breastfeeding support in Wake County child care programs in collaboration with the child care health consultants and Smart Start and to develop 10 steps for breastfeeding-friendly child care. Based on these 10 steps, the Special Nutrition Program through the Division of Public Health is developing a breastfeeding-friendly designation for North Carolina

child care programs.[b] The program model was based on DPH's North Carolina Maternity Center Breastfeeding-Friendly Designation. CGBI and DPH's experience in developing and offering training and voluntary certification could be used to pilot this effort and provide the groundwork for including other aspects of healthy child care. In fact, the inclusion of additional aspects should be relatively seamless, given that CGBI has patterned its materials and approach after NAP SACC, a highly successful nutrition and physical activity enhancement and promotion program for child care settings.

Child care programs that receive these enhanced standards could include this recognition in their marketing materials. In addition, the ECOP Task Force recommends that NC DCDEE seek private or other funding to provide financial incentives to child care programs that meet the voluntary standards for enhanced health and wellness recognition.

Policy Strategy 1: Create a voluntary recognition program for child care programs and early education programs that meet enhanced physical activity and nutrition standards

The North Carolina Division of Child Development and Early Education (NC DCDEE), the Child and Adult Care Food Program (CACFP), the North Carolina Partnership for Children (NCPC), the Carolina Global Breastfeeding Initiative (CGBI), Child Care Resource and Referral Network, and the North Carolina Child Care Health and Safety Resource Center should develop a voluntary recognition program for licensed child care programs, family care homes, Head Start, North Carolina Pre-K, and other child care and early education settings that meet enhanced nutrition, including breastfeeding, physical activity, and naturalized outdoor learning environment standards for infants and young children.

a) The standards for recognition should include:

1) Evidence-based or other validated measures that have been shown to improve nutrition, physical activity, and overall health, and promote a healthy weight for young children, beginning in infancy.

2) Requirements that teachers have received enhanced training and certification on health and wellness, including training on how to educate parents about early childhood nutrition and physical activity.

b Sullivan, C. State Breastfeeding Coordinator, Nutrition Services Branch, Division of Public Health, North Carolina Department of Health and Human Services. Written communication. June 10, 2013.

b) The groups listed in Strategy 1 should seek public input into the voluntary recognition standards before implementing the program.

c) NC DCDEE should seek additional funding to provide financial incentives to child care programs that meet the voluntary standards for enhanced health and wellness recognition.

Lead organization and partners: NC DCDEE should take the lead and pull together other appropriate organizations to develop the voluntary recognition program including incentive funding strategy for enhanced health and wellness programs and policies in licensed child care settings. NC DCDEE should involve other key organizations, including but not limited to: CACFP, NCPC, CGBI, Child Care Resource and Referral Network, and the North Carolina Child Care Health and Safety Resource Center.

Funding and new resources required: New funding is not needed to create the voluntary recognition system.

While funding is not needed to create the voluntary recognition system, incentive funding would be helpful to incentivize child care facilities to reach these higher standards. NC DCDEE and partners should seek public and/or private funding to support financial incentives to help child care facilities achieve the voluntary recognition.

Performance measures and evaluation: By the end of 2018, North Carolina would have developed its voluntary recognition program, and at least 75 licensed child care programs would have received this recognition.

Policy Strategy 2: Enhance family education about early childhood healthy weight and obesity prevention strategies through existing maternal, infant, and early childhood home visiting and family strengthening programs

North Carolina has a number of different family strengthening and home visitation programs. For example, the Affordable Care Act (ACA) provided funding to states to implement evidence-based or evidence-informed maternal, infant, and early childhood evidence-based visitation models. The goals of these programs are to improve prenatal, maternal, and newborn health; child health and development; parenting skills; school readiness; and family economic self-sufficiency, and also to reduce juvenile delinquency.[4] In June 2011, North Carolina was awarded $3.2 million per year for three years to implement the

North Carolina Maternal, Infant, and Early Childhood Home Visiting Program. Two evidence-based home visiting models are supported: the Nurse Family Partnership (NFP) and Healthy Families America (HFA), which are operated through the Women's and Children's Health Section in the North Carolina Division of Public Health. NFP provides nurses to educate and support low-income, first-time mothers throughout their pregnancy and the first two years of motherhood. The NFP is supported in a variety of ways including The Duke Endowment, the Kate B. Reynolds Charitable Trust, the Blue Cross and Blue Shield of North Carolina Foundation, the North Carolina Division of Public Health, and Smart Start. The ACA is an additional source of support. HFA is an evidence-based home visiting program for low-income families at risk of child abuse or neglect. The program's goals include developing nurturing relationships, promoting healthy child development and growth, and building the foundation for a strong family. Some of the HFA sites are incorporating Parents as Teachers (PAT) into the HFA home visiting program. PAT is also an evidence-based program that provides family education and support to families with young children. This support includes home visits by parent educators, parent group meetings, developmental and health screenings, and linkages to community resources. While PAT is supported by Smart Start, the Women's and Children's Health Section works with Smart Start to coordinate support for this and any home visiting program.

North Carolina has a number of different family strengthening and home visitation programs.

In addition, the state is also helping to support implementation of Positive Parenting Program (Triple P). Triple P is a multilevel, evidence-based parenting and family support program that promotes positive and nurturing parent-child relationships in order to prevent behavioral, emotional, and developmental problems in children.[5,6] Triple P aims to increase protective factors including parental confidence, the use of positive parenting practices, community capacity, interagency collaboration, and the capacity and confidence of service providers. It also aims to reduce risk factors such as harmful or ineffective parenting practices, parental stress, depression, conflict, and child abuse and neglect. A final goal of Triple P is to reduce the prevalence of behavioral and emotional problems among young children.[5]

All of these programs rely on trained professionals who work directly with at-risk families, and have an opportunity to provide valuable information on healthy weight and obesity.

Children ages 0-5 years who have certain risk factors may be eligible for care coordination through Care Coordination for Children (CC4C), which is administered jointly by Community Care of North Carolina (CCNC), DPH, and the North Carolina Division of Medical Assistance (DMA). The goal of CC4C is to improve young children's health outcomes while reducing their medical costs. Children with special health care needs or those who are exposed to toxic stress, in the foster care system, or transitioning out of the neonatal intensive care unit may receive CC4C services. Families referred to CC4C receive a comprehensive evidence-based health assessment, including measures of the parents' life skills, that help a family achieve a healthy level of functioning. A care manager then works with the family to develop a plan of care to meet the desired outcomes. CC4C care managers help families connect with needed

support services such as health insurance, child care, behavioral health, early intervention, medical care, and transportation. CC4C began in 2011 and is still being developed and implemented in CCNC networks through health departments across the state.[7]

In addition to these home visiting programs, DMA covers a postnatal home visit by a registered nurse. This visit provides the opportunity to follow up with the mother on her health; provide counseling for family planning and infant care; and arrange for needed appointments for the mother and/or child.[8] Head Start also has a federally funded home-based program for pregnant women and low-income families with infants and toddlers. Home visiting is one component of Early Head Start, a child and family development program. The home-visiting program offers weekly home visits in addition to playgroups with other children and parents several times per month.[9,10]

The Task Force wanted to build on the existing home visiting and family strengthening programs by including parent education on strategies to support healthy weight.

All of these programs rely on trained professionals who work directly with at-risk families, and thus have an opportunity to provide valuable information on healthy weight and obesity. Providing healthy weight information and obesity prevention strategies to families in the home extends the current US Preventive Services Task Force recommendation to screen and provide counseling to children ages 6 years and older who are obese to very young children (ages 0-5 years).[11] Further, an article in the *New England Journal of Medicine* (January 2013) noted that interventions that include parental involvement and the home setting are likely to result in better weight outcomes than programs provided only in the school environment or other non-home settings.[12]

The ECOP Task Force wanted to build on the existing home visiting and family strengthening programs by including parent education on strategies to support healthy weight. The North Carolina Division of Public Health is involved in the oversight and/or funding of many of these initiatives. For some of these programs, DPH may be limited in how much it can change program requirements because the state received federal funding to implement these evidence-based programs. Evidence-based programs should be implemented with fidelity to the program design in order to achieve the same results.[13] However, while the NFP, HFA, and PAT programs have specific content—some of which addresses healthy weight, physical activity, nutrition, and food access/security—DPH and NCPC believe there is an opportunity to provide additional resources and data specificity to the home visiting programs while maintaining fidelity to the models. The content of visits is currently recorded within the NFP and HFA client record, but is not reported or collected as part of the data system. This additional data collection would need to occur at the national NFP and HFA level. The Children and Youth Branch within DPH has a child nutrition consultant on staff who could provide additional and formal training to NFP and HFA, and who could coordinate training with NCPC for the PAT parent educators on early childhood nutrition, healthy weight, and obesity prevention.

Policy Strategy 2: Enhance family education about early childhood healthy weight and obesity prevention strategies through existing maternal, infant, and early childhood home visiting and family strengthening programs

a) The Children and Youth Branch in the North Carolina Division of Public Health should train the NFP and HFA parent educators it funds about early childhood physical activity, nutrition, healthy weight, and obesity prevention. This training should include appropriate parent education on healthy weight, breastfeeding, nutrition, physical activity, and sleep into existing home visiting or family strengthening programs.

b) NCPC should collaborate with DPH to ensure PAT parent educators receive similar training.

c) DPH should examine possibilities to track this information in the home visiting data systems for the programs funded through DPH.

Lead organization and partners: DPH, NCPC, and CCNC should take the lead on determining how to best implement this strategy.

Funding and new resources required: There would be no need for new funding associated with this strategy since the Children and Youth Branch at DPH has a nutrition consultant who will provide the training directly to NFP and HFA sites and coordinate with NCPC in the provision of this type of training to the PAT sites. They should also incorporate materials from the modules developed for child care providers, consultants, and technical support in community/environment strategies 2 and 3 from Chapter 4.

Performance measures and evaluation: Within three years of implementation, 80% of parent educators should be trained.

Policy Strategy 3: Expand the focus of state agencies to include early childhood health, physical activity, and nutrition through healthy community design

The concept of healthy community design is based on the tenet that both the physical built environment and the food environment are important ways to respond to the obesity epidemic and related chronic diseases. Increasing access to healthy foods and places to be active is an integral part of a larger strategic

plan to help individuals maintain healthy weight and reduce chronic diseases.

The built environment refers to the physical, human-made resources and infrastructure in the environment, including but not limited to homes, open spaces, buildings, streets, parks, restaurants, and open spaces.[14,15] The built environment is an important factor that influences physical activity levels among people of all ages.[16] Research shows that people with access to sidewalks and trails are more likely to be physically active than those without access, demonstrating that the built environment can either encourage activity or hinder it.[17] A lack of sidewalks, for example, reduces opportunity for physical activity. The Centers for Disease Control and Prevention states that children can benefit from healthy community design. For example, planning for parks in the design of communities creates spaces where children can be active and be nurtured.[18] In fact, promoting public health and healthy communities is one of six tenets of the American Planning Association's smart growth definition.[19] Further, to support physical activity in communities, the Guide to Community Preventive Services recommends community-scale and street-scale urban design land use policies and practices, as well as the creation of, or enhanced access to, places for physical activity.[20] The North Carolina Department of Transportation's Statewide Pediatrian and Bicycle Plan, WalkBike NC, was designed to improve walking and bicycling conditions statewide and can serve as a resource as communities develop a vision for the built environment in the future of the state.[c]

All North Carolina agencies that make decisions affecting the built environment and food environment should consider the impact their decisions have on the health and well-being of North Carolinians.

Another environmental factor that contributes to overweight and obesity is the food environment. Research shows that a lack of access to grocery stores as well as the high cost of healthier foods are barriers to healthy nutrition behaviors. Low-income, rural, and minority communities are less likely to have grocery stores, and similar disparities exist in the availability of healthier foods and beverages.[21] The American Planning Association developed a Policy Guide on Community and Regional Food Planning that can serve as a resource for communities planning to improve the health of their food environments while promoting local and regional food and stimulating their economies.[d]

All North Carolina agencies that make decisions affecting the built environment and food environment should consider the impact their decisions have on the health and well-being of North Carolinians. Ensuring equitable access to opportunities for physical activity, as well as to healthy and affordable food, should also be part of the planning process. The ECOP Task Force is interested in the needs of families with very young children, and is especially concerned about low-income families and at-risk groups with high rates of early childhood obesity. The intention of this strategy is to ensure the needs of very young children are specifically considered and addressed in the work of state agencies that impacts community design, and thus health.

c http://www.ncdot.gov/bikeped/planning/walkbikenc/
d http://www.planning.org/policy/guides/pdf/foodplanning.pdf

Policy Strategy 3: Expand the focus of state agencies to include early childhood health, physical activity, and nutrition through healthy community design

a) State agencies should adopt and promote policies and practices that focus on healthy community design to create opportunities for physical activity and access to healthy, affordable foods for families with young children ages 0-5 years, targeting at-risk communities.

b) As community design impacts all age groups, the 2013 North Carolina Statewide Pedestrian and Bicycle Plan should be used as a standard reference for designing communities with pedestrian mobility in mind, and with consideration at the local level to connectivity of neighborhoods, commercial/retail areas, schools (including child care and early learning programs), and recreation areas.

c) The American Planning Association's Policy Guide on Community and Regional Food Planning should be used as a standard reference for designing communities with healthy and affordable food access in mind, with consideration at the local and regional levels to support comprehensive food planning processes.

Lead organization and partners: The North Carolina Departments of Commerce, Transportation, Agriculture and Consumer Services, and Environment and Natural Resources, as well as the North Carolina Division of Public Health, the North Carolina Housing Finance Agency, and other appropriate agencies should collaborate as equal partners in this strategy.

Funding and new resources required: No new resources are required; however, if new programs are implemented or built environment elements are created, additional resources may be required.

Performance measures and evaluation: Five years after implementation, the North Carolina Alliance of State YMCAs should review all the policies and practices that have been put into operation at the state level that foster the health of very young children through the promotion of physical activity and good nutrition.

Policy Strategy 4: Improve the collection and reporting of physical activity and nutrition data in multiple settings to more fully promote healthy weight among young children

North Carolina is rich in health data, but there are some gaps and data needs. When it comes to breastfeeding data, the North Carolina Pregnancy Risk Assessment Monitoring System (PRAMS) collects data on a variety of measures including breastfeeding initiation, duration, cessation, and hospital support of breastfeeding.[22] However, using PRAMS data to fully understand breastfeeding duration in North Carolina is limited, as mothers are only surveyed two to three months postpartum.[23] In addition to PRAMS, the Child Health Assessment and Monitoring Program (CHAMP) collects data on breastfeeding. CHAMP data provide more information about breastfeeding length or duration (up to one or more years). CHAMP also collects data for nutrition and physical activity behaviors for children 17 years and younger.[24] Even though these data are collected and reported for children under age 5 years, or for children ages 2-4 years, the data are often deemed unreliable due to small sample sizes. Aggregating these data across several years would provide reliable data.

Using existing data sources, North Carolina can generate a better profile of weight status and predictors of weight status in young children.

In addition, more information is needed to understand the extent to which licensed child care programs are implementing best practices for nutrition and physical activity. In North Carolina, child care programs receive an announced visit by the North Carolina Division of Child Development and Early Education (NC DCDEE) licensing inspectors annually. Licensing inspectors may also make one unannounced visit each year. NC DCDEE contracts with third party consultants to inspect centers once every three years as part of the star rating assessment. These consultants are highly trained in administration of the Early Childhood Environment Rating Scale (ECERS) and the Infant/Toddler Environment Rating Scale (ITERS), the North Carolina Star Rated License system's assessment instruments. These instruments measure aspects of physical activity and food.[25,26] In addition, other data are collected through multiple agencies. The North Carolina Child and Adult Care Food Program collects information on nutrition from the many child care programs that receive funding from this program to provide nutritious foods in child care programs. More detailed information about nutrition, physical activity, and outdoor learning environments is collected on a subset of child care programs participating in Shape NC. Using existing data sources, North Carolina can generate a better profile of weight status and predictors of weight status in young children.

Finally, collecting data about places that provide opportunities for young children and their families to be active would be a valuable addition to the body of data available to help support healthy, active lifestyles among very young children. This information would enable identification of locations where resources are lacking and also help to inform the resource information needed for Clinical Strategy 4.

Policy Strategy 4: Improve the collection and reporting of physical activity and nutrition data in multiple settings to more fully promote healthy weight among young children

a) The North Carolina Partnership for Children (NCPC), NC DCDEE, and the Child and Adult Care Food Program within DPH should collect data on the extent to which child care programs are implementing best practices related to nutrition and physical activity. Specifically:

1) The North Carolina Child and Adult Care Food Program should continue to collect information about the nutritional content of foods served in child care programs for meals or snacks.

2) NC DCDEE should continue to collect information on physical activity, screen time, meal/snack practices, music and movement, and health practices as part of the North Carolina Star Rated License system.

3) NCPC should use physical activity, nutrition, and outdoor learning environment data from current and future iterations of the Shape NC assessment tool for centers that want to implement additional best practices not captured by other assessments.

This information should be provided to NCPC in order to gain a better understanding of current nutrition and physical activity practices in child care programs.

b) The North Carolina State Center for Health Statistics (SCHS) should aggregate data across multiple years on young children, ages 0-5 years, to obtain reliable data on physical activity, nutrition, and other data that would provide information about activities that influence healthy weight.

Lead organizations and partners: (a) NCPC should convene all the collaborating partners mentioned in a), b), and c) to review the data needs. (b) SCHS will determine how many years of data are needed in order to produce reliable CHAMP data for children ages 0-5 years.

Funding and new resources required: (a) NCPC would need an estimated $15,000 in one-time funding from North Carolina and national funders to convene the partner agencies. (b) No additional funding is needed for this.

Performance measures and evaluation: (a) NCPC should convene the funders within one year after initial funding. (b) Reliable CHAMP data for these

measures should be available once SCHS has determined the number of years of data needed. (Note: Data collected from 2011 and beyond have been collected under a new methodology; therefore, data from years prior to 2011 cannot be used in aggregate with more recent data.) (c) Within two years of initial funding, Recreation Resources Service should have this information.

Policy Strategy 5: Improve the collection of body mass index (BMI) data for young children and make the information available to policymakers, health professionals, and the public to evaluate existing programmatic and policy initiatives and to inform future ones

North Carolina providers, policymakers, and the general public need better information about the number of children who are overweight or obese in order to determine whether state and community policies and practices are helping to promote healthy weight and reduce overweight and obesity among young children.

Currently we use the data from the North Carolina Pediatric Nutrition Surveillance System (NC PedNSS) to assess the level of overweight and obesity among young children. However, the NC PedNSS is a limited dataset; it only collects information on low-income children who are receiving services through the WIC program, which is only 18.5% of the 753,690 children ages 0-5 years in the state (in 2011).[e] We need information on all children—not just children from low-income families. In addition, we need trend data to determine whether strategies that we adopt are making a difference in improving healthy weight among young children.

Community Care of North Carolina (CCNC) has a special initiative focused on reducing childhood obesity as part of its Children's Health Insurance Program Reauthorization Act (CHIPRA) quality improvement grant. As part of this initiative, pediatric quality improvement coaches in every CCNC network are encouraging pediatric and family practices to calculate BMI at each visit, and to report a child's BMI percentile into the claims data for all children ages 0-20 years and older (using a "V code"). There are four V codes that correspond with a child's BMI percentage: under 5th percentile (failure to thrive), 5th to 85th percentile (healthy weight), 85th to 95th percentile (overweight), and at or above 95th percentile (obese).[27] These data are reported back to practices on a quarterly basis. Currently only about 11% of practices routinely report the child's BMI percentile using a V code (an increase from 0% of the practices in

e Knight K. North Carolina Division of Public Health. Written (email) communication. April 3, 2013.

2011).[f] CCNC quality improvement coaches are actively working with practices to increase the number of practices reporting the BMI percentile and to document that they have been counseled about healthy nutrition and physical activity. Through this effort, data are being collected on a large proportion of children ages 0-5 years and, in particular, children who may be at higher risk for overweight and obesity. These data will be analyzed by age ranges, networks, and practices. Medicaid currently covers about two-thirds of young children in the state (ages 0-5 years) with family incomes no greater than 200% of the federal poverty guideline.[g],[h] Another source of data is needed to obtain information for children who do not receive Medicaid or for older children who receive North Carolina Health Choice.

The ECOP Task Force explored the possibility of capturing data on BMI from electronic health records. Physicians and other health care providers are increasingly moving to incorporate electronic health records (EHRs) into their practices. Eligible primary care practitioners can qualify for incentive payments from the federal government if they adopt certified EHR technology in their practice and they use the EHRs in a meaningful manner ("meaningful use"). Physicians can qualify for up to $63,750 (over six years) from Medicaid if they have a large Medicaid patient panel (20% Medicaid for pediatricians and 30% for all other providers) and meet other requirements (including meaningful use). Certain physicians who do not have a large enough Medicaid patient population can qualify for smaller Medicare incentive payments. The federal government has defined the criteria to meet the meaningful use requirements in three stages. One of these measures is to record and report changes in the patient's vital signs, including BMI, and to plot and display growth charts for children ages 3-20 years (including BMI).[i] In the first stage, practitioners must show that they recorded BMI information on at least 50% of their patients into the EHRs. (Note: Eligible providers are only required to report that they recorded the BMI, not the actual BMI percentile itself.) Individual practitioners can obtain incentive payments for up to two years by meeting Stage 1 requirements. In order to continue to receive incentive payments thereafter, they would have to meet Stage 2 requirements. In the second stage of meaningful use, they must show that they obtained these data for 80% of their patients.[28]

We need better information about the number of children who are overweight or obese in order to determine whether state and community policies and practices are helping to promote healthy weight and reduce overweight and obesity among young children.

Theoretically, data from EHRs could provide the state with more complete

f Earls MF. Community Care of North Carolina. Written (email) communication. May 8, 2013.

g North Carolina Department of Health and Human Services. Health Check (EPSDT) Program Year-To-Year Comparisons Report. North Carolina Department of Health and Human Services website. http://www.ncdhhs.gov/dma/healthcheck/hcsfy2012states.pdf. Published December 18, 2012. Accessed May 30, 2013.

h North Carolina Office of State Budget and Management. July 1, 2012 County total age groups - standard. North Carolina Office of State Budget and Management website. http://www.osbm.state.nc.us/demog/countytotals_agegroup_2012.html. Updated April 18, 2013. Accessed May 30, 2013.

i Originally, CMS required most eligible providers to record vital signs, including BMI, on children ages 2-20, but more recent regulations, starting in calendar year 2013, only required participating providers to capture data on children ages 3-20. Some providers can seek exemptions from this requirement—for example, if the provider does not routinely see children in their practice, or is a specialist or other type of practitioner (such as a dentist) who does not normally collect vital signs.

information about the BMI percentile for young children (ages 3-5 years), once more practitioners actively use EHRs. However existing EHR systems were designed for adults, not children. Thus, the EHRs calculate a BMI (rather than the BMI percentile), which is not an appropriate measure for children. As noted earlier, North Carolina received a CHIPRA quality grant. It was one of only two states that focused, in part, on working with pediatric electronic health vendors to change the data that is collected for children. As part of this effort, CCNC is working with electronic health vendors to incorporate obesity-related data and data prompts for BMI percentile, evidence of counseling, and blood pressure percentiles.[29] Once properly designed, the pediatric EHRs could include prompts for practitioners to encourage practitioners to more actively counsel their patients and families about the child's weight.

The ECOP Task Force explored the possibility of capturing data on BMI from electronic health records.

While redesigning pediatric EHRs to capture meaningful BMI data may encourage more practitioners to counsel their patients, the current Health Information Exchange is not designed to capture or warehouse population health data that exists in individual EHRs. There is an effort in Western North Carolina to try to collect BMIs through EHRs. With combined support from The Duke Endowment, the Community Foundation of Western North Carolina, and The Kate B. Reynolds Charitable Trust, the Western North Carolina (WNC) Health Network has implemented a pilot program called WNC Healthy Kids, which is designed to reduce and prevent childhood obesity in 16 rural counties in Western North Carolina. Through WNC Healthy Kids, hospitals and local health departments collaborate to track outcomes by collecting BMI through EHRs.[30] We should be able to learn from the WNC Health Network's pilot program. The goal is to design a population health data system that could collect aggregate data—such as BMI percentiles—to use in monitoring the state's health.

Another potential source of data is the Kindergarten Entry Assessment (KEA).

Another potential source of data is the Kindergarten Entry Assessment (KEA) process, which is being developed by the North Carolina Department of Public Instruction with funding through the Race to the Top—Early Learning Challenge Grant. With a whole-child perspective, the KEA process will construct a child profile for every child at kindergarten entry to include data on various developmental domains including health, social-emotional indicators, and academic readiness. The KEA will incorporate the existing Kindergarten Health Assessment, which captures height and weight data collected at the child's medical home (pediatric or health department) prior to entering school. The Kindergarten Health Assessment (KHA) is mandated by law and required by all schools. Currently the KHA is paper-based, which limits the ability to aggregate captured data. Thus, height and weight data, which could be used to calculate BMI, are not aggregated at the state or district level.[j] These data would be incredibly valuable to policymakers and others working to ensure healthy weight among young children.

j Pruette J. Office of Early Learning, North Carolina Department of Public Instruction. Oral communication. April 10, 2013.

Policy Strategy 5: Improve the collection of body mass index (BMI) data for young children and make the information available to policymakers, health professionals, and the public to evaluate existing programmatic and policy initiatives and to inform future ones

a) CCNC should continue to encourage primary care professionals to measure weight and height (to calculate BMI percentile) for all Medicaid recipients at least once annually. This information should be included as part of the data collected by the CCNC Informatics Center, and should be included in quality improvement reports provided back to the networks and CCNC health professionals. Within three years, aggregate information about BMI at the state and at the network levels should be made publicly available, including information for young children ages 0-5 years.

b) The North Carolina Division of Public Health (DPH) should explore the possibility of capturing BMI data from electronic health records.

c) The Kindergarten Entry Assessment (KEA) should capture BMI data for each child entering kindergarten. To do so, the Kindergarten Health Assessment, which captures height and weight data and which will inform the KEA, should be submitted electronically to schools enrolling kindergarten-aged students with data to be aggregated at the district and state level. These data will provide the state with BMI data for all children in the state entering kindergarten.

Lead organization and partners: (a) CCNC should continue its efforts to encourage primary care professionals to measure a child's BMI percentile and to counsel families on nutrition and exercise. (b) DPH should explore the possibility of capturing BMI data from electronic health records. In Stages 1 and 2 of meaningful use, health professionals receive incentives to report certain population health measures to DPH (including immunization and reportable diseases). As DPH sets up the systems to capture these data from EHRs, it should also explore the feasibility of capturing other population health measures, such as BMI. (c) The North Carolina Department of Public Instruction should continue its efforts to develop the Kindergarten Health Assessment, and should capture data on BMI as part of the health related core elements.

Funding and new resources required: (a) New resources are not required to capture the information on BMI percentile as part of the CCNC claims data,

as the Medicaid data system is already set up to capture that data. (b) North Carolina and national funding may be required to capture statewide data on BMI through a statewide Health Information Exchange. Additional funding may also be required to capture population health measures, including BMI, within the State Center for Health Statistics. (c) Funding for the Kindergarten Entry Assessment is part of the Race to the Top—Early Learning Challenge Grant.

Performance measures and evaluation: (a) Within the next five years, CCNC should have a sufficient number of primary care providers who report the V codes for obesity as part of the claims submission. Once sufficient data is collected, CCNC should make aggregate data available to the public (by age, network, race, and ethnicity). (b) By 2015, DPH should know whether or not capturing BMI data through electronic health records is a feasible option. (c) Within five years, electronic data on BMI should be made available through the Kindergarten Entry Assessment.

Policy Strategy 6: Promote breastfeeding for all North Carolina infants

The association between breastfeeding and obesity prevention was first discussed in Chapter 1. In that chapter, results from a recently published study were cited, which found breastfeeding duration and exclusivity offered no protection against obesity.[31] In addition, recent literature reviews suggest that breastfeeding is not a major determinant for healthy weight, but may offer a modest protective effect against overweight and obesity.[12,32] The ECOP Task Force learned of this information at the conclusion of its work, but elected to retain the strategies pertaining to breastfeeding that it developed for two reasons: 1) a modest protective factor may in fact exist and future scientific research will help elucidate the association, if there is one, and 2) the many known benefits of breastfeeding are clear and include protection against a multitude of infections, allergic disease, and sudden infant death syndrome.[33]

Children who have been breastfed are less likely to develop acute disease in childhood or chronic illness, such as diabetes and heart disease, later in life.[34] Despite the known benefits of breastfeeding exclusively for the first six months of life and continued breastfeeding for the first year of life, mothers' decisions to breastfeed and continue breastfeeding can be influenced by the presence or lack of social support offered by hospital maternity practices, health care professionals, child care settings, and employers.[34] Providing counseling and support in clinical settings, as well as in other community venues, has been shown to promote breastfeeding. For example, the US Preventive Services Task Force review of the research literature found that coordinated clinical interventions including counseling throughout pregnancy, birth, and infancy can help increase breastfeeding initiation, duration, and exclusivity.[35] The

American Association of Pediatrics (AAP), the American Academy of Family Physicians (AAFP), and the American College of Obstetricians and Gynecologists all recommend that pregnant women receive breastfeeding counseling and education. AAP and AAFP also recommend that women receive ongoing breastfeeding support.

The World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) developed the Baby-Friendly Hospital Initiative (BFHI) in 1991 to guide institutions in promoting breastfeeding.[36] The intention of this effort is to increase the number of babies who receive breastmilk and all of the related benefits. BFHI outlines 10 steps to successful breastfeeding that a hospital or birthing center must implement to receive the "Baby Friendly" designation. Steps include helping mothers initiate breastfeeding within half an hour of birth and showing mothers how to breastfeed and how to maintain lactation, even if they should be separated from their infants.[34] Since 2010, four North Carolina facilities have achieved the "Baby Friendly" designation: Mission Hospital in Asheville, Women's Birth and Wellness Center in Chapel Hill, Vidant Medical Center in Greenville, and North Carolina's Women's Hospital in Chapel Hill. Several others are in the process of implementing the necessary steps.[34] The steps involve policy change, mother instruction, and staff training and education.

Children who have been breastfed are less likely to develop acute disease in childhood or chronic illness later in life.

In 2006, the North Carolina Department of Health and Human Services released Promoting, Supporting, and Protecting Breastfeeding: A North Carolina Blueprint for Action.[k] The Blueprint reviews the benefits of and barriers to breastfeeding then makes recommendations for various groups including communities, the health care system, workplaces, and child care facilities. The Blueprint can serve as a resource for communities and professionals as they plan a healthy start for the children of North Carolina.

The Affordable Care Act (ACA) includes several provisions aimed at promoting breastfeeding. First, the law requires private insurers to provide coverage of preventive services without cost sharing. As part of this requirement, insurers must provide "comprehensive lactation support and counseling, by a trained provider during pregnancy and/or in the postpartum period, and costs for renting breastfeeding equipment."[37] This provision applies to all private insurers (except grandfathered plans).[l] While the ACA requires that lactation counseling be provided by a "trained provider" it does not specify the specific particular type of training needed. The International Board of Lactation Consultant Examiners (IBLCE) set requirements for certification in the United States, and, while not

k http://www.nutritionnc.com/breastfeeding/PDFS/bf-stateplanFINAL.pdf

l A grandfathered plan is a health plan that was in existence since March 23, 2010, and that has not been substantially changed since that time. Health plans can lose grandfathered status for many reasons, including but not limited to: changes in health insurance carriers or covered benefits, or a substantial increase in deductibles or copayments. Department of the Treasury, Department of Labor, Department of Health and Human Services. Group Health Plans and Health Insurance Coverage Relating to Status as a Grandfathered Health Plan Under the Patient Protection and Affordable Care Act; Interim Final Rule and Proposed Rule. 2010;75(116):34538-34570. http://www.gpo.gov/fdsys/pkg/FR-2010-06-17/pdf/2010-14488.pdf. Accessed February 18, 2013.

legally mandated, it does provide assurance of appropriate training and skills. There are currently 557 lactation consultants in North Carolina who have received IBLCE recognized certification.[38]

In addition to the requirement to pay for lactation counseling and rental of breastfeeding equipment, the ACA requires employers with 50 or more employees to provide time and a private place for a female employee to express breastmilk for up to one year after the birth of a child.[39] This requirement also applies to smaller employers (with fewer than 50 employees), unless they can prove they have difficulty complying with the new provisions. Employers are not required to compensate the employee for this break time.

Current data suggests that Medicaid-eligible women are less likely to breastfeed than are women with other insurance coverage.

Although private insurers are required to provide coverage of lactation support and counseling, and help pay for breastfeeding equipment, this same mandate does not apply to Medicaid. Current data suggests that Medicaid-eligible women are less likely to breastfeed than are women with other insurance coverage. In 2010, 31% of Medicaid recipients reported in the North Carolina Pregnancy Risk Assessment Monitoring System Survey that they breastfed eight weeks after delivery, compared to 55% of women who were not Medicaid recipients.[40] This may be due, in part, to the lack of breastfeeding support for Medicaid-eligible women. The Centers for Medicare and Medicaid Services developed an issue brief that describes different ways in which states can cover lactation services and pay for breastfeeding equipment within the current Medicaid statute. Specifically, states can pay for lactation services as an allowable expense as part of inpatient or outpatient hospital services; early and periodic screening, diagnostic, and treatment services (EPSDT) for individuals who are under age 21 years; physician services; services for nurse-midwives; free standing birth center services; or services furnished by nurse practitioners and other licensed practitioners.[41] If North Carolina were to cover these expenses, the federal government would pay 65% of these costs. Currently the North Carolina Division of Medical Assistance (DMA) does not cover lactation support for its beneficiaries; however breastfeeding is generally promoted through the medical home model. Lactation support would be covered if identified as a health care need through an EPDST health screening for infants. However, this is not well known among primary care providers so is not generally ordered as part of the EPSDT screening. Ideally, lactation support by trained lactation consultants and breastfeeding equipment would be covered as part of the existing CCNC network infrastructure.

In 2008, the Kaiser Family Foundation and the George Washington University Department of Health Policy conducted a survey to determine whether state Medicaid agencies were providing coverage for breastfeeding education, individual lactation consultation, and equipment rentals. At the time, 25 states reported covering breastfeeding education, 15 states reported covering lactation consultations, and 31 states reported covering equipment rentals.[41] North Carolina was only one of eight states that did not provide support for any of these services.

Since 2008, DMA began an initiative that could be expanded to further support breastfeeding. DMA, DPH, and CCNC created the Pregnancy Medical Home (PMH) program, which provides pregnant Medicaid patients with coordinated, comprehensive maternity care.[42] The quality improvement measures include "reducing elective deliveries prior to 39 weeks, performing standardized initial risk screening, using 17P (progesterone injections) to prevent recurrent preterm birth, reducing primary c-section rates, and collaborating with pregnancy care management programs to serve high-risk patients."[42] The PMH program serves women through their pregnancy until 60 days postpartum.[6] The PMH does not officially promote breastfeeding; however participating physicians have an opportunity to discuss the benefits of breastfeeding throughout a patient's pregnancy and should be encouraged to do so. In addition, the 60-day postpartum period provides further opportunity to promote breastfeeding.

A few local networks are interested in incorporating breastfeeding support into the PMH program. These networks are exploring available community resources.[m] If the networks are successful and able to pilot this, DMA and CCNC should disseminate best practices to all CCNC networks.

The ECOP Task Force's intention with this strategy is to promote breastfeeding among all women. The new ACA provisions include new resources for women who have private health insurance coverage. The big gap is for Medicaid-eligible women, as the state does not currently pay for lactation consultants or breastfeeding equipment. Thus, the ECOP Task Force recommended that DMA change its policies to promote breastfeeding for pregnant and breastfeeding women who are Medicaid eligible.

Policy Strategy 6: Promote breastfeeding for all North Carolina infants

The North Carolina Division of Medical Assistance, in conjunction with Community Care of North Carolina, should:

a) Promote Baby-Friendly hospitals.

b) Promote breastfeeding as part of the Pregnancy Medical Home program.

c) Encourage pediatricians, family physicians, and other health care professionals to work with parents to promote breastfeeding and to provide referrals to lactation consultants, as needed.

d) Provide reimbursement to lactation consultants that have IBLCE certification, and pay to rent or purchase breastfeeding equipment.

m Berrien K. Community Care of North Carolina. Oral communication. March 20, 2013.

Lead organization and partners: DMA should work with North Carolina Community Care Network, Inc., the Carolina Global Breastfeeding Institute, North Carolina Hospital Association, North Carolina Pediatric Society, North Carolina Academy of Family Physicians, the North Carolina Obstetrical and Gynecological Society, North Carolina Affiliate of the American College of Nurse Midwives, North Carolina Council of Nurse Practitioners, and North Carolina Academy of Physician Assistants to review current Medicaid policies and determine how they can be changed to promote breastfeeding among mothers of Medicaid eligible infants and young children.

Funding and new resources required: DMA should study how to cover lactation support and services.

The ECOP Task Force recommended that DMA change its policies to promote breastfeeding for pregnant and breastfeeding women who are Medicaid eligible.

Performance measures and evaluation: Within five years, DMA should have changed its policy to pay for breastfeeding education, lactation consultants, and the purchase or rental of an electric breast pump, especially for women who work outside the home.

References

1. North Carolina General Assembly. §115C Elementary and Secondary Education.
2. North Carolina Institute of Medicine Task Force on Prevention. Prevention for the Health of North Carolina: Prevention Action Plan. http://www.nciom.org/wp-content/uploads/NCIOM/projects/prevention/finalreport/PreventionReport-July2010.pdf. Published October 2009. Accessed April 5, 2013.
3. Institute of Medicine of the National Academies. Chapter 3: Physical activity. In: *Early Childhood Obesity Prevention Policies.* Washington, DC: The National Academies Press; 2011:61-64.
4. Patient Protection and Affordable Care Act, Pub L No. 111-148, § 2951, enacting Sec. 511 of the Social Security Act, 42 USC 711.
5. United Nations Office on Drugs and Crime. Compilation of Evidence-Based Family Skills Training Programmes. http://www.unodc.org/docs/youthnet/Compilation/10-50018_Ebook.pdf. Accessed April 5, 2013.
6. North Carolina Institute of Medicine Task Force on the Mental Health, Social, and Emotional Needs of Young Children and Their Families. Growing Up Well: Supporting Young Children's Social-Emotional Development and Mental Health in North Carolina. http://www.nciom.org/wp-content/uploads/2012/08/Early-Childhood.pdf. Published July 2012. Accessed April 5, 2013.
7. Community Care of North Carolina. Care Coordination for Children (CC4C). Community Care of North Carolina website. https://www.communitycarenc.org/emerging-initiatives/care-coordination-children-cc4c/. Published 2013. Accessed April 5, 2013.
8. North Carolina Division of Medical Assistance; North Carolina Department of Health and Human Services. Home Visit for Postnatal Assessment and Follow-up Care: Clinical Coverage Policy No: 1M-5. http://www.ncdhhs.gov/dma/mp/1m5.pdf. Published March 12, 2012. Accessed April 5, 2013.
9. Early Head Start National Resource Center. Home-based program option. Early Head Start National Resource Center website. http://www.ehsnrc.org/Publications/homebased.htm. Accessed May 2, 2013.
10. Early Head Start National Resource Center. What is Early Head Start? Early Head Start National Resource Center website. http://www.ehsnrc.org/AboutUs/ehs.htm. Accessed May 2, 2013.
11. US Preventive Services Task Force. Screening for obesity in children and adolescents: recommendation statement. US Department of Health and Human Services website. http://www.uspreventiveservicestaskforce.org/uspstf10/childobes/chobesrs.htm. Published January 2010. Accessed April 5, 2013.
12. Casazza K, Fontaine KR, Astrup A, et al. Myths, presumptions, and facts about obesity. *N Engl J Med.* 2013;368(5):446-454.
13. North Carolina Institute of Medicine Task Force on Implementing Evidence-Based Strategies in Public Health. Improving North Carolina's Health: Applying Evidence for Success. http://www.nciom.org/wp-content/uploads/2012/10/EvidenceBased_100912web.pdf. Published September 2012. Accessed April 5, 2013.
14. County Health Rankings and Roadmaps. Built environment. County Health Rankings website. http://www.countyhealthrankings.org/our-approach/health-factors/built-environment. Published 2013. Accessed April 5, 2013.
15. Division of Emergency and Environmental Health Services; Centers for Disease Control and Prevention. Impact of the Built Environment on Health. http://www.cdc.gov/nceh/publications/factsheets/impactofthebuiltenvironmentonhealth.pdf. Published June 2011. Accessed April 11, 2013.
16. Institute of Medicine of the National Academies. *Does the Built Environment Influence Physical Activity? Examining the Evidence.* Washington, DC: The National Academies Press; 2005.
17. Brownson RC, Baker EA, Housemann RA, Brennan LK, Bacak SJ. Environmental and policy determinants of physical activity in the United States. *Am J Public Health.* 2001;91(12):1995-2003.

18. Division of Emergency and Environmental Health Services; Centers for Disease Control and Prevention. Health Issues Related to Community Design. http://www.cdc.gov/healthyplaces/factsheets/health_issues_related_to_community_design_factsheet_final.pdf. Published March 2007. Accessed April 11, 2013.

19. Centers for Disease Control and Prevention. About healthy places. US Department of Health and Human Services website. http://www.cdc.gov/healthyplaces/about.htm. Updated July 21, 2010. Accessed April 11, 2013.

20. The Guide to Community Preventive Services. Increasing physical activity. US Department of Health and Human Services website. http://www.thecommunityguide.org/pa/index.html. Updated March 29, 2012. Accessed April 11, 2013.

21. Khan LK, Sobush K, Keener D, et al; Centers for Disease Control and Prevention. Recommended community strategies and measurements to prevent obesity in the United States. *MMWR Recomm Rep*. 2009;58(RR-7):1-26.

22. North Carolina State Center for Health Statistics. 2010 PRAMS data tables: breastfeeding. North Carolina Department of Health and Human Services website. http://www.schs.state.nc.us/schs/prams/2010/#2. Updated November 13, 2012. Accessed April 5, 2013.

23. North Carolina State Center for Health Statistics. PRAMS data collection and analysis methods. North Carolina Department of Health and Human Services website. http://www.schs.state.nc.us/schs/prams/dataca.html. Updated March 9, 2012. Accessed April 5, 2013.

24. North Carolina State Center for Health Statistics. 2011 CHAMP Topics: breast feeding. North Carolina Department of Health and Human Services website. http://www.schs.state.nc.us/schs/champ/2011/topics.html#bf. Updated November 2, 2012. Accessed April 5, 2013.

25. Frank Porter Graham Child Development Institute. Environment rating scales. C. Overview of the subscales and items of the ECERS-R. University of North Carolina at Chapel Hill website. http://ers.fpg.unc.edu/c-overview-subscales-and-items-ecers-r. Accessed April 5, 2013.

26. Frank Porter Graham Child Development Institute. Environment rating scales. C. Overview of the subscales and items of the ITERS-R. University of North Carolina at Chapel Hill website. http://ers.fpg.unc.edu/c-overview-subscales-and-items-ecers-r. Accessed April 5, 2013. 27.

27. Division of Medical Assistance; North Carolina Department of Health and Human Services. North Carolina Health Check Billing Guide. http://www.ncdhhs.gov/dma/healthcheck/guide2011.pdf. Published July 1, 2011. Accessed April 5, 2013.

28. EHR Incentive Program, Centers for Medicare and Medicaid Services. Eligible Professional Meaningful Use Table of Contents Core and Menu Set Objectives. Stage 1. http://www.cms.gov/Regulations-and-Guidance/Legislation/EHRIncentivePrograms/downloads/EP-MU-TOC.pdf. Accessed April 5, 2013.

29. Earls M. CHIPRA & Community Care of North Carolina. Presented to: North Carolina Institute of Medicine Task Force on Children's Preventive Oral Health Services; March 22, 2013; Morrisville, NC. http://www.nciom.org/wp-content/uploads/2012/11/Earls_3-22-13.pdf. Accessed April 5, 2013.

30. WNC Healthy Kids. About. http://www.wnchealthykids.net/about. Published 2012. Accessed April 5, 2013.

31. Martin RM, Patel R, Kramer MS, et al. Effects of promoting longer-term and exclusive breastfeeding on adiposity and insulin-like growth factor-I at age 11.5 years: a randomized trial. *JAMA*. 2013;309(10):1005-1013.

32. Casazza K, Fernandez JR, Allison DB. Modest protective effects of breast-feeding on obesity: is the evidence truly supportive? *Nutr Today*. 2012;47(1):33-38.

33. Section on Breastfeeding. Breastfeeding and the use of human milk. *Pediatrics*. 2012;129(3):e827-41.

34. Mims SR, Lisenbee JH. Maternal care practices and breastfeeding in North Carolina: becoming baby-friendly. *N C M J*. 2013;74(1):44-47.

35. US Preventive Services Task Force. Primary care interventions to promote breastfeeding: recommendation statement. US Department of Health and Human Services website. http://www.uspreventiveservicestaskforce.org/uspstf08/breastfeeding/brfeedrs.htm. Published October 2008. Accessed April 5, 2013.

36. World Health Organization; UNICEF. Protecting, Promoting and Supporting Breast-feeding: The Special Role of Maternity Services: A Joint WHO/UNICEF Statement. http://apps.who.int/iris/bitstream/10665/39679/1/9241561300.pdf. Published 1989. Accessed March 15, 2013.

37. Health Resources and Services Administration. Women's preventive services: required health plan coverage guidelines. US Department of Health and Human Services website. http://www.hrsa.gov/womensguidelines/. Accessed April 5, 2013.

38. International Board of Lactation Consultant Examiners in the Americas. Facts and figures. International Board of Lactation Consultant Examiners website. http://www.americas.iblce.org/facts-and-figures. Updated November 29, 2012. Accessed April 5, 2013.

39. Patient Protection and Affordable Care Act, Pub L No. 111-148, § 4207, enacting Sec. 7 of the Fair Labor Standards Act, 29 USC 207.

40. North Carolina State Center for Health Statistics. 2010 North Carolina Pregnancy Risk Assessment Monitoring System Survey results: breastfeeding at 8 weeks after delivery. North Carolina Department of Health and Human Services website. http://www.schs.state.nc.us/schs/prams/2010/BF8weeks.html. Published November 16, 2012. Accessed April 5, 2013.

41. Center for Medicaid and CHIP Services; Centers for Medicare and Medicaid Services. Issue Brief: Medicaid Coverage of Lactation Services. http://www.medicaid.gov/Medicaid-CHIP-Program-Information/By-Topics/Quality-of-Care/Downloads/Lactation_Services_IssueBrief_01102012.pdf. Published January 10, 2012. Accessed April 5, 2013.

42. Community Care of North Carolina. Pregnancy medical home. Community Care of North Carolina website. https://www.communitycarenc.org/emerging-initiatives/pregnancy-home/. Published 2013. Accessed April 5, 2013.

Conclusion

Chapter 6

Obesity often starts in very young children. The adverse health outcomes of obesity can occur throughout a person's lifetime—from childhood through adulthood. However, there is often little focus on very young children ages 0-5 years. In North Carolina, roughly 3 out of every 10 (28.5%) low-income young children ages 2-4 years are either overweight or obese.[1] These young children are at risk of developing health conditions and are at increased risk of becoming overweight or obese adults. Preventing obesity from occurring in early childhood is an opportunity to promote child health as well as to prevent obesity-associated health conditions from occurring throughout life. A focus on early childhood obesity prevention is a focus on child health and future population health.

Preventing obesity from occurring in early childhood is an opportunity to promote child health as well as to prevent obesity-associated health conditions from occurring throughout life.

The increasing prevalence of overweight and obesity within the American population has spurred national and state-level action to determine what can be done to address the epidemic. The NCIOM Early Childhood Obesity Prevention (ECOP) Task Force examined the collective work of other expert groups in order to develop a blueprint for action in North Carolina. The ECOP Task Force examined the existing expert recommendations to inform its development of practicable strategies that can be used and promoted by public and private stakeholders throughout the state. In essence, the work of the ECOP Task Force wraps the sound work of other experts groups into a single, comprehensive blueprint for North Carolina that is complete with strategies, and includes lead organizations and partners, needed funding and resources, and performance measures for evaluation. Strategies focus on the clinical, community and environment, and policy levels. What can health professionals do? What type of support do health professionals need to help young children reach and maintain a healthy weight? What can be done in communities and in child care settings where so many of North Carolina's children spend part of their early childhood? What kinds of policies are needed to drive the types of changes essential to supporting healthy weight in this age group? These are the questions to which the ECOP Task Force provides strategic answers within its blueprint. The Tables at the end of this Chapter provide a summary of the different strategies discussed throughout the report (Tables 6.1, 6.2, 6.3). A complete list of the strategies can be found in Appendix C.

Progress in early childhood obesity prevention cannot be accomplished through one method, one policy, one funder, or any one type of intervention—and it can certainly not be done alone. The ECOP Task Force's blueprint builds on resources and partners already dedicated to improving child health, and it depends heavily on those settings where very young children can best be reached. While the greatest gain would come from the implementation of multiple strategies, the implementation of any one singular strategy would result in benefits to North Carolina's young children. This blueprint is an invitation to any stakeholder

interested in the health and well-being of young children to work collectively to address this critical problem. There is a role for everyone to play in ensuring a healthy start for our youngest children.

Table 6.1
Clinical Strategies

STRATEGY	Funding	Funders	Childcare	Health Prof.	Other
Clinical Strategy 1: Increase and enhance the education of health professionals while in training (pre-service) or in residency programs.	$250,000 annually	North Carolina funders		Academic and community-based health professionals and health departments	AHEC
Clinical Strategy 2: Expand education for practicing health professionals, which could be met through enhanced continuing education opportunities	$260,000 in one-time funding	North Carolina and national funders		CCNC, NCPS, NCAFP, NCOGS, NCCNP, NCAPA, NCA-ACNM, NCDA, NCHA, NCDPH, PQCNC, lactation consultants	AHEC, NCFAHP, payers/insurers, EHR vendors such as Epic and Allscripts
Clinical Strategy 3: Ensure adherence of insurers/payers to the Affordable Care Act requirements for coverage of the prevention, diagnosis, and treatment of obesity (and as outlined in the American Academy of Pediatrics' Bright Futures guidelines)	$125,000 in one-time funding	North Carolina funders			NCPP
Clinical Strategy 4: Convene a group to identify and catalog core statewide and local services, resources, and supports for health professionals to refer families and children for additional support or intervention to enhance clinical recommendations				NCALHD	

Area Health Education Centers (AHEC), Community Care North Carolina (CCNC), North Carolina Affiliate of American College of Nurse Midwives (NCA-ACNM), North Carolina Association of Family Physicians (NCAFP), North Carolina Association of Local Health Directors (NCALHD), North Carolina Council of Nurse Practitioners (NCCNP), North Carolina Dietetic Association (NCDA)
North Carolina Division of Public Health (NCDPH), North Carolina Foundation for Advanced Health Programs (NCFAHP), North Carolina Hospitals Association (NCHA), North Carolina Obstetrical and Gynecological Society (NCOGS), North Carolina Prevention Partners (NCPP), North Carolina Pediatric Society (NCPS), Perinatal Quality Collaborative of North Carolina (PQCNC)

Table 6.2
Community and Environment Strategies

STRATEGY	Funding	Funders	Childcare	Health Prof.	Other
Community/Environment Strategy 1: Expand the use of evidence-based and evidence-informed strategies for physical activity and nutrition in pilot child care centers	Additional funding is encouraged	BCBSNCF, other interested funders	NCPC, SSP, NC DCDEE, ECAC, NC CCHCA, NC CCR&R, Head Start, child care programs	NCDPH, CGBI, NCCHW, local health departments working on the Community Transformation Grant effort	HPDP, NCDPI, NLI, Be Active Kids, State Board of Education, North Carolina funders convergence, faith community
Community/Environment Strategy 2: Provide pre-service and in-service education for child care providers on evidence-based and evidence-informed strategies for physical activity and nutrition	2a and 2b: $50,000 in one-time funding 2c: $20,000 in one-time funding	North Carolina or national funders	NC DCDEE; NC CCHSRC, NAEYC	NCCHW	NCICDP, NCDPI, ESMM, JWU representatives from colleges, universities, and community colleges
Community/Environment Strategy 3: Cross train all child care consultants and other support personnel on evidence-based and evidence-informed strategies for physical activity and nutrition	$125,000 in one-time funding; additional funding is encouraged	North Carolina and national funders	NC CCHSRC, NCICDP, NC DCDEE, NCPC, NC CCHCA, NC CCR&R	CACFP of NCDPH; NSB, WCHS, and EHS of NC DHHS	NCCE, NLI
Community/Environment Strategy 4: Increase the focus of Eat Smart, Move More North Carolina on young children and their families	$100,000 in one-time funding	North Carolina and national funders	NCPC, NC CCR&R		ESMM, NCRPA, NAACP, NCCIA, NCAIHB, NCCE, Head Start Body Start, El Pueblo, faith community
Community/Environment Strategy 5: Form an ECOP Communications Committee to develop a communications campaign to support policy and behavior change to reduce early childhood obesity	Additional funding is encouraged			NCIOM	

Blue Cross Blue Shield of North Carolina Foundation (BCBSNCF), Child and Adult Care Food Program (CACFP), Carolina Global Breastfeeding Initiative (CGBI), Early Childhood Advisory Council (ECAC), Environmental Health Section (EHS), Eat Smart Move More North Carolina (ESMM), Johnson and Wales University (JWU), National Association for the Advancement of Colored People (NAACP), North Carolina American Indian Health Board (NCAIHB), North Carolina Child Care Health Consultants Association (NC CCHCA), North Carolina Child Care Resource and Referral Council (NC CCR&R), North Carolina Child Care Health and Safety Resource Center (NC CCHSRC), North Carolina Cooperative Extension (NCCE), North Carolina Center for Health and Wellness at UNC Asheville (NCCHW), North Carolina Commission on Indian Affairs (NCCIA), North Carolina Division of Child Development and Early Education (NC DCDEE), North Carolina Department of Health and Humans Services (NC DHHS), North Carolina Division of Public Health (NCDPH), North Carolina Department of Public Instruction (NCDPI), North Carolina Institute for Child Development Professionals (NCICDP), North Carolina Institute of Medicine (NCIOM), North Carolina Partnership for Children (NCPC), North Carolina Prevention Partners (NCPP), North Carolina Recreation and Parks Association (NCRPA), Natural Learning Initiative at NC State University (NLI), Nutrition Services Branch (NSB), Smart Start Partnerships (SSP), Women and Children's Health Section (WCHS)

Table 6.3
Policy Strategies

STRATEGY	Funding	Funders	Childcare	Health Prof.	Other
Policy Strategy 1: Create a voluntary recognition program for child care programs and early education programs that meet enhanced physical activity and nutrition standards	Additional funding encouraged	North Carolina and national public and/or private funders	NC DCDEE, NCPC, NC CCR&R, NC CCHSRC	CACFP of NCDPH, CGBI	
Policy Strategy 2: Enhance family education about early childhood healthy weight and obesity prevention strategies through existing maternal, infant, and early childhood home visiting and family strengthening programs			NCPC	CCNC, NCDPH	
Policy Strategy 3: Create a voluntary recognition program for child care programs and early education programs that meet enhanced physical activity and nutrition standards	Additional funding encouraged			NCDPH	NC Department of Commerce, NCDENR, NCDOT, NCDA&CS, NCHFA, and other agencies
Policy Strategy 4: Improve the collection and reporting of physical activity and nutrition data in multiple settings to more fully promote healthy weight among young children	$15,000 in one-time funding	North Carolina and national funders	NCPC, NC DCDEE	CACFP of NCDPH, NC SCHS	
Policy Strategy 5: Improve the collection of body mass index (BMI) data for young children and make the information available to policymakers, health professionals, and the public to evaluate existing programmatic and policy initiatives and to inform future ones	Additional funding encouraged	North Carolina and national funders, Race to the Top Early Learning Challenge		CCNC, NCDPH	NCDPI
Policy Strategy 6: Promote breastfeeding for all North Carolina infants				DMA, CCN, CGBI, NCHA, NCPS, NCAFP, NCCNP, NCAPA, NCA-ACNM, NCOGS	

Child and Adult Care Food Program (CACFP), Community Care Network, Inc. (CCN), Community Care North Carolina (CCNC), Carolina Global Breastfeeding Initiative (CGBI), North Carolina Division of Medical Assistance (DMA), North Carolina Affiliate of American College of Nurse Midwives (NCA-ACNM), North Carolina Association of Family Physicians (NCAFP), North Carolina Academy of Physician Assistants (NCAPA), North Carolina Child Care Resource and Referral Council (NC CCR&R), North Carolina Child Care Health and Safety Resource Center (NC CCHSRC), North Carolina Council of Nurse Practitioners (NCCNP), North Carolina Department of Agriculture and Consumer Services (NCDA&CS), North Carolina Division of Child Development and Early Education (NC DCDEE), North Carolina Department of Environment and Natural Resources (NCDENR), North Carolina Department of Transportation (NCDOT), North Carolina Division of Public Health (NCDPH), North Carolina Department of Public Instruction (NCDPI), North Carolina Hospitals Association (NCHA), North Carolina Housing Finance Agency (NCHFA), North Carolina Obstetrical and Gynecological Society (NCOGS), North Carolina Partnership for Children (NCPC), North Carolina Pediatrics Society (NCPS), North Carolina State Center for Health Statistics (NC SCHS)

References

1. Centers for Disease Control and Prevention. Overweight and obesity. US Department of Health and Human Services website. http://www.cdc.gov/obesity/index.html. Updated December 21, 2012. Accessed April 5, 2013.

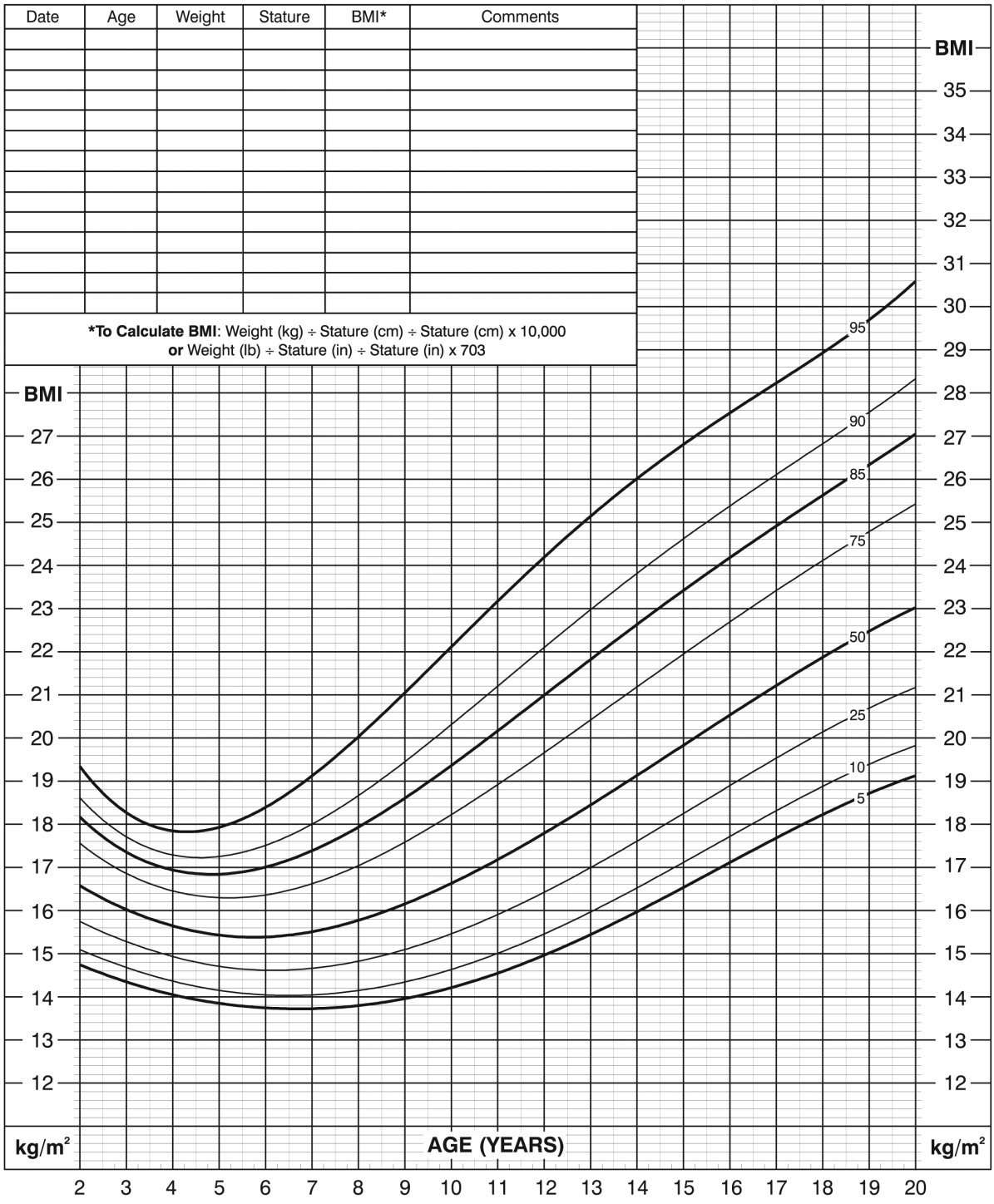
2 to 20 years: Boys
Body mass index-for-age percentiles

NAME _____

RECORD # _____

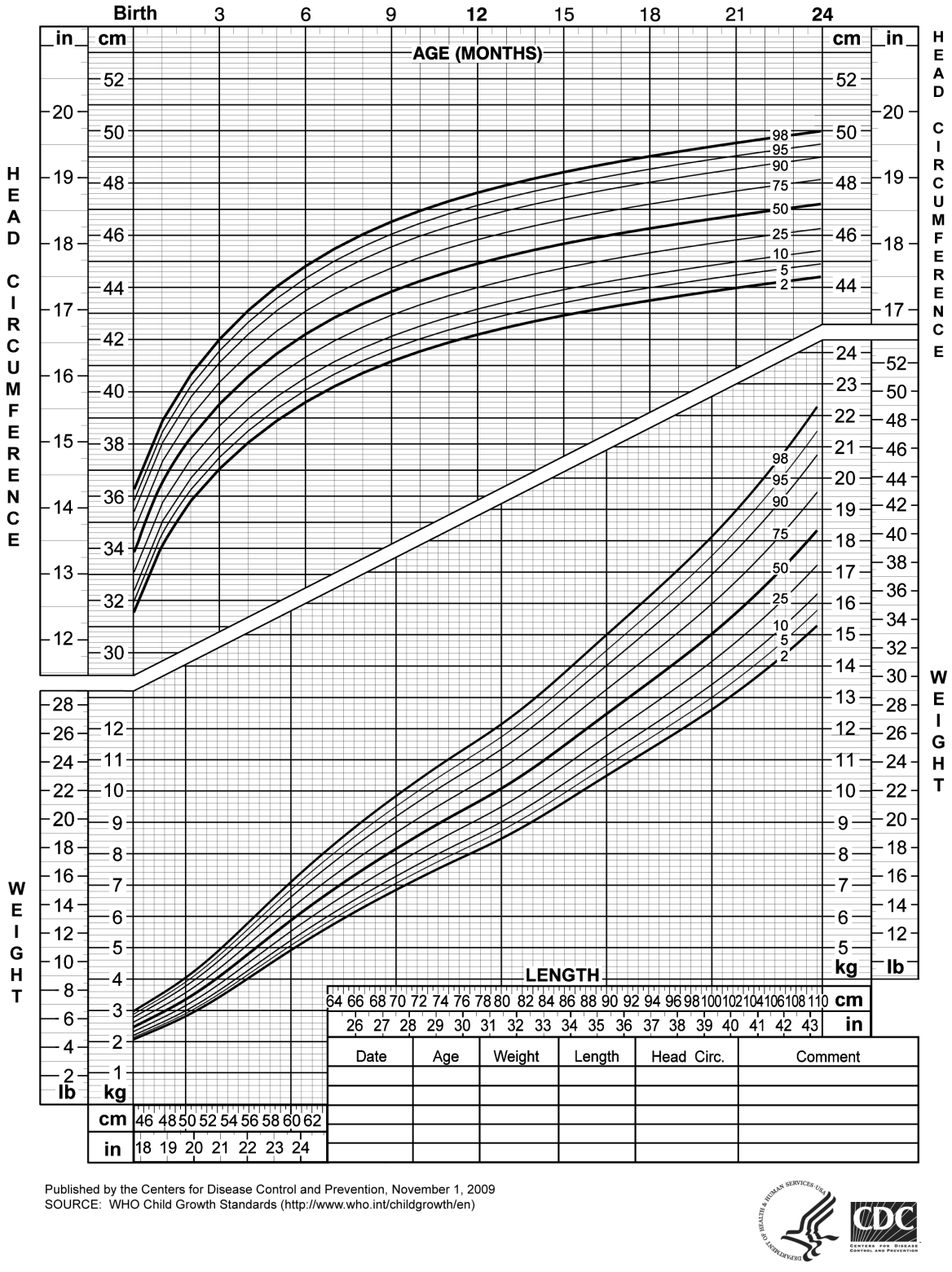
Date	Age	Weight	Stature	BMI*	Comments

***To Calculate BMI**: Weight (kg) ÷ Stature (cm) ÷ Stature (cm) x 10,000
or Weight (lb) ÷ Stature (in) ÷ Stature (in) x 703



Published May 30, 2000 (modified 10/16/00).
SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).
http://www.cdc.gov/growthcharts

CDC
SAFER • HEALTHIER • PEOPLE™


Birth to 24 months: Girls
Head circumference-for-age and
Weight-for-length percentiles
NAME
RECORD #
AGE (MONTHS)
HEAD CIRCUMFERENCE
WEIGHT
LENGTH
98
95
90
75
50
25
10
5
2
Date
Age
Weight
Length
Head Circ.
Comment
Published by the Centers for Disease Control and Prevention, November 1, 2009
SOURCE: WHO Child Growth Standards (http://www.who.int/childgrowth/en)

Clinical Strategies

Clinical Strategy 1: Increase and enhance the education of health professionals while in training (pre-service) or in residency programs. Funding amount: $250,000.

a) North Carolina and national funders should fund an inter-educational council to develop a systematic and ongoing plan focused on increasing the education and skills of health professional students and post-graduate trainees in North Carolina around obesity prevention and treatment. The council should include representation from the North Carolina Area Health Education Centers Program (AHEC); public and private schools of nursing, medicine, pharmacy, nutrition, public health, behavioral health, and allied health; and clinicians from across North Carolina. The council should review existing educational curricula and identify gaps or opportunities to strengthen health professional education and clinical training opportunities around early childhood obesity. The council needs to be broadly representative of health disciplines, geography, race/ethnicity, and gender. This education should include, but not be limited to:

1) The importance of charting the child's weight on a regular basis using the WHO Child Growth Standards for children ages 0-23 months, and CDC growth charts for ages 2-5 years during each well-child check; and information about measurement techniques and best practices, and the best way to communicate results of weight for height percentile and BMI percentile results (the use of color coded charts is one example of an effective communication tool).

2) Information about the role of family health history/behaviors, especially obesity and obesity related diseases, on children's risk of obesity and its consequences.

3) Available obesity prevention clinical tools such as "5-3-2-1-Almost None."

4) The importance of healthy weight gain during pregnancy and the benefits of breastfeeding.

5) Culturally sensitive information to support and educate new mothers in breastfeeding and exclusive breastfeeding.

6) Motivational interviewing.

7) Evidence-based prevention, assessment, and treatment options.

b) Health professionals should receive information to share with parents and caregivers about healthy weight at different stages of the child's life, satiety cues, healthy eating and nutrition, appropriate sleep durations, the importance of eliminating or limiting screen time (including televisions, computers, and other digital media devices), and strategies to increase physical activity.

Clinical Strategy 2: Expand education for practicing health professionals, which could be met through enhanced continuing education opportunities. Funding amount: $250,000.

a) North Carolina and national funders should provide funding to the Area Health Education Centers (AHEC) program and to CCNC to strengthen and expand the work of the quality improvement consultants to work with pediatric, family medicine, and obstetric practices to incorporate obesity prevention and treatment into clinical practice and systems (e.g. BMI coding and pediatric obesity prevention, assessments, and treatment). AHEC and CCNC should continue to develop a module for Maintenance of Certification (MOC) on early childhood obesity assessment, prevention, and treatment. Education should occur through learning collaboratives and through work with individual practices. The core curriculum of this educational program should be developed into a high-quality online continuing education (CE) course, which can be used by health professionals through one of the AHECs. To the extent possible, AHEC and CCNC should help practices gain continuing education and MOC credits. The practice-level goals should include, but not be limited to, education, skills, use of evidence-based or evidence-informed tools, work flow, toolkits, innovative delivery models, reimbursement options, and system changes (practice redesign) necessary to support practitioners in providing evidence-based or evidence-informed prevention, assessment, and treatment. This includes:

1) Educating women of childbearing age and pregnant women about healthy weight gain during pregnancy and the health benefits of breastfeeding.

2) Encouraging pregnant women and new mothers to breastfeed and helping women understand infant satiety cues.

3) Performing universal screening and understanding the importance of charting the child's weight on a regular basis using the World Health

Organization (WHO) Child Growth Standards for children ages 0-23 months, and CDC Growth Charts for children ages 2-5 years during each well-child check (and using color-coded BMI charts).

4) **Educating parents and caregivers about healthy weight at different stages of a child's life; healthy eating; appropriate sleep durations; the importance of eliminating or limiting screen time including televisions, computers, and other digital media devices; and strategies to increase physical activity.**

5) **Providing evidence-based/evidence-informed prevention, assessment, and treatment options.**

6) **Using motivational interviewing.**

b) **In addition, CCNC should ensure that prompts for regular BMI screening are built into the pediatric electronic health records (EHR) and BMI or weight for length percentiles are built into the EHR.**

Clinical Strategy 3: Ensure adherence of insurers/payers to the Affordable Care Act requirements for coverage of the prevention, diagnosis, and treatment of obesity (and as outlined in the American Academy of Pediatrics' Bright Futures guidelines). Funding amount: $125,000.

a) **All payers should review their coverage policies to ensure that pediatric obesity prevention and treatment can be delivered by the most appropriate and qualified professionals in pediatric, family, ob/gyn, and specialty practices. Coverage policies should cover individual and group visits, and adequate time to assess, educate, diagnosis, counsel, and/or treat parents or caregivers about breastfeeding, healthy weight gain, nutrition, exercise, sleep, and reduced screen time; lactation counseling from a trained lactation consultant; and nutritional counseling visits, when medically necessary, from a registered dietitian.**

b) **In addition, all members of the North Carolina Association of Health Plans, as well as public insurers, should design payment models that allow providers to treat patients effectively and efficiently when treatment relates to obesity prevention and treatment.**

c) **Insurers should evaluate benefit design and work with employers and others to encourage members to take advantage of healthy lifestyle programs and covered benefits.**

Clinical Strategy 4: Convene a group to identify and catalog core statewide and local services, resources, and supports for health professionals to refer families and children for additional support or intervention to enhance clinical recommendations. Funding amount: No additional funding required.

a) The Local Health Departments should collaborate with the appropriate partners to identify core services, resources, and supports available statewide. These should include, but not be limited to, organizations that provide evidence-based and evidence-informed nutrition and physical activity services, resources, and supports including parenting education to help prevent and reduce young childhood obesity. Examples include Women, Infants, and Children (WIC) program services; North Carolina Cooperative Extension services; information from Eat Smart, Move More North Carolina; and YMCAs/YWCAs.

b) The North Carolina Association of State Health Directors, in collaboration with the North Carolina Partnership for Children, North Carolina Child Care Resource and Referral Council, Community Care of North Carolina, and East Smart Move More should work together to create a template to identify the various local services, resources, and supports that are available at the county level to prevent or reduce early childhood obesity. Together, they should develop a method that enables health professionals to connect families and children with the identified services, resources, and supports.

Community and Environment Strategies

Community/Environment Strategy 1: Expand the use of evidence-based and evidence-informed strategies for physical activity and nutrition in pilot child care centers. Funding amount: No additional funding required.

a) The BCBSNC Foundation, along with other funders and state agencies with shared missions and goals, should develop incentives to incorporate evidence-based and evidence-informed obesity prevention strategies into programs and policies in child care centers located in counties with high obesity rates among children. This effort should be coordinated with, and expand the ongoing efforts of, the four Shape NC hubs including the obesity prevention work that will occur in Bertie County as part of the Transformation Zone.

b) As part of this initiative, child care teachers and directors should be educated and coached about obesity trends, healthy food preparation, best nutrition practices, age appropriate physical activity strategies, the outdoor learning environment, limited or no screen time, and the importance of breastfeeding and infant feeding.

Community/Environment Strategy 2: Provide pre-service and in-service education for child care providers on evidence-based and evidence-informed strategies for physical activity and nutrition. Funding amount: $70,000.

a) To expand the availability of pre-service education for child care providers on evidence-based and evidence-informed strategies to promote healthy weight for young children, the North Carolina Center for Health and Wellness (NCCHW), in partnership with Eat Smart, Move More North Carolina, should survey administrators in North Carolina's public and private two- and four-year colleges and universities that offer child care and early education degree programs about the existing curricula used to teach upcoming child care and early education professionals about early childhood health and obesity prevention strategies.

1) The survey should seek information about whether the current curricula conveys information on topics such as, but not necessarily limited to, the following:

i) Obesity trends among infants and young children

ii) The impact of obesity on health

iii) Infant feeding and signs of satiety

iv) Healthy food and beverage procurement and preparation and best nutrition practices

v) Strategies to promote healthy and appropriate sleep duration

vi) The importance of reducing screen time

vii) Age appropriate movement and physical activity

viii) Outdoor learning environments and edible landscapes

ix) Breastfeeding support

x) Staff wellness to support role modeling

xi) Effective strategies to educate parents and other caregivers about best practices to implement at home in order to promote healthy weight

2) The survey should seek information both on the content, the amount of time spent on the topics, teaching methods, whether information is integrated throughout the curricula (both in classroom and in-service learning), and whether the students are tested to ensure competency in the content area. In addition, the survey should collect information on the curricula used to teach prospective child care and early education professionals about educating parents about early childhood obesity prevention practices. NCCHW should evaluate the existing curricula to identify best practices and, if necessary, seek curricula from other colleges and universities outside of North Carolina.

b) NCCHW should host a summit for North Carolina child care and early education professionals to identify strategies to enhance the curricula offered at community colleges, colleges, and universities for prospective early childhood professionals about health and wellness for young children ages 0-5 years, and obesity prevention strategies such as those listed earlier.

c) Using the findings from the survey and the summit, the North Carolina Institute for Child Development Professionals, in collaboration with

NCCHW, the North Carolina Child Care Health and Safety Resource Center, the North Carolina Child Care Resource and Referral Council, North Carolina Pediatric Society, and two and four-year college and university representatives, should lead the development of education modules and materials that can be incorporated into existing curricula. The education materials should be pilot-tested in select higher education institutions. If they are successful in enhancing workforce and student knowledge about obesity in this age group and skills using evidence-based and evidence-informed strategies to reduce early childhood overweight and obesity, the curricula should be disseminated across the state.

d) To expand the availability of evidence-based and evidence-informed training for existing child care professionals, these education modules and materials should also be used for continuing education credits offered through the North Carolina Child Care Resource and Referral Council, Smart Start partnerships, child care health consultants' networks, and the North Carolina Child Care Health and Safety Resource Center to certified early educators.

Community/Environment Strategy 3: Cross train all child care consultants and other support personnel on evidence-based and evidence-informed strategies for physical activity and nutrition. Funding amount: $125,000.

All child care consultants and other support personnel who provide training and technical assistance to child care and early education programs should be cross trained in evidence-based and evidence-informed strategies to support early educators in promoting healthy weight among young children. Using the education modules and materials developed in Community/Environment Strategy 2 as a starting point, the North Carolina Child Care Health and Safety Resource Center should take the lead in developing the cross training curricula and promoting it among the different child care consultants including, but not limited to, child care health consultants, Shape NC consultants, Smart Start quality enhancement specialists, Child Care Resource and Referral technical assistance specialists, Head Start consultants, Child and Adult Care Food Program consultants, infant/toddler specialists, and the staff at NC DCDEE who provide training and technical assistance to licensed child care programs.

a) Training should cover, but not be limited to, the following topics:

1) Obesity trends among infants and young children

2) **The impact of obesity on health**

3) **Infant feeding and signs of satiety**

4) **Healthy food and beverage procurement and preparation and best nutrition practices**

5) **Strategies to promote healthy and appropriate sleep duration**

6) **The importance of reducing screen time**

7) **Age appropriate movement and physical activity**

8) **Outdoor learning environments and edible landscapes**

9) **Breastfeeding support**

10) **Staff wellness to support role modeling**

11) **Effective strategies to educate parents and other caregivers about best practices to implement at home to promote healthy weight**

a) **The modules and materials for this cross training should be developed and/or modified if need be such that they can be delivered through multiple mediums, including but not limited to computer-based webinars, training curricula that can be included as part of ongoing trainings and packaged learning modules. The training should be incorporated into existing trainings and updated as new information and evidence become available.**

b) **Organizations that employ consultants and other support personnel should require this cross training as part of their professional training requirements.**

Community/Environment Strategy 4: Increase the focus of Eat Smart, Move More North Carolina on young children and their families. Funding amount: $100,000.

a) **Eat Smart, Move More North Carolina (ESMM) should increase the focus of its community engagement efforts to implement evidence-based and evidence-informed strategies to promote healthy weight among young children and their families.**

1) **ESMM should survey member organizations to collect information on existing early childhood initiatives and programs.**

2) **ESMM should also work with other appropriate organizations, including but not limited to, the Physical Activity and Nutrition Branch, Women and Children's Health Section, and Nutrition Services Branch within the North Carolina Division of Public Health; as well as local health departments, Center for Training and Research Translation at the University of North Carolina at Chapel Hill, Shape NC, the Carolina Global Breastfeeding Institute, and the Natural Learning Initiative at North Carolina State University, to identify and create an inventory of evidence-based and evidence-informed tools, policies, programs, and practices to improve healthy nutrition and physical activity for young children.**

b) ESMM should educate member organizations about the importance of intervening to improve nutrition and physical activity among young children ages 0-5 years and their families, and should promote the availability of evidence-based and evidence-informed tools, policies, programs, and practices across the state. Specifically, ESMM should help connect member organizations and others who use their resources with additional information on:

1) **Obesity trends among infants and young children**

2) **The impact of obesity on health**

3) **Infant feeding and signs of satiety**

4) **Healthy food preparation and best nutrition practices**

5) **Strategies to promote healthy sleep**

6) **The importance of reducing screen time**

7) **Age appropriate movement and physical activity**

8) **Outdoor learning environments and edible landscapes**

9) **Effective strategies to educate parents and other caregivers about best practices to implement at home in order to promote healthy weight**

10) **Breastfeeding support**

Community/Environment Strategy 5: Form an ECOP Communications Committee to develop a communications campaign to support policy and behavior change to reduce early childhood obesity. Funding amount: No additional funding required.

a) The North Carolina Institute of Medicine (NCIOM) should convene an ECOP Communications Committee comprising North Carolina funders; communications professionals; the North Carolina Division of Public Health; Eat Smart, Move More North Carolina; representatives from North Carolina colleges and universities with expertise in communications, obesity, and/or young children; and other appropriate groups such as grocery stores, hospitals, and others to develop a carefully crafted communications campaign to promote healthy weight in very young children. This group should specifically examine opportunities for communications activities that would best support the ECOP Task Force's blueprint.

1) Once these activities have been determined, North Carolina health funders should provide support to the School of Journalism and Mass Communication at the University of North Carolina at Chapel Hill to conduct an analysis of the relevant peer-reviewed and "gray" literature to determine what messages have been effective in influencing individuals, organizations, or policymakers to make changes needed to reduce the risk of overweight and obesity among very young children. Other states' efforts that are similar should be reviewed as well.

2) The ECOP Communications Committee's campaign development process should follow the seven steps to developing a successful communications campaign and should specifically consider audience segmentation, channel selection, and opportunities for partnering with existing efforts (e.g. farmers markets accepting EBT cards, existing school efforts) to boost overall campaign effectiveness, minimize costs, and ensure that the campaign is culturally and linguistically appropriate.

Policy Strategies

Policy Strategy 1: Create a voluntary recognition program for child care programs and early education programs that meet enhanced physical activity and nutrition standards. Funding amount: Additional funding not required.

The North Carolina Division of Child Development and Early Education (DCDEE), Division of Public Health Child and Adult Care Food Program (CACFP), the North Carolina Partnership for Children (NCPC), the Carolina Global Breastfeeding Initiative (CGBI), Child Care Resource and Referral Network, and the NC Childcare Health and Safety Resource Center should develop a voluntary recognition program for licensed child care programs, family care homes, Head Start, NC Pre-K, and other early care and education settings that meet enhanced nutrition, including breastfeeding, physical activity, and naturalized outdoor learning environment standards for infants and young children.

a) The standards for recognition should include:

1) Evidence-based or other validated measures that have been shown to improve nutrition, physical activity, and overall health, and promote a healthy weight for young children, beginning in infancy.

2) Requirements that teachers have received enhanced training and certification on health and wellness, including training on how to educate parents about early childhood nutrition and physical activity.

b) The groups listed in Strategy 1a should seek public input into the voluntary recognition standards before implementing the program.

c) NCPC should seek additional funding to provide financial incentives to child care programs that meet the voluntary standards for enhanced health and wellness recognition.

Policy Strategy 2: Enhance family education about early childhood healthy weight and obesity prevention strategies through existing maternal, infant, and early childhood home visiting and family strengthening programs. Funding amount: Additional funding not required.

a) The Children and Youth Branch in the North Carolina Division of Public Health should train the NFP and HFA parent educators it funds about early childhood physical activity, nutrition, healthy weight, and obesity prevention. This training should include appropriate parent education on healthy weight, breastfeeding, nutrition, physical activity, and sleep into existing home visiting or family strengthening programs

b) NCPC should collaborate with DPH to ensure PAT parent educators receive similar training.

c) DPH should examine possibilities to track this information in the home visiting data systems for the programs funded through the Division of Public Health.

Policy Strategy 3: Expand the focus of state agencies to focus on early childhood health, physical activity, and nutrition through healthy community design. Funding amount: Additional funding not required.

a) State agencies should adopt and promote policies and practices that focus on healthy community design to create opportunities for physical activity and access to healthy, affordable foods for families with young children ages 0-5, targeting at-risk communities.

b) As community design impacts all age groups, the 2013 Statewide Walk Bike NC Plan should be used as a standard reference for designing communities with pedestrian mobility in mind, and with consideration at the local level to connectivity of neighborhoods, commercial/retail areas, schools (including child care and early learning programs), and recreation areas.

c) The American Planning Association's Policy Guide on Community and Regional Food Planning should be used as a standard reference for designing communities with healthy and affordable food access in mind, with consideration at the local and regional levels to support comprehensive food planning processes.

Policy Strategy 4: Improve collection and reporting of physical activity and nutrition data in multiple settings to more fully promote healthy weight among young children. Funding amount: $15,000.

a) The North Carolina Partnership for Children, North Carolina Division of Child Development and Early Education, and the Child and Adult Care Food Program within the North Carolina Division of Public Health should collect data on the extent to which child care programs are implementing best practices related to nutrition and physical activity. Specifically:

1) The North Carolina Child and Adult Care Food Program should continue to collect information about the nutritional content of foods served in child care programs for meals or snacks.

2) The Division of Child Development and Early Education should continue to collect information on physical activity, screen time, and meal/snack practices, and music and movement and health practices as part of the Star Rated License system.

3) The North Carolina Partnership for Children should use physical activity, nutrition, and outdoor learning environment data from the current (and future iterations) of the Shape NC assessment tool for centers that want to implement additional best practices not captured by other assessments. This information should be provided to the North Carolina Partnership for Children to gain a better understanding of current nutrition and physical activity practices in child care programs.

b) The North Carolina Division of Public Health, State Center for Health Statistics, should aggregate data across multiple years on young children, ages 0 to 5, to obtain reliable data on physical activity, nutrition, and other data that would provide information about activities that influence healthy weight.

c) The Recreation Resources Service at North Carolina State University should collect information about available active play opportunities for young children and their families, including but not limited to parks, outdoor learning environments, walking and bicycle trails.

Policy Strategy 5: Improve the collection of body mass index (BMI) data for young children and make the information available to policy makers, health professionals, and the public to evaluate existing programmatic and policy initiatives and to inform future ones. Funding amount: Additional funding not required.

a) Community Care of North Carolina should continue to encourage primary care professionals to measure weight and height (to calculate Body Mass Index (BMI) percentile) for all Medicaid recipients at least once annually. This information should be included as part of the data collected by the Informatics Center, and should be included in quality improvement reports provided back to the networks and CCNC health professionals. Within three years, aggregate information about BMI at the state and at the network levels should be made publicly available, including information for young children ages 0 through 5.

b) The North Carolina Division of Public Health should explore the possibility of capturing BMI data from electronic health records.

c) The Kindergarten Entry Assessment (KEA) should capture BMI data for each child entering kindergarten. To do so, the Kindergarten Entry Health Assessment, which captures height and weight data and which will inform the KEA, should be submitted electronically to schools enrolling kindergarten-aged students with data to be aggregated at the district and state level. These data will provide the state with BMI data for all children in the state entering kindergarten.

Policy Strategy 6: Promote Breastfeeding for All North Carolina Infants. Funding amount: Additional funding not required.

The North Carolina Division of Medical Assistance, in conjunction with Community Care of North Carolina, should:

a) Promote Baby-Friendly hospitals

b) Promote breastfeeding as part of the Pregnancy Medical Home program

c) Encourage pediatricians, family physicians, and other health care professionals to work with parents to promote breastfeeding and to provide referrals to lactation consultants, as needed

d) Provide reimbursement to lactation consultants that have IBCLC certification, and pay to rent or purchase breastfeeding equipment.

Existing Recommendations

CLINICAL

General

Recommendation (North Carolina Health & Wellness Trust Fund)

In an effort to curb childhood obesity, North Carolina based medical schools, nursing, and other health care professional schools should teach the basic principles of prevention including the benefits of healthful eating and physical activity, the importance of breastfeeding, and how to effectively counsel people to change health behaviors as part of the core curriculum.

Recommendation (North Carolina Health & Wellness Trust Fund)

North Carolina health care providers and institutions should educate their members and other health care providers about the issues of preventing childhood obesity and the need for effective weight management for overweight and obese people.

Recommendation (North Carolina Health & Wellness Trust Fund) [also in Policy]

The State Health Plan, Medicaid, Health Choice, and Special Health Services coverage in North Carolina should increase financial support for prevention services designed to promote healthy lifestyles which lower risk for childhood obesity related co-morbidities.

Breastfeeding

Recommendation 15 (North Carolina Legislative Task Force)

Support for State Employees that Breastfeed

Because of the health benefits to infants and to mothers, the North Carolina Legislative Task Force encourages the State Personnel Commission to support state employees that decide to breastfeed.

Recommendation 1.3 (White House Task Force)

Hospitals and health care providers should use maternity care practices that empower new mothers to breastfeed, such as the Baby-Friendly hospital standards.

Hospitals and health care providers should routinely provide evidence-based maternity care that empowers parents to make informed infant feeding decisions as active participants in their care, and improves new mothers' ability to breastfeed successfully. Examples of specific practices and policies include: skin-to-skin contact between the mother and her baby; teaching mothers how to breastfeed; and early and frequent breastfeeding opportunities.

Hospitals, health care providers, and health insurers should also help ensure that new mothers receive proper information and support on breastfeeding when they are released from the hospital.

Recommendation 1.4 (White House Task Force)

Health care providers and insurance companies should provide information to pregnant women and new mothers on breastfeeding, including the availability of educational classes, and connect pregnant women and new mothers to breastfeeding support programs to help them make an informed infant feeding decision.

Recommendation 1.5 (White House Task Force) [also in Community/Environment]

Local health departments and community-based organizations, working with health care providers, insurance companies, and others should develop peer support programs that empower pregnant women and mothers to get the help and support they need from other mothers who have breastfed.

Peer support networks should exist in all communities across the country, allowing all new mothers to easily identify and obtain help from trained breastfeeding peer counselors. Community organizations can foster the creation of peer support networks through expansion of programs like the WIC Breastfeeding Peer Counseling program. They can work with local breastfeeding coalitions to ensure existence of other peer support networks, such as La Leche League groups or Nursing Mothers' Councils. They can also foster the creation of mother-to-mother support groups in community health centers and advertise these groups, particularly as part of the hospital discharge process.

Early Head Start (EHS) programs that enroll pregnant women, including pregnant teenagers, can also support community breastfeeding networks. EHS can provide home visits and reach out to pregnant and breastfeeding mothers to encourage and support breastfeeding, including by providing professional and peer opportunities to disseminate information and provide ongoing support. Funding for evidence-based home visitation programs in the recently-enacted Affordable Care Act will complement this program.

Private companies, including those that market baby products, can also help support and promote these types of community supports for mothers.

Recommendation 1.6 (White House Task Force) [also in Community/Environment and Policy]

Early childhood settings should support breastfeeding.

Child care centers and providers, health care providers, and government agencies should provide accurate information about the storage and handling of breast milk. They should also make sure child care employees and providers know how to store, handle, and feed breastmilk, and understand the importance of breastfeeding.

Growth Monitoring

Recommendation 2-1 (Institute of Medicine of the National Academies)

Health care providers should measure weight and length or height in a standardized way, plotted on World Health Organization growth charts (ages 0-23 months) or Centers for Disease Control and Prevention growth charts (ages 24-59 months), as part of every well-child visit.

Recommendation 2-2 (Institute of Medicine of the National Academies)

Health care professionals should consider 1) children's attained weight-for-length or BMI ≥ 85th percentile, 2) children's rate of weight gain, and 3) parental weight status as risk factors in assessing which young children are at highest risk of later obesity and its adverse consequences.

Recommendation (North Carolina Health & Wellness Trust Fund)

As outlined by the Institute of Medicine of the National Academies' report *Preventing Childhood Obesity: Health in the Balance*, pediatricians, family physicians, nurses, and other clinicians should engage in the prevention of childhood obesity. Health care professionals should routinely track body mass index (BMI), offer relevant evidence-based counseling and guidance, serve as role models, and provide leadership in their communities for obesity prevention efforts.

Healthy Eating and Nutrition

Recommendation 4-6 (Institute of Medicine of the National Academies)

Health and education professionals providing guidance to parents of young children and those working with young children should be trained and educated and have the right tools to increase children's healthy eating and counsel parents about their children's diet.

Physical Activity

Recommendation 3-4 (Institute of Medicine of the National Academies)

Health and education professionals providing guidance to parents of young children and those working with young children should be trained in ways to increase children's physical activity and decrease their sedentary behavior, and in how to counsel parents about their children's physical activity.

Potential actions include:

- Colleges and universities that offer degree programs in child development, early childhood education nutrition, nursing, physical education, public health, and medicine requiring content within coursework on how to increase physical activity and decrease sedentary behavior in young children.
- Child care regulatory agencies encouraging child care and early childhood education programs to seek consultation yearly from an expert in early childhood physical activity.
- Child care regulatory agencies requiring child care providers and early childhood educators to be trained in ways to encourage physical activity and decrease sedentary behavior in young children through certification and continuing education.
- National organizations that provide certification and continuing education for dietitians, physicians, nurses, and other health professionals (including the American Dietetic Association and the American Academy of Pediatrics) including content on how to counsel parents about children's physical activity and sedentary behaviors.

Prenatal Care

Recommendation 1.1 (White House Task Force)

Pregnant women and women planning a pregnancy should be informed of the importance of conceiving at a healthy weight and having a healthy weight gain during pregnancy, based on the relevant recommendations of the Institute of Medicine of the National Academies.

Specifically, health care providers, as well as Federal, state, and local agencies; medical societies; and organizations that serve pregnant women or those planning pregnancies should provide information concerning the importance of conceiving at a normal BMI and having a healthy weight gain during pregnancy. Those who provide primary and prenatal care to women should offer them counseling on dietary intake and physical activity that is tailored to their life circumstances. In many cases, conceiving at a normal BMI will require some weight loss.

Screen Time

Recommendation 5-2 (Institute of Medicine of the National Academies)

Health care providers should counsel parents and children's caregivers not to permit televisions, computers, or other digital media devices in children's bedrooms or other sleeping areas.

Recommendation 1.8 (White House Task Force) [also in Community/Environment]

The American Academy of Pediatrics' guidelines on screen time should be made more available to parents, and young children should be encouraged to spend less time using digital media and more time being physically active.

Health care provider visits and meetings with teachers and early learning providers are opportunities to give guidance and information to parents and their children.

Sleep

Recommendation 6-2 (Institute of Medicine of the National Academies)

Health and education professionals should be trained in how to counsel parents about their children's age appropriate sleep durations.

COMMUNITY AND ENVIRONMENT

General

Recommendation 5-4 (Institute of Medicine of the National Academies) [also in Policy]

The Secretary of the Department of Health and Human Services, in cooperation with state and local government agencies and interested private entities, should establish a sustained social marketing program to provide pregnant women and caregivers of children from ages 0-5 years with consistent, practical information on the risk factors for obesity in young children and strategies for preventing overweight and obesity.

Recommendation (North Carolina Health & Wellness Trust Fund) [also in Policy]

Public and private insurers should adopt policies that provide incentives for members to achieve a healthy lifestyle.

Recommendation (North Carolina Health & Wellness Trust Fund)

The North Carolina Health & Wellness Trust Fund and the Blue Cross and Blue Shield of North Carolina Foundation should consider an expansion of the FitTogether television series and website campaign beyond the three year budgeted plan.

Breastfeeding

Recommendation 4-1 (Institute of Medicine of the National Academies)

Adults who work with infants and their families should promote and support exclusive breastfeeding for six months and continuation of breastfeeding in conjunction with complementary foods for one year or more.

Potential actions include:

- Hospitals and other health care delivery settings improving access to and availability of lactation care and support by implementing the steps outlined in the Baby-Friendly Hospital Initiative and following American Academy of Pediatrics policy recommendations.
- Hospitals enforcing the World Health Organization's International Code of Marketing of Breast Milk Substitute. This step includes ensuring that hospitals' informational materials show no pictures or text that idealizes the use of breast milk substitutes; that health professionals give no samples of formula to mothers (this can be complied with through the Baby-Friendly Hospital Initiative); and that the Federal Communications Commission, the Department of Health and Human Services, hospital administrators (through the Baby-Friendly Hospital Initiative), health professionals, and grocery and other stores are required to follow Article 5 of the Code, which states that there should be no advertising or promotion to the general public of products within the scope of the code (i.e. infant formula).
- The Special Supplemental Nutrition Program for Women, Infants, and Children; the Child and Adult Care Food Program; Early Head Start; other child care settings; and home visitation programs requiring program staff to support breastfeeding.

- Employers reducing the barriers to breastfeeding through the establishment of worksite policies that support lactation when the mothers return to work.

Recommendation 15 (North Carolina Legislative Task Force)

Support for State Employees that Breastfeed

Because of the health benefits to infants and to mothers, the North Carolina Legislative Task Force encourages the State Personnel Commission to support state employees that decide to breastfeed.

Recommendation 1.5 (White House Task Force) [also in Clinical]

Local health departments and community-based organizations, working with health care providers, insurance companies, and others should develop peer support programs that empower pregnant women and mothers to get the help and support they need from other mothers who have breastfed.

Peer support networks should exist in all communities across the country, allowing all new mothers to easily identify and obtain help from trained breastfeeding peer counselors. Community organizations can foster the creation of peer support networks through expansion of programs like the WIC Breastfeeding Peer Counseling program. They can work with local breastfeeding coalitions to ensure existence of other peer support networks, such as La Leche League groups or Nursing Mothers' Councils. They can also foster the creation of mother-to-mother support groups in community health centers and advertise these groups, particularly as part of the hospital discharge process.

Early Head Start (EHS) programs that enroll pregnant women, including pregnant teenagers, can also support community breastfeeding networks.EHS can provide home visits and reach out to pregnant and breastfeeding mothers to encourage and support breastfeeding, including by providing professional and peer opportunities to disseminate information and provide ongoing support. Funding for evidence-based home visitation programs in the recently-enacted Affordable Care Act will complement this program.

Private companies, including those that market baby products, can also help support and promote these types of community supports for mothers.

Recommendation 1.6 (White House Task Force) [also in Clinical and Policy]

Early childhood settings should support breastfeeding.

Child care centers and providers, health care providers, and government agencies should provide accurate information about the storage and handling of breastmilk. They should also make sure child care employees and providers know how to store, handle, and feed breastmilk, and understand the importance of breastfeeding.

Healthy Eating and Nutrition

Recommendation (North Carolina Health & Wellness Trust Fund)

Churches and faith-based organizations in North Carolina should:

- Consider the health benefits of serving healthy and nutritious snack options in all children's activities.
- Serve as community locations for physical activity and nutrition promotion programs.
- Emphasize, through educational programming, preaching, printed resources, and modeling, the significance of the "Family Meal" in order to reduce the number of meals eaten away from the home.
- Explore ways in which their proprietary recreational facilities (gymnasiums, playgrounds, ball fields, etc.) might be opened to their member children/families (and, if feasible, non-members) in order to encourage and promote respect for the body through increased physical activity.

Recommendation (North Carolina Health & Wellness Trust Fund)

State and/or private grant funding organizations in North Carolina providing grants for preschools and before/after school child care programs should give preference, when appropriate, to those applicants that demonstrate established high standards of physical activity and nutrition.

Recommendation (North Carolina Health & Wellness Trust Fund)

As a public service, appropriate communications/media associations should develop a strategic plan for promoting healthy eating and physical activity and encourage members to broadcast and promote the campaign on a local level.

Recommendation (North Carolina Health & Wellness Trust Fund)

North Carolina hospitals and medical centers should be good role models by offering healthy food and beverage choices and physical activity opportunities for employees, staff, patients, and their families.

Recommendation (North Carolina Health & Wellness Trust Fund)

The North Carolina Association for the Education of Young Children and other statewide associations working to improve the education, health, and care for young children in North Carolina should consider the benefits of adopting policies and programs that promote the benefits of proper nutrition and increased physical activity.

Recommendation 4.4 (North Carolina Institute of Medicine) [also in Policy]

Expand Physical Activity and Nutrition in Child Care Centers and After-school Programs.

The North Carolina Division of Public Health and the North Carolina Partnership for Children, Inc. (NCPC) should expand dissemination of evidence-based approaches for improved physical activity and nutrition standards in preschools.

- The North Carolina Division of Public Health (DPH) and the North Carolina Partnership for Children, Inc. (NCPC) should expand dissemination of evidenced-based approaches

for improved physical activity and nutrition standards in preschools using Nutrition and Physical Activity Self-Assessment for Child Care (NAP SACC). Beginning in SFY 2011, the North Carolina General Assembly should appropriate $70,000 in recurring funds to DPH and $325,000 in recurring funds to NCPC for these activities.

Further, the North Carolina Child Care Commission should assess the process needed to include healthy eating and physical activity in the quality indicators in North Carolina's Star Rated License system.

- The North Carolina Child Care Commission should assess the funding needed for child care centers to incorporate healthy eating and physical activity practices and the process to include healthy eating and physical activity as quality indicators in North Carolina's Star Rated License system for licensed childcare centers.

After-school programs should incorporate recommended standards for after-school activity into their programming.

- After-school programs should use the *Move More North Carolina: Recommended Standards for After-School Physical Activity*. Specifically:
  1. State agencies should require after-school programs that receive state funding or federal funding administered by the state to use the standards.
  2. The North Carolina Department of Public Instruction and the North Carolina Center for Afterschool Programs should encourage other after-school programs that do not receive state or federal funds to use the standards.

Physical Activity

Recommendation 3-2 (Institute of Medicine of the National Academies)

The community and its built environment should promote physical activity for children from ages 0-5 years.

Potential actions include:

- ensuring that indoor and outdoor recreation areas encourage all children, including infants, to be physically active;
- allowing public access to indoor and outdoor recreation areas located in public education facilities; and
- ensuring that indoor and outdoor recreation areas provide opportunities for physical activity that meet current standards for accessible design under the Americans with Disabilities Act.

Recommendation (North Carolina Health & Wellness Trust Fund)

Church and faith-based organizations in North Carolina should:

- Consider the health benefits of serving healthy and nutritious snack options in all children's activities.

- Serve as community locations for physical activity and nutrition promotion programs.
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Recommendation (North Carolina Health & Wellness Trust Fund)

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Recommendation (North Carolina Health & Wellness Trust Fund)

As a public service, appropriate communications/media associations should develop a strategic plan for promoting healthy eating and physical activity and encourage members to broadcast and promote the campaign on a local level.

Recommendation (North Carolina Health & Wellness Trust Fund)

North Carolina hospitals and medical centers should be good role models by offering healthy food and beverage choices and physical activity opportunities for employees, staff, patients, and their families.

Recommendation (North Carolina Health & Wellness Trust Fund)

The North Carolina Association for the Education of Young Children and other statewide associations working to improve the education, health, and care for young children in North Carolina should consider the benefits of adopting policies and programs that promote the benefits of proper nutrition and increased physical activity.

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  2. The North Carolina Department of Public Instruction and the North Carolina Center for Afterschool Programs should encourage other after-school programs that do not receive state or federal funds to use the standards.

Prenatal Care

Recommendation 1.2 (White House Task Force) [also in Policy]

Education and outreach efforts about prenatal care should be enhanced through creative approaches that take into account the latest in technology and communications.

Partners in this effort could include companies that develop technology-based communications tools, as well as companies that market products and services to pregnant women or prospective parents.

Screen Time

Recommendation 5-1 (Institute of Medicine of the National Academies)

Adults working with children should limit screen time, including television, cell phone, or digital media, to less than two hours per day for children ages 2-5 years.

Potential actions include:

- Child care settings limiting screen time, including television, cell phone, or digital media, for preschoolers (ages 2-5 years) to less than 30 minutes per day for children in half-day programs or less than one hour per day for those in full-day programs.
- Health care providers counseling parents and children's caregivers to permit no more than a total of two hours per day of screen time, including television, cell phone, or digital media, for preschoolers, including time spent in child care settings and early childhood education programs.
- Health care providers counseling parents to coordinate with child care providers and early education programs to ensure that total screen time limits are not exceeded between at-home and child care or early education settings.

- State and local government agencies providing training, tools, and technical assistance for child care providers, early education program teachers and assistants, health care providers, and community service agency personnel in how to provide effective counseling of parents regarding the importance of reducing screen time for young children.

Recommendation 1.8 (White House Task Force) [also in Clinical]

The American Academy of Pediatrics' guidelines on screen time should be made more available to parents, and young children should be encouraged to spend less time using digital media and more time being physically active.

Health care provider visits and meetings with teachers and early learning providers are opportunities to give guidance and information to parents and their children.

Recommendation 1.9 (White House Task Force)

The American Academy of Pediatrics (AAP) guidelines on screen time should be made more available in early childhood settings.

Early childhood settings should be encouraged to adopt standards consistent with AAP recommendations not to expose children 2 years of age and under to television, as well as to limit media exposure for older children by treating it as a special occasion activity rather than a daily event.

POLICY

General

Recommendation 5-4 (Institute of Medicine of the National Academies) [also in Community/ Environment]

The Secretary of the Department of Health and Human Services, in cooperation with state and local government agencies and interested private entities, should establish a sustained social marketing program to provide pregnant women and caregivers of children from ages 0-5 years with consistent, practical information on the risk factors for obesity in young children and strategies for preventing overweight and obesity.

Recommendation (North Carolina Health & Wellness Trust Fund)

The Department of Insurance should commission a study committee to investigate the fiscal impact of programs and services for the prevention and treatment of childhood obesity by public and private third party payers. In addressing these issues, the committee will consider the fiscal impact of action versus inaction.

Recommendation (North Carolina Health & Wellness Trust Fund) [also in Clinical]

The State Health Plan, Medicaid, Health Choice, and Special Health Services coverage in North Carolina should increase financial support for prevention services designed to promote healthy lifestyles which lower risk for childhood obesity related co-morbidities.

Recommendation (North Carolina Health & Wellness Trust Fund) [also in Community/ Environment]

Public and private insurers should adopt policies that provide incentives for members to achieve a healthy lifestyle.

Recommendation (North Carolina Health & Wellness Trust Fund)

The Lt. Governor and the co-chairs should commend academic and research institutions in North Carolina that have invested in research and outreach to address childhood obesity prevention and treatment. Further, whereas there remains an acute need for further research examining the relationship between physical activity and nutrition with academic performance, the Lt. Governor and the Co-Chairs should encourage these respective institutions to conduct this type of research.

Breastfeeding

Recommendation 1.6 (White House Task Force) [also in Clinical and Policy]

Early childhood settings should support breastfeeding.

Child care centers and providers, health care providers, and government agencies should provide accurate information about the storage and handling of breastmilk. They should also make sure child care employees and providers know how to store, handle, and feed breastmilk, and understand the importance of breastfeeding.

Growth Monitoring

Recommendation 11 (North Carolina Legislative Task Force)

Explore BMI Screening for at-risk Medicaid and Health Choice Children and Collaborate to Decrease BMI Levels in Children and Youth (NC Legislative Task Force).

The Task Force recommends that the General Assembly direct the Department of Health and Human Services (DHHS) to explore the possibility of requiring Community Care of North Carolina (CCNC) to implement body mass index (BMI) screening for children participating in Medicaid or the Health Choice for Children Program, who are at risk of becoming obese and developing diabetes or other chronic diseases; and to require CCNC networks to collaborate with local health departments, county departments of social services, Eat Smart Move More Coalitions, and local education agencies on ways to decrease BMI levels in children and youth. The plans developed by DHHS must include establishing performance goals within each CCNC network which will include: 1) Care management for children at-risk; and 2) annual BMI testing to identify the percentage of children who have a BMI test and the percentage of children who have a decrease in the BMI. The Department of Health and Human Services must ensure the privacy and integrity of information collected. Additionally, in the development of a plan to collect BMI, DHHS should explore data collection through programs like Fitnessgram, a fitness assessment and reporting program for youth that includes health-related physical fitness tests to assess aerobic capacity; muscular strength, muscular endurance, and flexibility; and body composition.

Healthy Eating and Nutrition

Recommendation 4-2 (Institute of Medicine of the National Academies)

To ensure that child care facilities provide a variety of healthy foods and age appropriate portion sizes in an environment that encourages children and staff to consume a healthy diet, child care regulatory agencies should require that all meals, snacks, and beverages served by early childhood programs be consistent with the Child and Adult Care Food Program meal patterns and safe drinking water be available and accessible to the children.

Recommendation 4-3 (Institute of Medicine of the National Academies)

The Department of Health and Human Services and the US Department of Agriculture should establish dietary guidelines for children from ages 0-2 years in future releases of the *Dietary Guidelines for Americans*.

Recommendation 4-4 (Institute of Medicine of the National Academies)

State child care regulatory agencies should require that child care providers and early childhood educators practice responsive feeding.

Potential actions include:

- For infants — holding infants in one's arms or sitting up on one's lap while feeding, and not propping bottles; recognizing infant feeding cues (e.g. rooting, sucking); offering an age appropriate volume of breastmilk or formula to infants and allowing infants to self-regulate their intake; and introducing developmentally appropriate solid foods in age appropriate portions, allowing all infants to self-regulate their intake.

- For toddlers/preschoolers — providing meals and snacks as part of a daily routine; requiring adults to sit with and eat the same foods as the children; when serving children from common bowls (family-style service) allowing them to serve themselves; when offering foods that are served in units (e.g. sandwiches) providing age appropriate portions and allowing children to determine how much they eat; and reinforcing children's internal cues of hunger and fullness.

Recommendation 4-5 (Institute of Medicine of the National Academies)

Government agencies should promote access to affordable healthy foods for infants and young children from ages 0-5 years in all neighborhoods, including those in low-income areas, by maximizing participation in federal nutrition assistance programs and increasing access to healthy foods at the community level.

Potential actions include:

- For children that qualify, US Department of Agriculture and state agencies maximizing participation in federal nutrition assistance programs serving children from ages 0-5 years, including for Special Supplemental Nutrition Program for Women, Infants, and Children; the Child and Adult Care Food Program; and the Supplemental Nutrition Assistance Program.
- The federal government assists state and local governments in increasing access to healthy foods.

Recommendation 5-3 (Institute of Medicine of the National Academies)

The Federal Trade Commission, the US Department of Agriculture, Centers for Disease Control and Prevention, and the Food and Drug Administration should continue their work to establish and monitor the implementation of uniform voluntary national nutrition and marketing standards for food and beverage products marketed to children.

Recommendation (North Carolina Division of Public Health)

Summary of Enhanced Child Care Nutrition Standards

As a result of reviewing the evidence-base on nutrition for young children, the data on childhood overweight and obesity in North Carolina, a comparison of existing North Carolina child care nutrition standards to those recently proposed by the Institute of Medicine of the National Academies for the Child and Adult Care Food Program, and feedback from a variety of North Carolina stakeholders, the North Carolina Division of Public Health, in conjunction with the North Carolina Division of Child Development, recommends a phased implementation of the following enhanced nutrition standards for licensed child care facilities.

Phase 1

- Prohibit the serving of sweetened beverages, other than 100% fruit juice, to children of any age.
- Prohibit the serving of more than six ounces of juice per day to children of any age.
- Prohibit the serving of juice from a bottle.
- Prohibit the serving of whole milk to children 2 years of age or older.

- Prohibit the serving of flavored milk to children of any age.
- Create an exception from the rules for parents of children who have medical needs, special diets, or food allergies.

Phase 2

- Limit the number of grains containing added sugars and increase the number of whole grains.
- Limit foods high in fat and salt.

In consideration of the challenges and training needs expressed by stakeholders during the Listening Sessions held across the state, a phased approach is recommended for implementation of the latter two recommendations. The first six recommendations (Phase 1) are expected to be cost-neutral for child care facilities and to require minimal training for implementation. However, the latter two will require additional collaboration between the North Carolina Division of Public Health and the North Carolina Division of Child Development to develop training materials and resources, as well as to work with food vendors to ensure availability of healthy options.

Recommendation (North Carolina Health & Wellness Trust Fund)

The Lt. Governor and the co-chairs of the study committee should send letters to the representatives of the packaged food industry in North Carolina commending those that have developed and distributed age appropriate portion sizes for snack foods and beverages and encouraging other vendors to follow suit.

Recommendation (North Carolina Health & Wellness Trust Fund)

The Lt. Governor and the co-chairs of the study committee should co-sign a letter to North Carolina's congressional delegation and federal regulatory authorities asking for consideration of limits on national youth-targeted advertising of unhealthy foods and beverages.

Recommendation (North Carolina Health & Wellness Trust Fund)

The North Carolina Star rating system of licensed child care centers, developed by the Frank Porter Graham Child Development Institute, should be examined as a possible point of intervention for childhood obesity by placing more emphasis on criteria related to physical activity and nutrition. As such, the Frank Porter Graham Child Development Institute should consider the benefits of more stringent physical activity and nutrition standards for the Early Childhood Environment Rating Scale-Revised (ECERS-R) and the Infant/Toddler Environment Rating Scale-Revised (ITERS-R) Child Care evaluation scale.

Recommendation 4.4 (North Carolina Institute of Medicine) [also in Community/Environment]

Expand Physical Activity and Nutrition in Child Care Centers and After-school Programs.

The North Carolina Division of Public Health and the North Carolina Partnership for Children, Inc. (NCPC) should expand dissemination of evidence-based approaches for improved physical activity and nutrition standards in preschools.

- The North Carolina Division of Public Health (DPH) and the North Carolina Partnership for Children, Inc. (NCPC) should expand dissemination of evidenced-based approaches

for improved physical activity and nutrition standards in preschools using Nutrition and Physical Activity Self-Assessment for Child Care (NAP SACC). Beginning in SFY 2011, the North Carolina General Assembly should appropriate $70,000 in recurring funds to DPH and $325,000 in recurring funds to NCPC for these activities.

Further, the North Carolina Child Care Commission should assess the process needed to include health eating and physical activity in the quality indicators in North Carolina's Star Rated License system.

- The North Carolina Child Care Commission should assess the funding needed for child care centers to incorporate healthy eating and physical activity practices and the process to include healthy eating and physical activity as quality indicators in North Carolina's Star Rated License system for licensed child care centers.

After-school programs should incorporate recommended standards for after-school activity into their programming.

- After-school programs should use the *Move More North Carolina: Recommended Standards for After-School Physical Activity*. Specifically:
  1. State agencies should require after-school programs that receive state funding or federal funding administered by the state to use the standards.
  2. The North Carolina Department of Public Instruction and the North Carolina Center for Afterschool Programs should encourage other after-school programs that do not receive state or federal funds to use the standards.

Recommendation 1.10 (White House Task Force)

The Federal government, incorporating input from health care providers and other stakeholders, should provide clear, actionable guidance to states, providers, and families on how to increase physical activity, improve nutrition, and reduce screen time in early child care settings.

Recommendation 1.11 (White House Task Force)

States should be encouraged to strengthen licensing standards and Quality Rating and Improvement Systems to support good program practices regarding nutrition, physical activity, and screen time in early education and child care settings.

Both federal guidance and state policies and practices may be drawn from:

- The guidelines for Out-of-Home Child Care Programs that will be outlined in the soon-to-be released third edition of *Caring for our Children: National Health and Safety Performance Standards*. These nationally recognized standards include health and safety practices such as physical activity, nutrition, and limited screen time for children from ages 0-12 years in all types of early childhood settings
- The National Association for Sport and Physical Education (NASPE) recommendation that all children in full-day child care are provided at least 60 minutes of structured and unstructured physical activity per day. Others have recommended that infants be provided opportunities for gross motor activity, and should not be unnecessarily confined.

- The revised Head Start Program Performance Standards, which include recommendations for health, nutrition, and physical environments.

Physical Activity

Recommendation 3-1 (Institute of Medicine of the National Academies)

Child care regulatory agencies should require child care providers and early childhood educators to provide infants, toddlers, and preschool children with opportunities to be physically active throughout the day.

For infants, potential actions include:

- providing daily opportunities for infants to move freely under adult supervision to explore their indoor and outdoor environments;
- engaging with infants on the ground each day to optimize adult-infant interactions; and
- providing daily "tummy time" (time in the prone position) for infants less than 6 months of age.

For toddlers and preschool children, potential actions include:

- providing opportunities for light, moderate, and vigorous physical activity for at least 15 minutes per hour while children are in care;
- providing daily outdoor time for physical activity when possible;
- providing a combination of developmentally appropriate structured and unstructured physical activity experiences;
- joining children in physical activity;
- integrating physical activity into activities designed to promote children's cognitive and social development;
- providing an outdoor environment with a variety of portable play equipment, a secure perimeter, some shade, natural elements, an open grassy area, varying surfaces and terrain, and adequate space per child;
- providing an indoor environment with a variety of portable play equipment and adequate space per child;
- providing opportunities for children with disabilities to be physically active, including equipment that meets the current standards for accessible design under the Americans with Disabilities Act;
- avoiding punishing children for being physically active; and
- avoiding withholding physical activity as punishment.

Recommendation 3-3 (Institute of Medicine of the National Academies)

Child care regulatory agencies should require child care providers and early childhood educators to allow infants, toddlers, and preschoolers to move freely by limiting the use of equipment that restricts infants' movement and by implementing appropriate strategies to ensure that the amount of time toddlers and preschoolers spend sitting or standing still is limited.

Potential actions include:

- using cribs, car seats, and high chairs for their primary purpose only—cribs for sleeping, car seats for vehicle travel, and high chairs for eating;
- limiting the use of equipment such as strollers, swings, and bouncer seats/chairs for holding infants while they are awake;
- implementing activities for toddlers and preschoolers that limit sitting or standing to no more than 30 minutes at a time; and
- using strollers for toddlers and preschoolers only when necessary.

Recommendation (North Carolina Health & Wellness Trust Fund)

The Division of Public Health and appropriate partners should develop physical activity guidelines to promote the benefits of physical activity during the first two years of life and promote that program to licensed child care centers in North Carolina.

Recommendation (North Carolina Health & Wellness Trust Fund)

The North Carolina Star rating system of licensed child care centers, developed by the Frank Porter Graham Child Development Institute, should be examined as a possible point of intervention for childhood obesity by placing more emphasis on criteria related to physical activity and nutrition. As such, the Frank Porter Graham Child Development Institute should consider the benefits of more stringent physical activity and nutrition standards for the Early Childhood Environment Rating Scale-Revised (ECERS-R) and the Infant/Toddler Environment Rating Scale-Revised (ITERS-R) Child Care evaluation scale.

Recommendation (North Carolina Health & Wellness Trust Fund)

The North Carolina State Commission on Childcare should examine the state's Five-Star rating system of licensed child care centers as a possible point of early intervention in the state's fight against childhood obesity by placing greater emphasis on physical activity and nutrition standards.

Recommendation 4.4 (North Carolina Institute of Medicine) [also in Community/Environment]

Expand Physical Activity and Nutrition in Child Care Centers and After-school Programs.

The North Carolina Division of Public Health and the North Carolina Partnership for Children, Inc. (NCPC) should expand dissemination of evidence-based approaches for improved physical activity and nutrition standards in preschools.

- The North Carolina Division of Public Health (DPH) and the North Carolina Partnership for Children, Inc. (NCPC) should expand dissemination of evidenced-based approaches for improved physical activity and nutrition standards in preschools using Nutrition and Physical Activity Self-Assessment for Child Care (NAP SACC). Beginning in SFY 2011, the North Carolina General Assembly should appropriate $70,000 in recurring funds to DPH and $325,000 in recurring funds to NCPC for these activities.

Further, the North Carolina Child Care Commission should assess the process needed to include health eating and physical activity in the quality indicators in North Carolina's Star Rated License system.

- The North Carolina Child Care Commission should assess the funding needed for child care centers to incorporate healthy eating and physical activity practices and the process to include healthy eating and physical activity as quality indicators in North Carolina's Star Rated License system for licensed childcare centers.

After-school programs should incorporate recommended standards for after-school activity into their programming.

- After-school programs should use the *Move More North Carolina: Recommended Standards for After-School Physical Activity*. Specifically:

3. State agencies should require after-school programs that receive state funding or federal funding administered by the state to use the standards.

4. The North Carolina Department of Public Instruction and the North Carolina Center for Afterschool Programs should encourage other after-school programs that do not receive state or federal funds to use the standards.

Recommendation 1.10 (White House Task Force)

The Federal government, incorporating input from health care providers and other stakeholders, should provide clear, actionable guidance to states, providers, and families on how to increase physical activity, improve nutrition, and reduce screen time in early child care settings.

Recommendation 1.11 (White House Task Force)

States should be encouraged to strengthen licensing standards and Quality Rating and Improvement Systems to support good program practices regarding nutrition, physical activity, and screen time in early education and child care settings.

Both federal guidance and state policies and practices may be drawn from:

- The guidelines for Out-of-Home Child Care Programs that will be outlined in the soon-to-be released third edition of Caring for our *Children: National Health and Safety Performance Standards*. These nationally recognized standards include health and safety practices such as physical activity, nutrition, and limited screen time for children from ages 0-12 years in all types of early childhood settings
- The National Association for Sport and Physical Education (NASPE) recommendation that all children in full-day child care are provided at least 60 minutes of structured and unstructured physical activity per day. Others have recommended that infants be provided opportunities for gross motor activity, and should not be unnecessarily confined.
- The revised Head Start Program Performance Standards, which include recommendations for health, nutrition, and physical environments.

Screen Time

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- The revised Head Start Program Performance Standards, which include recommendations for health, nutrition, and physical environments.

Sleep

Recommendation 6-1 (Institute of Medicine of the National Academies)

Child care regulatory agencies should require child care providers to adopt practices that promote age appropriate sleep durations.

Potential actions include:

- creating environments that ensure restful sleep, such as no screen media in rooms where children sleep and low noise and light levels during napping;
- encouraging sleep-promoting behaviors and practices, such as calming nap routines;
- encouraging practices that promote child self regulation of sleep, including putting infants to sleep drowsy but awake; and
- seeking consultation yearly from an expert on healthy sleep durations and practices.

Other Community/Environmental Strategies

Appendix E

1. Improved nutrition in child care programs by harnessing local buying power (eg, group purchasing of healthy foods).
2. Improved nutrition in child care programs through the use of central kitchens.
3. Improved nutrition in child care programs through infrastructure grants to child care (eg, to support purchase of refrigerators or cooking appliances).
4. Utilization of farm-to-child care mini-grants.
5. Improved coordination between child care facilities and the NC Division of Parks and Recreation.
6. Build and expand local food system community coalitions.
7. Improve nutrition through enhanced breastfeeding support in the community.
8. Improve targeted physical activity for young children through the NC Division of Parks and Recreation.
9. Expand Faithful Families to faith organizations that run child care programs.
10. Expand Partners in Health and Wholeness certification to include a focus on early childhood.
11. Evaluate the effectiveness of child care consultants in changing child care practices around breastfeeding, nutrition, and physical activity.

North Carolina Institute of Medicine
630 Davis Drive, Suite 100
Morrisville, NC 27560
919.401.6599
www.nciom.org
www.ncmedicaljournal.com