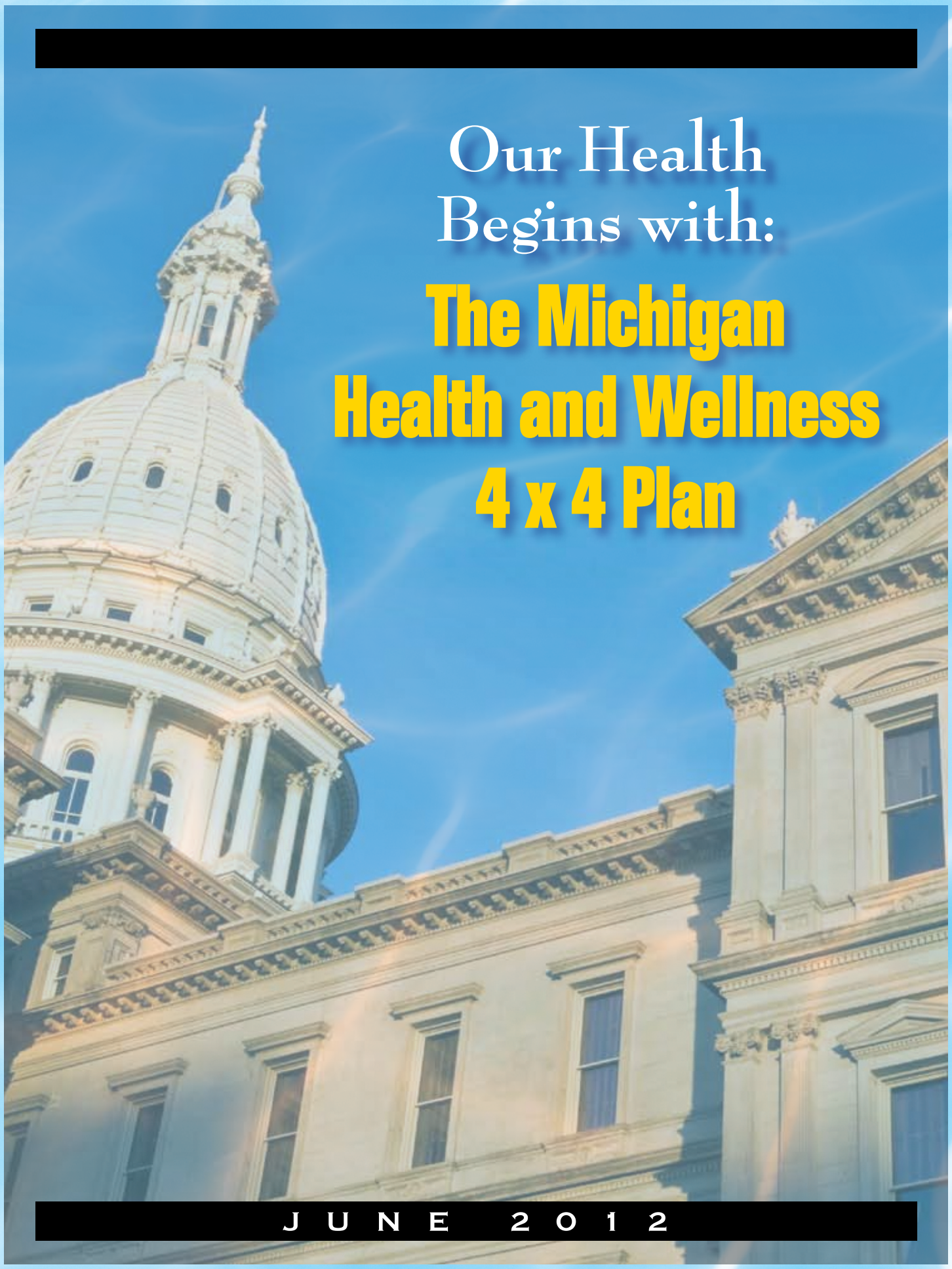
Our Health
Begins with:
The Michigan
Health and Wellness
4 x 4 Plan
JUNE 2012

STATE OF MICHIGAN
DEPARTMENT OF COMMUNITY HEALTH
LANSING

RICK SNYDER
GOVERNOR

OLGA DAZZO
DIRECTOR

June 2012

Dear Colleagues and Partners:

It is my pleasure to introduce the *Michigan Health and Wellness 4 x 4 Plan*, which contains Michigan's priorities for obesity prevention over the next five years.

The burden of obesity continues to take its toll on Michigan residents through chronic diseases and rising healthcare costs. Governor Rick Snyder has identified the prevention and control of obesity as a top health priority that we need to pursue if we are to become a healthier state that is economically competitive.

The Michigan Department of Community Health worked with university researchers, health professionals, business and community leaders, and other stakeholders who volunteered their time and expertise to help craft this plan. We are grateful for their passion and commitment to advance this important issue and to help Michigan residents achieve a healthier lifestyle. The strategies in this plan build on partnerships, current program efforts, and existing resources to lay a foundation for change.

As we move forward, we must utilize best practices, leverage public and private partnerships, and embrace new and innovative approaches. Change isn't easy, but it is achievable. This plan outlines actions all segments of our population can take to reduce obesity – and it will take all of us working together.

We invite you to consider how you and your organization can contribute to the success of this plan. We look forward to your involvement as we work collaboratively to accomplish our vision of a healthier Michigan.

Sincerely,

Olga Dazzo
Director

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Introduction

Governor Rick Snyder helped shape the State's vision during his Health and Wellness Message on September 14, 2011.

Our vision is for Michiganders to be healthy, productive individuals, living in communities that support health and wellness, with ready access to an affordable, person-centered, and community-based system of care.

Governor Snyder made reducing obesity a priority, which he has placed on the Michigan Dashboard. In his 2011 and 2012 State of the State addresses, the Governor reiterated the importance of personal responsibility in our quest for healthier individuals and communities. The Michigan 4 x 4 concept, which he unveiled in his Health and Wellness message this past fall, is one tool people can use to attain health. Governor Snyder believes in the power of prevention and the impact wellness initiatives can have on our health as individuals, communities, businesses, and as a state.

The goal of the Michigan Health and Wellness 4 x 4 Plan is for every Michigander to adopt health as a personal core value. The plan describes the approach that the State of Michigan will undertake in addressing wellness and obesity. Central to the plan is the 4 x 4 tool which can be used to maintain and/or attain health. The 4 x 4 tool recommends the practice of four healthy behaviors and keeping four health measures in control. The four healthy behaviors are: maintain a healthy diet, engage in regular exercise, get an annual physical exam, and avoid all tobacco use. The four measures are body mass index (BMI), blood pressure, cholesterol level, and blood sugar/glucose level.

The facts point to Michigan having a public health crisis when it comes to obesity and chronic illnesses. Thirty-two percent of adults are obese (BMI greater than 30) and 17 percent of youth are obese. Obesity is the root cause of most chronic illnesses. Therefore, the Michigan Health and Wellness 4 x 4 Plan focuses much of its efforts on addressing obesity. Addressing obesity will help Michiganders control blood pressure, cholesterol and blood sugar/glucose levels which altogether will greatly reduce chronic illnesses in our population.

Implementation of this plan will require a collaborative approach among state, tribal and local governments; businesses, industry and other private sector partners; schools and community organizations; and individuals and families. Through these partnerships we can improve health by creating healthy communities, expanding prevention activities and empowering people to make healthy choices and adopt health as a personal core value.

The plan uses principles from the social ecological model where interventions for individuals and the environment are used. Strategies in the plan include: a multimedia campaign, deployment of coalitions, and external partnerships to help the coalitions implement the plan.

Acknowledgements

Over the past several months, we have worked with a group of experts from the University of Michigan, Michigan State University, and Wayne State University, as well as an Obesity Steering Committee comprised of experts to identify strategies to address this issue. In September 2011, the Michigan Department of Community Health (MDCH) held an Obesity Summit attended by nearly 500 participants from around the state to identify key priority strategies that we should implement in Michigan.

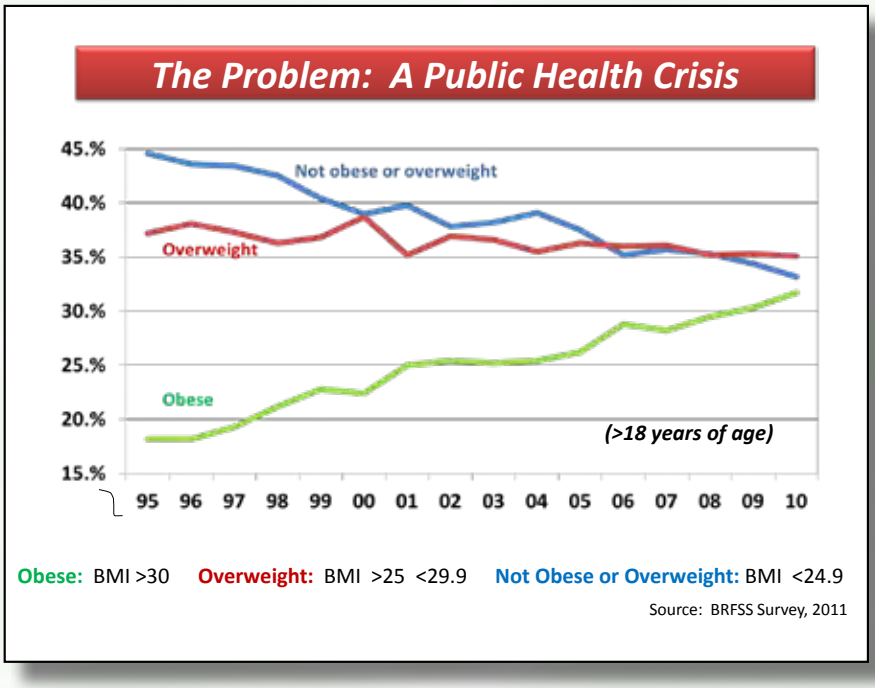
This plan was developed with the input and guidance of numerous community, healthcare, business, education, and academic experts across the state. Special recognition goes to these experts, as well as staff from MDCH for sharing their knowledge, time and experience to develop a plan that, if adopted, will result in the reduction of obesity and a healthier Michigan.

We are grateful for everyone's passion and commitment to advance this important issue, and to help Michigan residents achieve a healthier lifestyle.

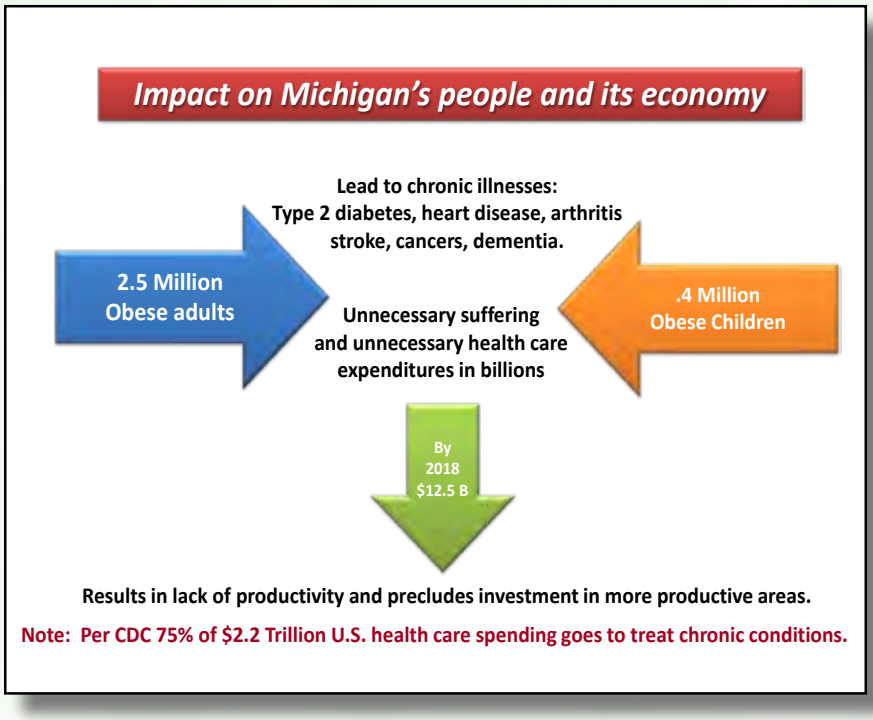
Public Health Crisis - A Call to Action

Michigan has a public health crisis. In 1995, 18% of the adult population was obese. By 2010, the obesity prevalence in our population had increased to 32%. If the tide is not changed, the percent of obesity in our population will reach 50% by 2030.

Obesity is a root cause of most chronic illnesses. Therefore, it is the role and obligation of Public Health to inform and educate Michiganders about this threat to their health just as it does when there is a threat of pandemics and epidemics.



The consequences of obesity are Type 2 diabetes, heart disease, arthritis, stroke, and dementia. Currently in Michigan, 2.5 million adults and 400,000 children are obese, many of whom already show signs of chronic illnesses. Unnecessary suffering is being caused by obesity, which is mainly driven by sedentary lifestyles and unhealthy eating habits.



According to the CDC, 75% of total health care expenditures are associated with treating chronic diseases. If Michiganders reduce their BMI rates to lower levels and achieve an improved status of health, the state could save over $13 billion annually in unnecessary health care costs.

Components of the 4 x 4 Tool

Preventing or managing chronic diseases is the top health challenge of the 21st century. Seven out of 10 deaths each year are from chronic diseases. More than 75% of healthcare spending (in Michigan and the U.S.) is for people with chronic diseases including heart disease, stroke, cancer, diabetes, kidney disease, and dementia. Leading a healthy lifestyle can greatly reduce the risk of developing chronic diseases. Two-thirds of premature deaths in the U.S. are due to poor nutrition, lack of physical activity, and tobacco use. Prevention measures such as appropriate screening and control of risk factors are important steps to save lives, reduce disability, and lower healthcare costs.

PRACTICE FOUR KEY HEALTHY BEHAVIORS

1. **Maintain a Healthy Diet**
   Research shows that healthy eating contributes greatly to one's overall health, as well as maintaining a healthy body weight. As described in the Dietary Guidelines for Americans, eating healthy means consuming a variety of nutritious foods and beverages. The guidelines include vegetables, fruits, low- and fat-free dairy products and whole grains. The guidelines also include limiting intake of saturated fats, added sugars, and sodium; keeping trans-fat intake as low as possible; and balancing caloric intake with calories burned to manage body weight.

2. **Engage in Regular Exercise**
   Reduction of sedentary lifestyle and increased regular physical activity are important contributors to health. Regular physical activity helps to achieve and maintain a healthy weight while contributing to the health of bones, joints, and muscles. It can also reduce feelings of anxiety and depression. Even though the benefits of physical activity are apparent, less than half of adults in Michigan engage in physical activity regularly – at least 150 minutes (2.5 hours) of moderate intensity physical activity a week, such as brisk walking, biking or swimming. Children and adolescents should get 60 minutes of physical activity per day. The American Academy of Pediatrics also recommends less than 2 hours of media time per day (television, computer, movies, and video games).

3. **Get an Annual Physical Examination**
   Receiving an annual physical is a good way to remain proactive about one's health and wellness. There are many benefits to having an annual physical exam, including earlier diagnosis and treatment of existing health issues and prevention of future problems. Regular physical exams also provide a variety of screenings dependent on age, health and family history and lifestyle choices. By getting the right health services, screenings, and treatments, Michiganders increase their chances for living longer and healthier lives.

   Individuals also should discuss with their health professional the status of their four health measures (BMI, cholesterol, blood sugar, blood pressure) and develop goals for maintaining or attaining desired levels for each measure.

4. **Avoid All Tobacco Use and Exposure**
   Tobacco use is the leading cause of premature and preventable death in the United States. Avoiding all tobacco use, which includes cigarettes, cigars, smokeless tobacco, pipes and hookahs, and eliminating exposure to secondhand smoke, can greatly reduce the risk of developing heart disease, cancers, pulmonary disease, periodontal disease, asthma and other diseases. While Michigan has decreased smoking in the population over the last 50 years from 46% to 18%, we still have 15,000 annual deaths related to smoking.

KNOW YOUR FOUR KEY HEALTH MEASURES

1. **Body Mass Index (BMI)**
   BMI, or Body Mass Index, is a measure of body fat based on height and weight. A healthy adult BMI falls within a range of 18.5 -24.9. A BMI between 25 and 29.9 is considered overweight. Those with a BMI of 30 or greater are classified as obese. Maintaining a BMI within the healthy range can reduce blood pressure, cholesterol, blood glucose and lower your risk for heart disease, stroke, cancer, diabetes and kidney disease. BMI values for children are expressed in percentiles to control for differences in body sizes due to gender and age. The percentile indicates the relative position of the child's BMI number among children of the same gender and age. A child with a BMI percentile between 5% and 84% is considered to be at a healthy weight; 85% - 94% is considered overweight and above the 95th percentile is considered obese.

   Lowering BMI can have dramatic health benefits including reducing risk of developing Type 2 diabetes by more than 50% and substantially reducing the risk of heart disease and cancer if moderate reduction of BMI (5 to 10%) is achieved.

2. **Blood Pressure**
   Healthy blood pressure is a key to heart health. Uncontrolled high blood pressure increases your risk of heart attack, stroke and kidney disease. A blood pressure of less than 120/80 is considered healthy or normal. A blood pressure between 120-139/80-89 is considered "pre-hypertension"; and a blood pressure of 140/90 or above is considered hypertension.

3. **Cholesterol Level**
   High cholesterol is a direct contributor to cardiovascular disease, which can lead to stroke and heart attacks. To decrease risk for cardiovascular disease total blood cholesterol should be kept below 200. A blood cholesterol level of 200-239 is considered mildly high, while a blood cholesterol level of 240 or greater is considered high.

4. **Blood Glucose Level**
   Blood glucose levels measure the amount of a type of glucose in your blood. It is important to know this measure because increased blood glucose levels can be a predictor of diabetes. Fasting blood glucose levels should be below 100mg/dl.

STRATEGIES AND GOALS 2012 - 2017

Each of the strategies listed below will incorporate information for individuals and organizations on adoption of the 4 x 4 plan as part of their activities.

- Maintain a Healthy Diet
- Engage in Regular Exercise
- Get an Annual Physical Examination
- Avoid All Tobacco Use and Exposure
- Body Mass Index (BMI)
- Blood Pressure
- Cholesterol Level
- Blood Sugar/Glucose Level

A. Develop multimedia public awareness campaign to reduce obesity and promote a social movement encouraging every Michigander to adopt health as a personal core value through promotion of the 4 x 4 Plan.

B. Deploy 46 community coalitions throughout Michigan to support implementation of the 4 x 4 Plan.

C. Engage partners throughout Michigan to help coalitions implement the 4 x 4 Plan.

- Employers
- Trade and other professional organizations
- Education system
- Departments of state government

D. Within the Michigan Department of Community Health create the infrastructure to support 4 x 4 Plan implementation energizing the local coalitions, and partners.

E. Seek funding to finance the plan for a projected first-year cost of $18.25 million.

STRATEGIES AND GOALS 2012 - 2017

A. Develop multimedia public awareness campaign to promote a social movement to reduce obesity and encourage every Michigander to adopt health as a personal core value through promotion of the 4 x 4 Plan.

1. Alert Michiganders of obesity crisis that will result in chronic diseases, unaffordable costs, and losses in productivity and vitality.
2. Conduct Consumer Perception Survey to guide development of the multimedia campaign.
3. Provide a marketing umbrella for the campaign with broad public recognition. Design campaign utilizing TV, radio, print, website and social media.
4. Develop messages appropriate for population at large and culturally sensitive messages related to race and ethnicity.
5. Redevelop the existing Michigan Health and Wellness state website to continue personal goal tracking and risk assessment, and access to evidence-based tools and resources for adoption of the 4 x 4 Plan.
6. Promote free, low-cost, self-management tools, such as electronic calorie counters, pedometers, health tracking tools, combined with smart technology.
7. Post to wellness website a referral bank of Michigan-based worksite wellness experts and companies for use by employers.
8. Post to wellness website a referral bank of Michigan-based worksite wellness experts and companies for individuals to use.
9. Create section in wellness website for Michiganders to self-report preferred techniques for weight loss and wellness; use tracking system for following and rewarding most followed practices.
10. Document stories about persons who lose significant weight or significantly improve health measures; reward them as 4 x 4 Champions.
11. Include small measurable steps that individuals can take to improve healthy eating and physical activity.
12. Develop Governor's Awards for "Best Practices" and recognition programs for individuals, employers, state restaurants, businesses, schools, state departments, and other organizations that adopt the 4 x 4 health and wellness philosophy.

B. Deploy 46 community coalitions throughout Michigan to support implementation of the 4 x 4 Plan.

1. Develop guidelines to support coalitions and set expectations with pay for performance system.
2. Establish coalitions of sufficient size and leadership structure to have significant impact in communities.

3. Enter into contractual agreements with local health departments, Tribes and/or other suitable agencies to lead coalitions in the adoption of the 4 x 4 Plan, including creating environments that support healthy behaviors.
4. Implement community assessments and develop action plans that support healthy behaviors (see Appendix A for suggested evidence-based coalition strategies).
5. Develop roles for legislators to work with coalitions in their respective communities.
6. Engage leadership of community coalitions with statewide professional and trade organizations (e.g., Michigan Health & Hospital Association, Michigan Osteopathic Association, Michigan State Medical Society, restaurant and grocer associations, business associations) and departments of state government.

C. Engage partners throughout Michigan to help coalitions implement the 4 x 4 Plan.

1. Employers

a. Encourage employers to assess their worksites by using the Designing Health Environments at Work assessment tool and develop action plan consistent with findings (www.michigan.gov/healthymichigan ...click on Businesses).
b. Provide guidance for the development of worksite environments that encourage and support healthy eating, physical activity and the adoption of the 4 x 4 Plan. (See Appendix B for suggested content of worksite wellness programs.)
c. Develop referral process for Michigan-based companies that provide worksite wellness programs for employers seeking this assistance.
d. Work with employers and health plans to encourage adoption of health insurance products that incentivize adoption of the 4 x 4 Plan.
e. Develop recognition and award system for employers that successfully implement the 4 x 4 Plan.

2. Trade and Professional Organizations

a. Hospital, medical associations, health clinics (MHA, MSMS, MOA, Michigan Primary Care Consortium, Michigan Primary Care Association, Michigan Chapter of American Academy of Pediatrics):

1. Encourage local hospitals and all health care providers to provide every patient with his/her 4 health measures, plus offer discussion about the 4 healthy behaviors, if desired by patient.
2. Encourage healthcare professionals to provide education, counseling and referrals to community resources to help individuals with their 4 healthy behaviors and 4 health measures.
3. Incorporate the 4 x 4 Plan into their electronic health record system for health management and ease of distribution to patients.
4. Promote the recording of BMI into Michigan Care Improvement Registry (MCIR) for children.

b. Health Insurers (Blue Cross Blue Shield of Michigan, Michigan Association of Health Plans, other carriers, third party administrators):

1. Offer products to health care purchasers that include incentives to practice the 4 healthy behaviors and 4 health measures.
2. Offer products to health care purchasers that provide value-based purchasing.
3. Promote in health plan's wellness programs the adoption of health as a personal core value, and the adoption of the 4 x 4 tool.

c. Wholesale and retail food companies (Associated Food and Petroleum Dealers, Michigan Grocers Association), food producers:
   1. Promote program's adoption of consistent messaging, prominently displayed, about the 4 x 4 Plan.
   2. Promote foods with less salt, sugar, unhealthy fats.

d. Restaurant Associations (Michigan Restaurant Association, Michigan Association of Food Producers):
   1. Encourage Michigan restaurants to post menus online along with nutritional content and information.
   2. Encourage restaurants to include calorie information on their menus as well as social media coding whenever possible to assist customers with smart tools to obtain other nutrition information.
   3. Encourage restaurants to offer bite-size desserts.
   4. Include references to the 4 x 4 Plan on menus.
   5. Work with university researchers to offer appropriate content of sugar, sodium, and healthy fat levels in foods.

e. Business Associations (Small Business Association of Michigan, Michigan Chamber of Commerce):
   1. Encourage small and large businesses to offer worksite wellness programs for their employees.
   2. Encourage business associations to develop and encourage implementation of worksite wellness program for its members in collaboration with worksite wellness expert.

f. Parent-Teacher Associations and Principal Associations:
   1. Provide materials for parents, teachers and school children about the 4 x 4 Plan and strategies that can lead to adoption of healthy behaviors.
   2. Honor schools that promote the 4 x 4 Plan in effective ways.
   3. Work with school system and Michigan Department of Education to promote healthy eating and physical activity practices.

g. Weight Management Programs (Weight Watchers, Medical Weight Loss Clinic, hospital based clinics, On Target Living, other national weight loss Michigan-based franchises):
   1. Promote the 4 x 4 Plan in promotional materials including prominent signage on site in exchange for promotion on wellness website.

h. Physical Activity Programs (YMCA):
   1. Establish a statewide 4 x 4 health and wellness program affordable for everyone, including low-income individuals.
   2. Review Michigan's playgrounds and establish collaborative for development.

i. Work with Michigan's universities and colleges, trade associations and professional sports teams so that sports teams (males and females) adopt and promote the 4 x 4 Plan.
    1. Promote 4 x 4 Plan with community colleges, colleges, universities, and professional sports teams to engage players to be role models for general student population and community.
    2. Engage community colleges, colleges and universities to encourage students to adopt healthy behaviors.

3. Education System

a. Encourage all school systems to adopt healthy food offerings, healthy behaviors, physical activity programs, and discuss with students the meaning of health as a personal core value.
b. State Departments of Education and Community Health will continue to work with schools on initiatives listed on pages 10 and 12.

4. Departments of State Government

a. The Office of the State Employer:
    1. Encourage each state department to encourage employees to achieve the goals of the 4 x 4 Plan.
    2. Engage in collective bargaining for health insurance products for state employees that incentivize their adoption of the 4 x 4 Plan.
    3. Develop policies for use by state departments and agencies that provide appropriate space and break time for breastfeeding employees. Communicate those policies as well as the availability of any support programs and/or educational materials to employees.
    4. Encourage adoption of standards for healthy food and beverages where offered onsite and at meetings.
    5. Establish Governor's Michigan Health and Wellness 4 x 4 Awards for state agencies that achieve excellence criteria.
    6. Provide guidance to state departments and agencies on scheduling alternatives, uses for state-owned or leased facilities, and appropriate employee group activities related to the 4 x 4 goals and objectives.

b. The Michigan Department of Education:
    1. Implement Michigan Nutrition Standards in school districts, campus wide, where food is offered or sold.
    2. Continue to work with MDCH to develop resources as research emerges and as districts identify specific needs to supplement the Michigan Nutrition Standards Toolkit that was released in November 2011.
    3. Develop a State Board of Education model policy for Comprehensive School Physical Activity Programs that include physical education as the cornerstone and physical activity during the school day, before school and after school.
    4. Revise indicators to reflect obesity "best practices" in the Early Childhood Standards of Quality and Michigan's Quality Improvement Rating System and implement evidence-based facility level interventions.
    5. Create a Governor's Award for schools that attain excellence in health and wellness practices.
    6. Collaborate to jointly administer the Michigan Model for Health program with MDCH to implement and evaluate effective K-12 health education curriculum.

7. Continue to jointly administer the Child and Adolescent Health Center (CAHC) Program with MDCH to implement obesity prevention and treatment strategies in a clinical setting.

c. The Department of Agriculture and Rural Development:
   1. Strengthen the farm-to-school network.
   2. Collaborate on Pure Michigan FIT (Feeding Infants and Toddlers, 0-5). Beginning in 2012, state agencies (MDCH, Departments of Human Services and Education) will collaborate with state and local partners to pilot a nutrition education program, aimed at teaching parents and caregivers of babies, toddlers and preschoolers the information they need to raise healthy, happy children and tackle childhood obesity in our state. Other partners include: Michigan Grocers Association, Michigan Fitness Foundation, and Michigan Health and Hospital Association.
   3. Work on establishing Food Hubs:
      a. Link agriculture and consumers
      b. Increase access
      c. Allow for nutrition training
      d. Request for Proposal for 5 pilot sites
      e. Establish best practices

d. The Department of Transportation:
   1. Continue to promote the Michigan "Safe Routes to School" Program, an effort designed to increase safety and encourage more students to walk and bike to school daily.
   2. Work with the Complete Streets Advisory Council and the State Transportation Commission to develop and communicate a "complete streets" policy for Michigan. Complete streets are roadways planned, designed and constructed to provide appropriate access to all legal users in a manner that promotes safe and efficient movement of people and goods whether by car, truck, transit, assistive device, foot or bicycle.
   3. Work with the Complete Streets Advisory Council and the State Transportation Commission to identify model local policies for complete streets. Michigan currently leads the nation in the number of communities that have adopted complete streets policies.
   4. Continue to use a "context sensitive" approach to project development, working with communities and stakeholders to develop complete streets where appropriate, cost effective and in keeping with the context and function of the roadway.
   5. Give consideration to communities that have passed "Complete Streets" policies in rewarding federal Transportation Enhancement program grants.

e. The Department of Human Services:
   1. Develop nutrition standards, physical activity requirements and screen-time limits to the Licensing Rules for Family and Group Child Care Homes.

2. Expand the Double Up Food Bucks program.
3. Implement nutrition education through SNAP-ED program.

f. The Department of Natural Resources:
   1. Work with schools to provide educators the tools, training, and resources they need to bring the environment into their classrooms – and their students into the environment.
   2. Promote Project WILD, part of the "No Child Left Inside" initiative, as a preschool through 12th grade environmental and conservation education program, emphasizing awareness, appreciation and understanding of wildlife and natural resources and the importance of being active outdoors.
   3. Promote physical fitness and healthy outdoor lifestyles as part of DNR's Recreation 101 programs at state parks and other locations.

g. Michigan Economic Development Corporation:
   1. Consider promoting the statewide campaign as a PureMichigan campaign to promote wellness associated with the 4 x 4 Plan.
   2. Establish promotional opportunities with trade organizations and restaurants that adopt the 4 x 4 Plan.

h. Encourage each state department to assess their eating and physical activity environments and policies and to implement appropriate changes.

D. Within the Michigan Department of Community Health create the infrastructure to support 4 x 4 Plan implementation, energizing the local coalitions, and partners.

1. Establish administrative and programmatic infrastructure at MDCH to coordinate plan and support implementation by all public and private stakeholders of the Michigan 4 x 4 Plan.
2. Assist other state agencies to support and implement the 4 x 4 Plan.
3. Enhance Medicaid services to incorporate 4 x 4 Plan activities for enrollees.
4. Establish a Steering Committee consisting of leaders from stakeholder groups and state agencies to guide and monitor implementation and identify state policy priorities.
5. Manage local coalitions, including provision of technical assistance and trainings.
6. Create public awareness and public relations campaign (Strategy A).
7. Develop toolkits and enhance resources for schools, childcare settings, worksites, healthcare facilities and communities that include priority strategies and interventions.
8. Continue to implement programs that focus on improving healthy eating and increasing physical activity in childcare, schools, communities and faith-based organizations.
9. Collaborate with the Infant Mortality state plan on strategies that relate to healthy lifestyle and obesity reduction.
10. Develop valid methods to estimate weight of community residents at baseline and at end of each year of the five-year obesity plan.

11. Expand student-led approach to empower youth to improve their own health by implementing positive changes in schools in partnership with United Dairy Industry of Michigan and the Fuel Up to Play 60 program.
12. Monitor, evaluate and report the success of coalition strategies.
13. Aggressively pursue grant funding to support implementation of the 4 x 4 Plan.
14. Expand MICR's capabilities and promote its adoption among the healthcare community.
    a. Provide access to the MCIR BMI Growth Module for children 0 to 18 years that includes clinical decision support tools to empower physicians to provide quality care reflected in national guidelines.
    b. Build an interface from MCIR to Electronic Health Records.
    c. Expand MCIR to include a BMI Health Module for adults.
15. Work with Commission for the Blind to offer healthy options in their concessions at all state buildings.

E. Seek funding to finance the plan for a projected first year cost of $18.25 million.

Our ability to implement these strategies will depend upon the availability of resources.

PARTNERING ORGANIZATIONS

American Cancer Society	MI Department of Natural Resources
American Heart Association	MI Department of Transportation
Associated Food & Petroleum Dealers	MI Economic Development Corporation
Blue Cross Blue Shield of Michigan	MI Environmental Council
CHASS Center, Inc.	MI Fitness Foundation
Children's Health Initiative Program	MI Food Policy Council
Coalition of MI Organizations of Nursing	MI Food Processors Association
Communications & Research, Inc.	MI Governor's Office
Comprehensive School Health Coordinator's Association of MI	MI Grocers Association
Consulate of Mexico	MI Health & Hospital Association
Danialle Karmanos' Work It Out	MI Health Policy Forum
Detroit Wayne County Health Authority	MI Osteopathic Association
Diabetes Partners in Action Coalition	MI Office of the State Employer
Early Childhood Investment Corporation	MI Parent Teacher Association
Greater Detroit Area Health Council	MI Peer Review Organization
Greater Flint Health Coalition	MI Primary Care Association
Greater Lansing African American Health Institute	MI Public Health Institute
Health and Wellness Foundation	MI Restaurant Association
HealthMedia, Inc.	MI Soft Drink Association
Healthy Kids, Healthy Michigan	MI State Medical Society
Henry Ford Health System	Michigan State University
Institute for Black Family Development	MI Townships Association
Inter-Tribal Council of Michigan	MI Wellness Council
Lansing Latino Health Alliance	myNutratek
M.O.O.V.E. Detroit	National Kidney Foundation of MI
MI Academy of Family Physicians	On Target Living
MI Association of Broadcasters	Public Sector Consultants
MI Association of Food Producers	School – Community Health Alliance of MI
MI Association of Health Plans	Small Business Association of MI
MI Association of Local Public Health	Sparrow Health System
MI Business and Professional Association	Spectrum Health
MI Chamber of Commerce	State Alliance of MI YMCAs
MI Chapter American Academy of Pediatrics	United Dairy Industry of MI
MI Association of Chiropractors	UnitedHealthcare Community Plan
MI Department of Agriculture & Rural Development	University of Michigan
MI Department of Community Health	W.K. Kellogg Foundation
MI Department of Education	Wayne State University
MI Department of Human Services	Weight Watchers

Appendix A

Suggested Coalition Strategies to Increase the Availability of Healthy Foods and to Improve Access to Physical Activity Opportunities

1. Encourage coalitions to implement strategies to increase the availability of healthy foods (mainly fruits and vegetables) in communities (www.michigan.gov/healthymichigan and click on Communities):
    a. Assess local community needs and expand programs such as community gardens and farmers' markets that bring healthy foods (especially Michigan-grown fruits and vegetables) to schools, businesses and communities.
    b. Work with existing food outlets such as convenience stores and fringe stores to improve the selection of fresh fruits and vegetables available for purchase, especially in low-income communities.
    c. Work with government agencies to assist farmers' markets and stands to accept government assistance program payment (Michigan Bridge Card, EBT Stands, Project Fresh vouchers, etc.)
    d. Work with local businesses to encourage ready access to fruits, vegetables and other healthy foods through the adoption of food procurement policies, farm-to-work programs, and worksite foodservice including food offered at meetings and events.
2. Encourage coalitions to implement strategies to increase access to physical activity opportunity (www.michigan.gov/healthymichigan and click on Communities):
    a. Work with transportation projects to implement non-motorized infrastructure to support residents to walk, bike and use public transportation where appropriate.
    b. Facilitate safe neighborhoods that encourage physical activity where appropriate (e.g., sidewalks, bike lanes, adequate lighting, multi-use trails, walkways, parks, and playgrounds).
    c. Work with community, non-profit and faith-based organizations to offer low or no-cost physical activity programs (sports, walking clubs).
    d. Engage professional and trade organizations and departments from state government to help coalitions implement the 4 x 4 Plan.
3. Encourage coalitions to increase awareness of the importance of healthy behaviors through local community-wide campaigns.

Appendix B

Suggested Content of Worksite Wellness Programs

1. Implement initiatives to increase the number of employees who are physically active during the work day. Consider feasibility of scheduling alternatives as well as structural additions such as bicycle racks, walking paths, changing facilities and showers.

2. Establish policies that provide appropriate space and break time for breastfeeding employees even where not required by law. Communicate those policies as well as the availability of any support programs and/or education materials to employees.

3. Develop recommendations for healthy food and beverages offered at employers' meetings, parties, and snacks.

4. Promote the adoption of health insurance products that incentivize the adoption of the 4 x 4 Plan.

5. Work with employees or employee representatives where applicable, to develop incentives for those who set and achieve the goals of the 4 x 4 Plan.

Appendix C

Appendix C

Overweight and Obesity Dashboard

U.S vs. Michigan Adults[Current-2010]

Percentage	U.S.	MI	Rank
Obesity (Adults)	27.5	31.7	6
Overweight (Adults)	36.2	35.1	n/a

U.S vs. Michigan Youth[Current-2009]

Percentage	U.S.	MI
Obesity (High School)	12.0	11.9
Overweight (High School)	15.8	14.2

YRBS is conducted only odd years, thus the most recent year is 2009

Michigan Overall (Obesity in Adults)

	Prior (2009)	Current (2010)	Progress*
Obesity	30.3	31.7	
White, non-Hispanic	28.7	29.8	
Black, non-Hispanic	41.6	45.3	
Hispanic	42.6	36.4	
Other Non-Hispanic	30.2	28.1	

Michigan Overall (Overweight in Adults)

	Prior (2009)	Current (2010)	Progress*
Overweight	35.7	35.1	
White, non-Hispanic	36.7	36.1	
Black, non-Hispanic	34.0	28.8	
Hispanic	32.0	31.2	
Other Non-Hispanic	24.7	34.5	

* Note that the progress does not necessarily mean that there is a statistical significance in the difference noted.

Health Behaviors in Adults and Youth

	Prior (2007)	Current (2009)	Progress*
Sufficient Adult Physical Activity	50.7	52	
Adequate daily consumption of fruits and vegetables among adults	21.3	22.6	
Sufficient Youth Physical Activity (High School)	44	46.8	
Adequate daily consumption of fruits and vegetables among youth (High School)	17	19.6	

Performance Key

Performance Improving = Performance staying about the same Performance Declining

CDC HEALTHY COMMUNITIES: *Recommendations To Reduce And Prevent Obesity*

Root Causes	Problem	CDC Recommended Strategies	CDC Recommended Actions	Existing Strategies that the Plan will Build On
Food/Nutrition				
Dietary Behavior	• Increased consumption of sugar sweetened beverages • Low consumption of fruits & vegetables • Inappropriate consumption of processed and prepared foods, and convenience foods • Lack of knowledge related to overweight and healthy eating	• Improve dietary quality	• Increase consumption of fruits and vegetables • Decrease consumption of sugar sweetened beverages • Decrease consumption of high energy dense, nutrient poor foods • Raise consumer awareness about reasonable food and beverage portion sizes • Expand efforts to encourage healthy eating patterns, consistent with the Dietary Guidelines for Americans	• 543210 Go! Campaign (children) • Health Risk Assessment and personal plans via Healthy Michigan website (adults) • Community-based nutrition education programs • MQIC guidelines for childhood and adult obesity for physicians and other health professionals
Food Environment	• Increased number of fast food stores • Lack of access to full service grocery stores selling affordable healthful foods • Unhealthy food/beverage advertising aimed at children	• Promote the availability of affordable healthy food and beverages • Improve the nutritional quality of the food supply	• Increase availability of healthier food and beverage choices in public service venues • Improve availability of affordable healthier food and beverage choices in public service venues • Improve geographic availability of supermarkets in underserved areas • Provide incentives to food retailers to locate in and/or offer healthier food and beverage choices in underserved areas. • Improve availability of mechanisms for purchasing foods from farms • Provide incentives of the productions, distribution, and procurement of foods from local farms • Support local and regional farm-to-table efforts	• Nutrition standards for the school campus • Access to healthy food through healthy food retail • Access to healthy food through community and school gardens • PA 231-provides tax incentives to food retailers to locate in underserved areas • School breakfast expansion • Project Fresh • Farmer markets and other retail outlets with fresh food • State Board of Education passed Michigan Nutrition Standards in October 2010. (voluntary) • Licensed childcare nutrition regulations • Faith-based mini markets • Healthy Communities grants to local health departments to implement policies and environmental changes that support healthy eating

Appendix D

CDC HEALTHY COMMUNITIES: *Recommendations To Reduce And Prevent Obesity*

Root Causes	Problem	CDC Recommended Strategies	CDC Recommended Actions	Existing Strategies that the Plan will Build On
Food/Nutrition				
Food Environment		• Support healthy food and beverage choices	• Restrict availability of less healthy foods and beverages in public services venues • Institute smaller portion size options in public service venues • Limit advertisements of less healthy foods and beverages • Discourage consumption of sugar-sweetened beverages • Implement nutrition standards and policies in institutions and state supported programs	• Healthy Communities grants to local health departments to implement policies and environmental changes that support healthy eating • Michigan Nutrition Network • MI Hospital's STAR Program
Infant Feeding Practices	• Low breastfeeding rates	• Encourage breastfeeding initiation, duration and exclusivity	• Increase support for breastfeeding	• Breastfeeding Peer Support • Breastfeeding media campaign
Physical Inactivity	• Decrease in the recommended amount of physical activity • Decrease in active transportation • Increase in TV viewing and screen time • Lack of knowledge related to overweight and physical activity	• Encourage physical activity or limit sedentary activity among children and youth • Increase physical activity where people live, work, learn and play	• Increase physical activity • Require Physical Education in schools • Increase the amount of physical activity in schools • Increase opportunities for extracurricular physical activity • Reduce screen time in public service venues • Encourage the use of school facilities for physical activity programs offered by the school and/or community-based organizations outside of school hours	• Michigan Model for Health in schools (health ed. curriculum) • Exemplary Physical Education Curriculum in schools (EPEC) • Shaping Positive Lifestyles and Attitudes through School Health (SPLASH) in low-income schools • Licensed childcare physical activity and screen time regulations • Community-based physical activity programs

Appendix D

CDC HEALTHY COMMUNITIES: *Recommendations To Reduce And Prevent Obesity*

Root Causes	Problem	CDC Recommended Strategies	CDC Recommended Actions	Existing Strategies that the Plan will Build On
Food/Nutrition				
Community Design & Built Environment	• Lack of infrastructure: sidewalks, bike facilities • Lack of access to safe places to play and be active • Lack of access to public transit • Limited mixed use & transit oriented developments	• Create safe communities that support physical activity • Facilitate access to safe, accessible and affordable places for physical activity	• Improve access to outdoor recreational facilities • Enhance infrastructure supporting bicycling • Enhance infrastructure supporting walking • Support locating schools in residential neighborhoods • Improve access to transportation • Zone for mixed-use development • Enhance personal safety where people are or could be physically active • Enhance traffic safety in areas where persons are or could be physically active • Promote Safe Routes to School	• Improved parks, playgrounds, walking and biking trails • Complete streets and safe routes to school. 2010 House Bills 6151 and 6152 passed to increase number of roadways designed with all users in mind • Healthy Communities grants to local health departments to create policies and environmental changes that support physical activity • Safe Routes to School Program
		Settings: Home and Family, Schools and Childcare, Community, Worksites, Healthcare		
		Partners: Food and beverage industry, agriculture, education, media, government, public health systems, healthcare industry, business and workers, land use and transportation, leisure and recreation.		

[Excerpts from CDC Healthy Communities: What Local Governments Can do to Reduce and Prevent Obesity, CDC's Winnable Battles, and National Prevention Strategy]

Appendix E

NATIONAL HIGHLIGHTS

WEIGHT OF THE NATION

The Weight of the Nation is a presentation of HBO and the Institute of Medicine, in association with the Centers for Disease Control and the National Institutes of Health. It is one of the most far-reaching health campaigns on this epidemic to date. Comprising four documentary films; a two-part HBO family series; a robust website and social media campaign; a book; and a nationwide outreach campaign to more than 40,000 community organizations. This campaign aims to mobilize action to slow, arrest, and eventually reverse the prevalence of obesity and bring the nation to a healthier weight (www.hbo.com/theweightofthenation).

USDA IMPROVEMENTS IN SCHOOL MEALS

USDA released new standards for school meals that will result in healthier meals starting in school year 2012-2013. Changes include:

- Ensuring students are offered both fruits and vegetables every day of the week; and increasing offerings of whole grain-rich foods.
- Offering only fat-free or low-fat milk.
- Limiting calories based on the age of children being served to ensure proper nutrition.
- Reducing the amounts of saturated fat, trans-fats and sodium.

BRIGHT HORIZONS CHILD CARE COMMITMENT TO PREVENT CHILDHOOD OBESITY

Bright Horizons is committing to continue advancing their nutritional, physical activity and long-standing screen time policies and practices with the goal of having their nearly 600 U.S. child care centers and schools pass a public evaluation of their commitment to healthy practices. The standards Bright Horizons will meet are taken in large part from the Early Childhood Settings guidelines developed last year in conjunction with the American Academy of Pediatrics, the American Public Health Association and the U.S. Department of Health and Human Services.

Head Start joined Bright Horizons in making a pledge to implement policies to help end childhood obesity in their child care centers.

LET'S MOVE! CAMPAIGN

Let's move! is a comprehensive initiative dedicated to solving the problem of obesity within a generation. Let's Move! has sparked national awareness and attention among all sectors of the nation. This past year, groundbreaking legislation ensuring all children have healthier food in school was passed; Walmart announced a Nutrition Charter to bring healthier and more affordable foods to their stores; national sports leagues are operating clinics across the nation to encourage children to be physically active for 60 minutes a day; and Let's Move! has also released new public service announcements to help parents make healthier food choices and be more physically active with their families. More than 500 communities across the nation have signed up to be a Let's Move! city or town committed to improving the health of their residents.

AMERICA'S GREAT OUTDOORS

America's Great Outdoors promotes efforts to conserve outdoor spaces and to reconnect Americans to the outdoors. It supports local efforts which promote active living by supporting efficient transportation networks that connect people in both urban and rural communities to parks and other outdoor recreation venues.

FLAVORED MILK IN SCHOOLS

Milk companies across the U.S. are reformulating flavored milk to lower total calories, and decrease added sugars and fats, while preserving its nutritional value and taste appeal.

Flavored milks in school cafeterias this fall are projected to have:

- 134 calories on average, and nearly all flavored milk will have fewer than 150 calories.
- Only 31 calories more than the white milk in school.
- 38% less added sugar than just five years ago (from 16.7 grams to 10.4 grams).

Work continues to get school milk to 150 calories or less and fewer than 22 grams of total sugar 9or 10 grams of added sugar) per 8-ounce serving. Already, the most common flavored milk this fall will beat the goal—fat-free chocolate milk with 140 calories and only 10 grams of added sugars.

Two-thirds of milk processors (66%) throughout the country have reformulated new flavored milks for back-to-school.

PARTNERSHIP FOR A HEALTHIER AMERICA

DARDEN'S PLEDGE TO IMPROVE MENUS IN THEIR RESTAURANTS

Guarantee a fruit or vegetable will be the default side for every kid's menu item at those restaurants offering a default side on the children's menu: Bahama Breeze, LongHorn Steakhouse and Red Lobster.

One percent milk will be the default beverage, provided automatically if no alternate beverage is requested. Milk will be prominently promoted on the menu and made available with free refills.

Improve the nutritional content of one or more children's menu items to provide equal or less than 600 calories, 30 percent of total calories from fat, 10 percent of total calories from saturated fat, and 600 mg of sodium.

Appendix F

COMBATING OBESITY IN THE STATE OF MICHIGAN

University Perspective on Root Causes, Review of Current Interventions, and Discussion of Gaps and Opportunities

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FRAMEWORKS FOR UNDERSTANDING THE ROOT CAUSES OF OBESITY

Recent discussion among Michigan policymakers, researchers and practitioners has focused on identifying the 'root causes of obesity.' If we were to take the simplest path to a root cause, we need look no further than the energy balance equation:

energy intake – energy expenditure = weight status

On average, people today consume more calories than they expend, resulting in weight gain. Thus, efforts to prevent and control obesity are aimed at rebalancing this equation with respect to individuals. The optimal balance depends on an individual's current weight status and age. For example, adults with healthy weights should aim to maintain energy balance, while overweight and obese adults should try to achieve negative energy balance to decrease their weight status. In order to support healthy growth and development, a staged approach is recommended to slow the pace of weight gain, depending on children's weight status [1, 2].

Obesity is a term used to identify weight ranges that are above the weight that is considered healthy for a given height. Body mass index (BMI), a ratio of weight and height [wt (kg)/ht (m)2] is used to define obesity ranges because a high BMI correlates with the amount of body fat in most people. Different BMI cutoffs define obesity in adults and youth. Weight status ranges for children account for physical growth and the differences in body fat at various ages in boys and girls. Therefore, CDC reference growth curves are used to determine percentiles of BMI-for-age and sex for children aged 2-19 years [3].

	OVERWEIGHT	OBESITY
Adults [4]	BMI = 25.0-29.9	BMI > 30.0
Children 2-19 years [5]	BMI > 85% tile and < 95% for age and sex	BMI > 95% tile for age and sex

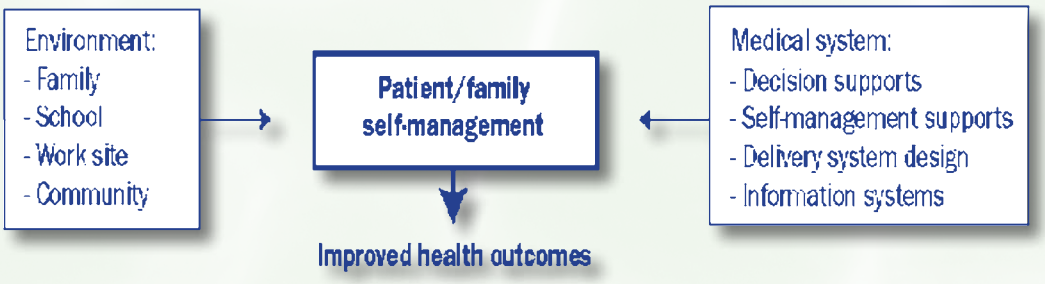
Obesity trends in adults and children defy simple solutions. Over the last decade, frameworks for understanding causes and designing interventions to reduce obesity in population-based settings have emphasized that health behaviors related to energy balance—such as, diet, physical activity and television viewing—are influenced at multiple levels. Rather than viewing obesity as an acute disorder that could be treated over a few months, both clinical and public health perspectives shifted dramatically—to portray obesity as a complex chronic condition or set of conditions [6, 7].

In 2000, the World Health Organization (WHO) set the stage by advocating a new taxonomy that marked a change from traditional classification of primary, secondary, and tertiary obesity prevention based in clinical outcomes [8]. Instead, the WHO proposed an alternative classification appropriate to chronic, multi-factorial conditions based on level of intervention:

- **Targeted prevention:** Management protocols for individuals
- **Selective prevention:** Programs & policies in organizational settings
- **Universal/public health:** Socio-cultural & physical environment

The chronic care model [9] adapted by the Centers for Disease Control and Prevention (CDC) to frame health plans' role in preventing and controlling pediatric obesity [10], recognizes that 'self management' by the family depends not only on support from health care providers, but also on 'complementary changes in schools and communities to support evidence-based strategies.' An expert committee composed of the American Medical Association, HHS's Health Resources and Services Administration, and CDC members similarly concluded that in order to effectively address obesity prevention, health care providers and systems will need to change their organizational approach. The committee concluded that integrating community resources, health care, and patient and family self-management would make care more comprehensive and useful for individuals and their families [1].

Figure 1: The Obesity Care Model [9, 10]



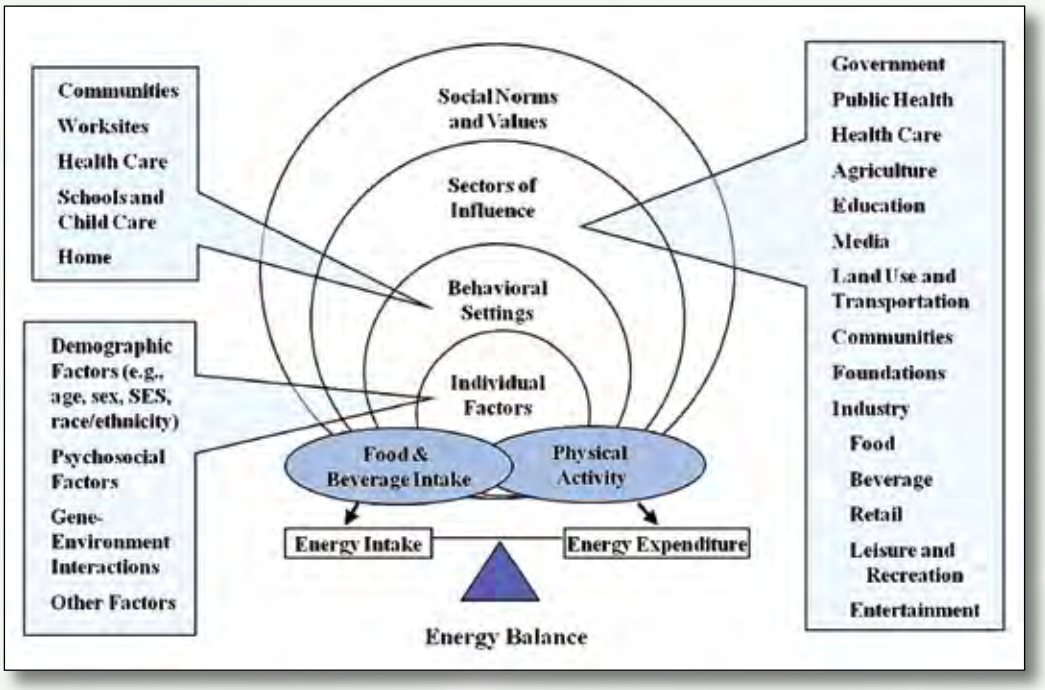
This model suggests that providing a continuum of care from prevention through control and management will likely be most effective in reducing obesity in individuals and across the population. The role of the medical system in the Obesity Care Model is to provide access to resources that will help patients and their families address their health issues [10]. In this model, health care providers realize the beneficial impact that a supportive environment can have on a patient's health and encourage patients to utilize health and weight management resources available in their home, school, work site, and community settings [10].

In the public health arena, researchers and practitioners responding to a 2005 'call to action' by an Expert Committee convened by the Institute of Medicine (IOM) [11] mounted myriad interventions to reduce child obesity. These efforts predominantly have been guided by the social ecologic model [12]. The framework portrays an individual's health behaviors and status as the result of influences at the individual, interpersonal (home, family, peers), organizational (school, worksite, health clinic), neighborhood/community, and societal levels.

Among adults, the social contextual model for promotion of health behaviors to reduce risk of chronic disease also emphasizes interactions across levels of influence and highlights the importance of factors such as culture, race/ethnicity, and socioeconomic status that must be addressed to reduce health disparities [13]. The International Obesity Task Force goes a step further, describing a framework and process for linking research on root causes of obesity to actions—programs and policies to prevent and control obesity—based on evidence for intervention effectiveness [14].

In 2007, the IOM reframed 'root causes' of obesity according to key arenas for action, shown in Figure 2 [15]. While management of obesity in the past may have focused on individuals' dietary and physical activity behaviors affecting 'energy balance', the IOM framework tackles determinants by highlighting behavioral settings, sectors of influence and social norms and values. It has become increasingly clear that obesity prevention efforts need to target systems change rather than rely primarily on promotion of individual behavior change [11, 16, 17]. That is, for individuals to adopt recommended eating and physical activity, the environments in which they spend time and the people that care for them in these settings must promote and support healthy lifestyles.

Figure 2. IOM Framework for Preventing and Addressing [15]



EFFECTIVENESS OF CURRENT INTERVENTIONS

Current obesity prevention and treatment interventions are often aimed at behavioral settings where individuals spend much of their time. This approach directs efforts to alter the person's immediate environment in an attempt to facilitate a healthy weight and lifestyles. Evidence for the effectiveness of obesity interventions in children and adults will be arranged by behavioral settings as outlined by the 2007 IOM report including: the home, schools and child care centers, worksites, health care, and communities [15].

Home Interventions

Despite evidence that parents and caregivers play an essential role in preventing childhood obesity [18, 19], limited research considers home-based interventions for childhood obesity prevention. Only four of the 147 studies in a comprehensive intervention review occurred in the home. All of the home interventions included a small number of participants and lasted for fewer than 15 weeks [20].

- One study provided televisions (TVs) contingent upon use of a stationary exercise bicycle to the homes of 10 obese children. After 10 weeks, children who had to pedal the bike to watch TV had significant reductions in percent total body fat (-1.2%) and percent leg fat (-1.6%) [21].
- An eight-week home internet intervention following a four-week summer camp for African American girls with a BMI >50th percentile. At the end of the 12-week intervention, there was no difference in BMI between children in the control and intervention groups. However, children in the intervention group consumed fewer calories, a lower percent of calories from fat, more water and fewer sweetened beverages than the control group [22].
- Peer educators met with overweight mothers of 1-3 year olds in their homes for 16 weeks to provide lessons on obesity prevention in the children. Children of mothers receiving parenting support from the peer educator consumed fewer calories and had greater decreases in weight-for-height z-scores over the 16-week intervention; these indices increased among children of mothers in the control group [23].

- Providing non-sweetened beverages, such as bottled water or diet soft drinks, iced tea or lemonade, for an adolescent and her family members weekly for 25 weeks decreased consumption of sugar-sweetened beverages (SSB) by 82% and resulted in a non-significantly smaller increase in BMI over time for adolescents in the intervention group. However, adolescents in the highest third of all BMIs at baseline had a significantly greater decrease in BMI than adolescents not receiving non-caloric beverages [24].

Among adults, home interventions also may impact spouses' weight status. Spouses of intensive lifestyle intervention participants lost more weight than spouses of control participants [25]. In another study, wives were given information on how to alter the home food and activity environment and were told to monitor their husbands' behaviors and health. The study showed that wives participating in this lifestyle intervention on their husbands' behalf led to significant weight loss in the husband [26].

Child-Care Interventions

Although 62% of children less than six years of age now attend child care outside of the home, [27], relatively few studies have evaluated interventions in this behavioral setting. A review of 42 studies on the role of child care in preventing childhood obesity suggests that child care settings provide an opportunity to improve young children's health through nutritious food, physical activity, promotion of healthy behaviors by child care providers, and the use of health education resources [28]. Nevertheless, only two of the 42 intervention studies (summarized below) influenced child weight status and both interventions included multiple components targeting dietary, physical activity, and sedentary behaviors [29, 30].

Hip Hop for Health Jr., a health-promotion program incorporating brief lessons and physical activity three times per week for all African American and Latino children in selected Chicago-area Head Start programs, found smaller increases in BMI for African American children in the intervention group (0.06 kg/m2) compared to controls (0.59 kg/m2) after one year and two years (0.54 vs 1.08 kg/m2) [29]. The same program had no effect on BMI of Latino preschoolers after one or two years [31].

A 14-week dietary and physical activity intervention was evaluated 54 preschool age children in Israel, 20-23%were overweight or obese. Among children in the intervention group, the following positive changes were observed: a 3.8 decrease in BMI percentile, a decrease in percent total body fat mass, and an improvement in fitness endurance time [30].

Due to the importance of preventing childhood obesity at increasingly younger ages, many organizations recently have reviewed the evidence and made recommendations to guide on obesity prevention efforts in child care. An expert committee convened in 2011 by the IOM recommended that child care providers be required: 1) to provide physical activity, decrease sedentary time, and provide safe drinking water and nutritious food consistent with the USDA-funded Child and Adult Care Food Program, 2) to demonstrate responsive feeding practices for the children and 3) to promote age-appropriate sleep durations [32]. The Academy of Nutrition and Dietetics released benchmarks for nutrition in child care to improve children's nutritional status and instill healthy behaviors at an early age [33]. These recommendations include providing food that meets the current Dietary Guidelines for Americans for children [34], having child care providers model healthy eating behaviors, and offering nutrition education for child care providers, children, and families at the child care center [33].

General limitations of studies in the area of child care-based obesity prevention interventions include:

- Data from Head Start, a federally-funded preschool program for low income families, suggest that children in some ethnic groups, specifically Mexican (29.0%) and Middle Eastern (19.0%), have a greater proportion of overweight children than Caucasian preschoolers (11.3%). In addition, data show that preschoolers who speak English as a second language are 75 times as likely to be overweight than those who speak English as their primary language. The disproportionate prevalence of overweight and obesity among children of some racial/ethnic groups supports the need for culturally tailored prevention and intervention programs [35].
- Head Start monitors students' height and weight, but has no centralized reporting system or database for this information [36, 37]. Federal studies of the Head Start program do not include anthropometric data [38, 39], so programs must evaluate their regional obesity rates and compare them to national averages for children of the same age [40, 41].
- Childcare and home care-giving practices both impact a child's attitudes and behaviors towards food, activity and health and it may be difficult to determine effects attributable solely to the childcare interventions.
- Due to the limited number of studies conducted in child care settings, no reviews or meta-analyses are available; therefore results of individual reports were used for this document.

School Based-Interventions

Schools are logical places to implement weight control programs since children spend a significant portion of their time at school. Schools also have the potential to positively impact children's health behaviors through health and nutrition education, inclusion of regular physical activity, and provision of healthy food for breakfast, lunch, and after-school snacks.

- Interventions, aimed at children in late elementary school or early middle school, appear to be more effective than those aimed at adolescents [42].
- Treatment effects are usually greater for heavier children compared to lean children participating in the same intervention [42].
- Some studies suggest multi-component interventions are related to larger reductions in weight than single component interventions [42], but others find no difference between the two program methods [43]. Multi-component interventions consist of interacting components such as: school environment, food service, physical education classes, social support services, health instruction, school-site health promotion for school faculty and staff, integrated family and community health promotion efforts [42].
- Interventions addressing both nutrition and physical activity have greater weight loss effects than those focusing on diet or activity alone [44].
- Physical activity appears to have a strong gender-specific effect with activity interventions reducing weight in overweight girls while having no effect on boys [43-46].

School-based intervention components that are suggestive of improved outcomes include:

- Parental involvement [42, 44].
- Classroom/afterschool instruction on improving dietary intake or increasing physical activity, participatory/hands-on skill building, provision of print materials, teacher training for program

implementation, student competitions, improvements to school cafeteria, implementation of physical activity programs, modifications of frequency or intensity of existing physical education, use of non-competitive physical activity, training in behavioral techniques/coping skills, and program tailoring for cultural relevance [42].

General limitations of studies in the area of school-based obesity prevention interventions include:

- Most programs target children who are already overweight to promote weight loss; few programs are designed as prevalence interventions for promotion and maintenance of a healthy weight among all students [42].
- Most studies use multi-component interventions, so it is difficult to distinguish whether some or all intervention components are responsible for the weight and health outcomes [42, 47].
- Follow up time for many of the studies is short, often six months or less, so it is impossible to know if the observed changes remain over time [42].
- Outcome measures between studies differ, making it difficult to compare results [42, 45].

Worksite Interventions

Worksite wellness programs have become increasingly popular over the past decade as employers realize the potential benefits and cost-savings of healthy employees. Since many adults spend a substantial portion of their waking hours at work, this approach has the potential to greatly impact adults' health behaviors. Similar to the school environment for children, worksites are often a source of food during the day, and can potentially serve as a location for physical activity. Cost-effectiveness estimates for worksite interventions range from $1.44 to $4.16 per pound of body weight lost, in comparison to the estimated $3,116-$7,504 lifetime savings in medical expenses per obese adult who loses 10% of their body weight [48]. After 6-12 months of participation, adults in worksite wellness interventions average a 2.8 lb weight loss [48].

- The following interventions have shown success in terms of employee weight loss: enhanced access to physical activity opportunities in conjunction with health education (median effect size of weight change -3.24%), exercise prescriptions alone (median effect -4.84 lbs), weight loss competitions with incentives (median effect -6.51 lbs, -1.58% change in body fat), behavioral practices with incentives (median effect -6.24 lbs), behavioral practices without incentives (median effect -5.81 lbs) [49].
- Randomized-controlled trials of worksite weight reduction programs show those that include both diet and physical activity have a larger impact on weight (-3.81lbs) (mean weight loss of 4.4-26.4 lbs in other meta-analysis, [49]), than diet (-1.71lbs) or exercise (-2.24lbs) alone [48].
- In general, multiple-component programs lead to greater weight loss than single-component interventions [48, 50, 51]. However, greater weight loss is observed among certain types of employees: older participants, women, those with higher baseline motivation and confidence in their ability to make behavioral changes, and those with a higher baseline BMI [51].
- Structured programs that consist of individual or group lessons for behavioral skill development or physical activity have greater weight loss benefits than self-directed programs [48].
- Interventions that follow information-giving or educational approaches to lifestyle changes are less effective than interventions that incorporate behavioral counseling [48].

- There is no difference in the effectiveness of the intervention conducted by a professional compared to a lay group leader [48], nor is there a difference in weight loss success for interventions conducted in-person compared to online [52].
- Cultural tailoring of worksite interventions may lead to greater weight loss, as observed in a small study of African American women who had greater weight loss and decreases in waist circumference and a significant improvement in quality of life after a 22-week tailored intervention, compared to women in a non-tailored intervention [53].
- Worksite interventions may have positive impacts on spousal weight, similar to home-based interventions for adults. A two-year weight loss program for men in Israel found that men whose wives attended some of the group meetings lost more weight at six months. Change in weight, between husbands and wives, was significantly correlated [54].

General limitations of studies in the area of worksite obesity prevention interventions include:

- There are few primary prevention interventions. Most programs target adults who are already overweight to promote weight loss; few programs are designed as general education for all employees for the promotion and maintenance of a healthy weight [45, 48].
- Weight regain is common after an intervention finishes, so it is important to reassess intervention participants' weight status 6-12 months after the program completes [49].

Health Care Interventions

Clinicians may need training on how to discuss the implications and prevention strategies of obesity while avoiding stigmatization of the patient [55, 56]. Health Care interventions include three major types of interventions: behavioral, pharmaceutical, and surgical.

Behavioral Health Care Interventions

- In children, low-intensity, short-term (6-12 months) behavioral interventions have shown minimal weight loss at best, with the majority of obese children remaining at or above the 95th percentile of reference growth curves after the interventions [57, 58]. Other interventions show no change in weight in overweight children after one year [59].
- Moderate- to high-intensity behavioral interventions in children show significant difference in mean BMI change (7-9%) between treatment and control groups [60, 61].
- Studies in health care settings aimed at preventing excessive weight gain in children have mixed results, with some studies demonstrating BMI maintenance at 12 months after the intervention [60, 62] while another study showed no sustained benefit of the intervention on weight status [63].
- Adolescents who participated in a four-month behavioral weight control program that integrated a baseline clinic visit with computer and bi-weekly telephone follow-up had greater change in BMI z-score than adolescents who only had one clinic visit with a health care provider [64].
- Adults who are told to lose weight by a health professional but are given no support from a weight management program and those participating in interventions involving exercise alone have minimal weight loss at one year [65].
- Adult interventions addressing diet alone and diet and exercise combined show benefits at six months (-4.9 and -7.9kg, respectively) but weight loss often plateaus after six months. Weight regain is common with an average of only 3-4kg total weight loss from baseline after four years [65].

- Non-African-American patients in programs with more than 12 annual clinic sessions [66], programs lasting more than two years [66, 67] or programs that include energy restriction or increased physical activity [67] have greater weight loss. However, total weight loss is still relatively minimal (2-7kg) in these programs [66].

- Very low energy diets (800-1000kcals per day) have the most drastic effect on short-term, non-surgical weight loss with an average of 17.9kg lost at six months. However, weight regain is common and rapid with patients regaining an average of 12kg by 36 months [65].

Pharmaceutical Health Care Interventions

- Weight outcomes from Orlistat trials among children are mixed; a 12-month study found a decrease in BMI [68], but a smaller, six-month trial found no difference in BMI between intervention and control children [69].

- Although weight loss plateaus are observed in adults on Orlistat after six months, the average weight loss maintained at the plateau (7.7kg) is greater that weight maintenance after behavioral interventions (3-4kg) [65]. Weight outcomes were not reported for any trials after Orlistat therapy was ended [66].

Surgical Health Care Interventions

- Children who undergo Laparascopic Adjustable Gastric Banding (LAGB) have significant weight loss at six (5.0-8.1kg) and 12 months (9.4-10.2kg) post-operatively [70-72]. Many children retain some weight loss two to three years after surgery [70, 71, 73, 74].

- The more radical, Roux-en-Y Gastric Bypass (RYGB) surgery yields greater weight loss in children with 15-20 kg losses one year post-operatively. However, some children (~7%) regain as much as 50% of the lost weight [75, 76].

- RYGB surgery produces the largest weight loss of any intervention in adults also. Surgical management of adult obesity is more costly that non-surgical weight management but produces greater weight loss and a greater decrease in co-morbidities [77].

Consequences of tertiary treatment for obese children and adults may include the side effects of weight loss pharmaceuticals and surgical complications.

- Mild-to-moderate gastrointestinal side effects were reported in both Orlistat trials [66, 68, 69, 78]. A 12-month study of adolescents reported one instance of asymptomatic cholelithiasis, but 32 cases of serious liver injury in adults have been reported [78]. The FDA has requested that stronger warnings be put on the Orlistat and Alli (non-prescription version of Orlistat) labels for potential adverse health effects. Orlistat interferes with absorption of fat-soluable vitamins, so levels need to be checked [66, 78].

- Abbott Laboratories voluntarily removed Sibutramine, a second pharmaceutical agent that was used for clinically induced weight loss, from the U.S. market in October 2010 due to serious cardiovascular side effects [79].

- LAGB side effects include: wound infection, band slippage, repositioning, removal, nutritional deficiencies, hiatal hernia, gastroesophageal reflux disease [70, 80].

Web-based Interventions

Obesity interventions aimed at individuals have traditionally been directed by physicians and other health care professionals in individual patient care visits. Due to the relative omnipresence of the internet, web-based interventions for health behavior change, health education, and counseling have increased in popularity over the past decade. In many cases, health care professionals are still facilitating the information exchange. Web-based interventions be an efficient and cost-effective mechanism for dispersing health promotion materials and resources to a greater number of individuals [81].

- Enrollment into web-based programs seems to be greater among adults who receive a personal letter from a health professional than among adults who receive a general newsletter with the information [81].
- A tailored, web-based intervention, developed by the Center for Health Communications Research, University of Michigan, containing motivational interviewing-based counseling via email, effectively increased fruit and vegetable consumption over 12 months. The intervention was administered to patients of five health plans in different geographic regions of the U.S. with web content tailored for participants by study staff and email counseling provided by trained study counselors from the University of Michigan [82].
- The content and mode of presentation of information also impact success in health outcome achievement; study participants prefer tailored messages and had greater weight loss after six months compared to participants just receiving general health information [83, 84].

Web-based interventions have the potential to reach a large proportion of the U.S. population. Future intervention development will need to consider how to target and effectively enroll individuals who do not regularly receive health care [85] since web-based interventions may be a primary source of health information for these populations [81, 85, 86]. More research is needed to determine how to improve participation from more socioeconomically and racial/ethnically diverse populations [86]. Participants in web-based interventions are more likely to be women with higher education and higher income with a majority of white respondents [83, 86]. However, one study found equal or greater participation in a web-based intervention among participants who were older, heavier, diagnosed with cardiovascular disease or type 2 diabetes, or were members of a racial/ethnic minority group [81]. Program adherence and motivating continued participation over an extended time period are current challenges of web-based interventions [81, 83, 85, 86]. A recent study of 51, obese adults found that adding a technology component to weekly weight loss meetings provided similar if not greater weight loss and changes in physical activity over six months, compared to the standard weekly meetings alone. This supports the efficacy of using technology as a clinical alternative for individual weight loss interventions [87].

Community-based Interventions

The community in which an individual lives, can serve as a foundation of resources to support a healthy lifestyle. In the IOM framework (Figure 5), communities may be viewed as both a behavioral setting and a sector of influence. Community infrastructure and interventions impacting socioeconomic status and the built environment reflect a Sectors of Influence [11]. Whereas many behavioral settings, such as the schools, workplaces, places of worship, recreational and entertainment centers, and restaurants may promote common health behaviors in a community [11]. Programs and resources within a community that impact motivation, remove barriers, address local cultural influences and support healthy lifestyles can be considered part of an individual's Behavioral Setting.

- Integration of interventions in multiple behavioral settings within a community are effective at promoting healthy behaviors and preventing excess weight gain in preschool and elementary children [88].
- Shape Up Somerville, a three-year community-based intervention, including a community advisory council, local 'champions', City Employee wellness campaign, farmers market initiative, monthly newspaper column, restaurant approval ratings, physician trainings, and community health events, decreased BMI z-score of elementary school students, compared with children in control schools [89].
- Interventions provided through faith and community based organizations have greater weight loss results and higher participant retention rates than traditional, clinically based interventions in adults from minority populations [90].
- Reducing the price of fruits, vegetables, and healthier snacks in cafeterias and vending machines results in increased purchasing of healthier foods. Subsidizing the price of healthy foods in vending machines on a college campus increased the amount of healthy foods purchased by 16% [91], 400% fruit and 200% vegetables in school cafeterias. [92-94].
- Providing coupons and incentives for purchasing healthier foods are linked to increased purchase and consumption of healthier foods in many populations, including: college students, recipients of the Supplemental Nutrition Program for Women, Infants, and Children (WIC), and low-income seniors [95-97]. For example, Double Value Coupon incentive programs increased use of SNAP and WIC checks at the markets by 300% in the first year [98].

Lessons from Current Interventions

Behavioral settings [15] remain an important arena for action to reduce obesity across the lifespan. Across different settings, a number of interventions have shown promise in improving health behaviors that influence energy balance, reflected in weight status in children and adults. Recent slowing of obesity trends [99, 100] suggests efforts may be having a combined impact. A comprehensive public health approach must ensure the continuum of care needed to both prevent and control this complex and chronic condition with lifelong consequences [10]. The World Health Organization's paradigm from 2000 highlights the central role of behavioral settings, ranging from health care, schools and worksites, in managing obesity at different levels of intervention [8]. **Targeted** management protocols for individual children who are overweight and obese and their families, **Selective** programs and policies aimed at reducing obesity incidence and prevalence in organizational settings; and **Universal** strategies that optimize the socio-cultural & physical environment are all necessary to tackling obesity trends.

Programs implemented in behavioral settings in some sense consider all individuals an organization serves to be 'at risk', given the high prevalence of obesity and rising incidence with age. 'Setting-specific' approaches can complement targeted clinical management protocols by providing programming, incentives and organizational environments to promote healthy eating and physical activity opportunities for overweight and obese individuals, while preventing those with normal weight status from becoming obese. Nevertheless, community-level mechanisms to foster interconnections across settings are needed. The need to develop new and support existing community coalitions was strongly recommended by state-wide obesity experts at the September 2011 Michigan Obesity Summit and echoed in Governor Snyder's 2012 State of the State address with the unveiling of the Pure Michigan Fit pilot program, continued support of the Economic Vitality Incentive Program, and recognition of a continuing need for infrastructure support across the state.

Public health practitioners, clinicians and researchers can take additional steps to improve the modest effectiveness of obesity prevention and control in behavioral settings.

1) Consider mechanisms to screen and refer those who are already overweight and obese to providers offering targeted clinical management. Although somewhat controversial, BMI screening in behavioral settings, e.g., primary health care [101], schools [102, 103] and worksites may offer the potential for early identification and facilitate individuals' access to health care and treatment of severe obesity and co-morbities.

2) Recognize one size may not fit all and create or adapt interventions that target those most at risk of obesity and who are most likely to respond. Interventions implemented in key transitions across life course, tailored to socio-cultural preferences and use novel technologies may amplify organizations' effectiveness not only in changing behaviors but also impact obesity and related metabolic conditions.

3) Evaluate not only whether programs are effective in reducing obesity, but also document how and why they work [104]. Few evaluations have incorporated an operational research component, essential to understanding the processes and infrastructure required for implementation in different organizational and community contexts [105-108]. Qualitative research and process implementation evaluations conducted through collaborations with public health partners can ensure the effectiveness of programs when they are brought to scale.

4) Advocate broader systems level change by implementing programs and policies in behavioral settings that are consistent with public health guidelines at state and national levels, e.g., Healthy Kids Healthy Michigan, school wellness policies, Dietary Guidelines.

EMERGING RESEARCH

Obesity remains a public health crisis, demanding ongoing research into causative factors and health impacts that may guide future recommendations for the prevention and treatment of obesity.

Causative Factors

Diet and physical activity are the two main behaviors commonly identified for their proximal impact on weight status and therefore obesity development. However, other factors impact an individual's susceptibility to develop obesity more subtly and earlier in life [109, 110]. Increasing evidence suggests that the fetal and infant environments may have a great impact on individuals' growth, development, and disease risk via gene regulation throughout the lifespan [109-113].

Low Birth Weight (LBW)

Low birth weight has been implicated as a potential factor that contributes to obesity later in life [114-117]. Prenatal stress and the lack of prenatal care are identified as contributing factors to LBW. The national average of low birth weight was 8.9% in 2009 [118]. While the rate of LBW in Michigan (9.4%) is similar to the national average, there is a significant racial disparity in Michigan with 7.0% incidence of LBW among whites but 13.9% LBW of all births for African-Americans [119]. This high rate of LBW in African Americans may precipitate the higher percentage of obesity in black adolescents and adults. Therefore, improving prenatal care to reduce the undue stress and improve nutritional status in pregnant woman will impact both state health dashboard priorities: infant mortality and obesity.

Developmental Origins of Adult Disease

At specific periods throughout the life-course, environmental exposures appear to have in increased impact on a person's health. These susceptible periods coincide with times of rapid growth: prenatal period, infancy, adiposity rebound in early childhood and adolescence [116]. The evolving field of epigenetics is investigating mechanisms to explain this phenomenon, elucidating evidence that environmental exposures may impact genetic expression [109-113]. Many man-made chemicals (phthalates, BPA, DDT, DDE, PCBs, dioxins) have been identified as endocrine disrupting chemicals, substances that influence and/or interfere with the body's natural chemical signaling network [120-122]. Exposure to these chemicals especially during the prenatal and infant periods of development appears to promote the accumulation of visceral and central subcutaneous fat [120-122]. National exposure data found that many of these man-made chemicals are ubiquitous, with detectable levels in over 90% of US adults tested [123]. Epigenetic changes caused by environmental exposure to EDCs can be passed from mother and/or father to child so that the child may never have been exposed, but if a parent was, the child's risk of obesity and other health issues may be similarly increased [124-126].

Obesity and Cognitive Functioning

Growing evidence suggests a connection between abdominal obesity in middle age and development of dementia [127-130]. Chronic inflammation is common in obese individuals and affects the functional capacity of the body's blood vessels; blood vessels of the brain are likely also negatively impacted by this inflammation [131-133]. However, overall obesity appears to be protective against dementia in old age (>65yo), potentially due to the significant weight loss commonly observed in patients with dementia [134]. A recent study of elderly adults found lower brain volumes in overweight and obese individuals than in normal weight counterparts [135].

Very few studies have investigated the cognitive impact of excessive weight in children and adolescents, so the following results need to be corroborated with additional research prior to use for specific recommendations. One pilot study found cognitive impairment in attention and executive function of 25 extremely obese adolescents (> 99th percentile for age and gender) [136]. Another study found signs of central neural impairment in obese, insulin-resistant children [137]. Gender differences in cognitive impairment were observed in a third study of children four to nine years old, with obese boys having greater impairment of gross motor skills and obese girls showing a greater deficit in their ability to focus attention [138]. There is a potential for early intervention with obese children to reverse these effects, but no research has been conducted on this topic yet.

SECTORS OF INFLUENCE

Obesity trends continue to rise despite more than a decade of experience in obesity interventions focused on behavioral settings. A new systems perspective is needed in order to address the complex issues of child and adult obesity [17]. Policy interventions have the potential to alter the food supply and marketing and the built environment, which lay the foundation for individual's choices and values within their community and environment. Therefore, these policy interventions could function as widespread obesity prevention measures, simultaneously impacting the greatest number of individuals within the population and ensuring the continued success of health promotion in behavioral settings and individualized health for obese individuals. Decreasing health disparities in obesity prevalence between population subgroups should be a goal incorporated into obesity prevention across sectors of influence. Community and systemic interventions have a promising potential to address health disparities gaps through the creation of economic stability, social capital development, access to affordable healthy food and physical activity resources via after school programs and other community resources [11, 139].

Studies relating sectors of influence to improved physical activity, diet, and weight status are reviewed below. While interventions may occur within individual communities, state and/or national government support, e.g., legislation and appropriated funding, could have a significant impact on intervention implementation [140-143].

Environmental influences on food and nutrition

- Current television advertising and food product marketing influences the diets and risk of obesity in children under age 12. [139, 144, 145] None of the ads children saw in one study were for fruits or vegetables, but more than one-third marketed candy and snacks [34].
- Children's food preferences are influenced by brand recognition [146] and the use of popular licensed characters [147]; 50% of children will choose a vegetable over a chocolate bar if the vegetable has a character sticker on it, compared to only 22% of children who chose the vegetable over chocolate without the sticker [147].
- Access to supermarkets or other retail outlets that sell healthy food is associated with greater fruit and vegetable consumption and lower BMI in adolescents [148, 149], while the availability of convenience stores is linked to higher adolescent BMI [148].
- People buy more healthy food if the prices for these foods are reduced and purchases of less healthy food decreases as their prices rise [92, 150, 151].
- Adding a tax to sugar sweetened beverages and 'junk food' results in a percent change in consumption that is usually smaller than the percent change in price [152-154], suggesting a higher tax rate may be necessary to significantly impact purchasing.

Environmental influences on physical activity

- Community-scale urban design and land use has been shown to increase physical activity levels, via increased walking and cycling [155-158] from residences to schools, workplaces, recreation areas, stores [159, 160]. Odds of obesity declined with mixed land use zoning in Atlanta, GA [155].
- Areas of low density development and urban sprawl have higher rates of adult obesity [161].
- Living in a neighborhood without access to sidewalks, walking paths, parks/playgrounds, recreation/community centers were 20-45% more likely to become overweight or obese compared to kids with access to these amenities [162].
- Access to outdoor recreational facilities with informational outreach and health education increases physical activity of child and adult community members [163-165], the perception of safety of these recreational areas increases the reported physical activity of area adults [166].
- Improving biking infrastructure, such as creating bike lanes and providing bike racks, is associated with increased frequency of bicycling [167-171].
- Increased access to parks is linked to greater physical activity in children [172] and adolescents [173]. Children's physical activity level increases when they participate in environmental education programs, which promote outdoor activities [174].
- Safety of public spaces for recreational activity is not well studied, but improving street lighting in London led to reduced crime, less fear of crime, and increased pedestrian use of the street [175].
- Increased traffic safety laws/regulations in areas of recreational activity also increase physical activity [166].

- Children who live in unsafe neighborhoods are 30-60% more likely to be overweight or obese than children living in better conditions [162].

THE NEED FOR A BROADER FOOD SYSTEMS PERSPECTIVE

The challenge in Michigan and across the U.S. today is identifying strategies for public health improvement that simultaneously address other needs. Given the reduction in public resources over the last decade this is both necessary and challenging. However, it is clear that there is a distinct opportunity in public health to link obesity reduction and prevention to economic development, environmental stewardship, agricultural production, and youth development [176, 177]. This provides a context, through the 'food intake' component of the energy balance equation, to link activities of MDCH with MDARD, DELEG, MEDC, DHS, MDE and DEQ at a minimum. The aegis for this currently is around the notion of regional food system development.

The development of robust regional food systems across the U.S. should be seen as a strategy to address the national security issues inherent to a country's food supply. The 2011 Japanese earthquake has given us a wake-up call on the risks inherent to limited supply points for key items in manufacturing -- in this case, computer chips for consumer electronics. Companies are quickly rethinking their supply chain strategies as a result and considering a move to more source points. Similarly, with our food supply (and considering only fruits and vegetables for this purpose), we are becoming more dependent on offshore sources and domestically are dependent on California for 50% of our production. In a period of rapid population growth, constraints on traditional energy sources, fresh water shortages, and projected climate change impacts, it is short sighted to rely on these ever-more-distant and narrow points of supply for critical components of our food supply. And yet, that is exactly what we are doing.

The emergence and development of regional food systems embedded in a national and global trading system offers the opportunity to decentralize production points and thus improve our national resilience as we proceed through an uncertain future. Distributing production across the country has a number of inherent advantages when viewed through a national food security lens. In addition, data demonstrates the inherent business and job development opportunities in this approach [178]. Linking obesity prevention and activities of MDCH as well as the private sector predominantly concerned with health to other state agencies and other private sectors is an opportunity to develop a myriad of businesses connected to healthy food production, processing, distribution, storage, marketing and preparation.

A broader, systems approach to obesity may benefit US populations whom are currently underserved by the health care system. These underserved populations include individuals of low socioeconomic status, low educational attainment, and diverse racial/ethnic groups [179]. Changes in infrastructure, the built environment, and cultural norms therefore have the greatest potential for positive impact in these populations who also have the greatest burden of obesity. For example, altering urban planning and rezoning land for safe recreational areas and grocery stores with healthy food options, the social default may change from driving and picking up fast food to walking or biking and buying produce.

Changing the background environment from obesogenic to healthful will not occur overnight; novel collaborations and new priorities must form. The individual struggling with her weight should not be ignored while these long-term systemic changes are taking place. The role of individual counseling will continue to be a crucial part of the fight against obesity, but as the increasing incidence of obesity over the past three decades has illustrated, this model of individual responsibility for obesity is not enough to change the tide. As the background environment becomes healthier through implementation of systemic changes, the individual clinician's voice against

obesogenic exposures and behaviors will continue to be important but it will be supported by an environment that makes their recommendations for a healthy lifestyle more realistic for the patient. The benefit of creating healthy defaults is that people commonly choose the option that is easiest and most accepted by their social network; if the option leads to lower risk of obesity and associated chronic disease the state will benefit with greater health, quality of life and lower economic costs.

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Appendix G

Michigan Call to Action to Reduce and Prevent Obesity

Obesity Summit: Work Group Recommendations

In September 2011, the Michigan Department of Community Health (MDCH) engaged stakeholders from across the state to create Michigan's Call to Action to Reduce and Prevent Obesity. The MDCH hosted a summit[1] to share information on obesity prevalence, disparities, and factors that contribute to obesity and unhealthy weight; highlight best practices, including those under way at the state and local community levels in Michigan; and ask participants to identify a limited number of priorities for addressing the issue with a focus on reducing disparity. It is the state's goal to engage and mobilize partners across multiple sectors and communities in efforts to reduce obesity. Nearly 500 summit participants were split into 20 work groups, organized by area of intervention—worksites (W); family, home, and community (F); early childhood (E); schools (S); and healthcare (H). The work groups were asked to suggest 3 to 5 top priority strategies to reduce and prevent obesity in Michigan. Summit participants were also asked to identify the priority strategies they would personally support and the specific steps they will take to help reduce and prevent obesity on a *Take Action!* commitment form.

Public Sector Consultants (PSC) compiled, reviewed, and grouped work groups' recommendations based on common themes. Five recommendations emerged that spanned all, or most, of the areas of intervention. Additional recommendations were identified specific to particular areas of intervention. Following is a synthesis of the priority strategies recommended by work groups. The five overarching recommendations are described first. Recommendations specific to the areas of intervention (e.g., worksites) are described in more detail later in this report.

OVERARCHING RECOMMENDATIONS

As work group representatives shared the recommendations from their groups, they recognized the overlap and interconnectedness of ideas, not only between work groups discussing the same area of intervention, but also across areas of intervention. For example, work groups discussing strategies for worksites offered similar recommendations as work groups discussing strategies for family, home, and community. The recommendations that predominated across work groups are as follows:

- Develop a statewide healthy living campaign (W, F, E, S, H)
- Support existing and develop new community coalitions (W, F, H)
- Create incentives to encourage healthy choices (W, F, H)
- Create disincentives to discourage unhealthy choices (W, F, H)
- Provide resources for implementation (F, S, H)

The areas of intervention from which these overarching recommendations emerged are noted above in parentheses. Each of the overarching recommendations is described below, along with suggestions for implementation that were shared by various work groups.

DEVELOP A STATEWIDE HEALTHY LIVING CAMPAIGN

At least one work group, and in some cases more than one work group, within each of the areas of intervention recommended the development of a comprehensive statewide campaign stressing

[1]The summit was sponsored by Blue Cross Blue Shield of Michigan, the W.K. Kellogg Foundation, United HealthCare Great Lakes Health Plan, and the Michigan Department of Community Health Women, Infants & Children Division.

healthy eating and physical activity. The purpose of the campaign would be to convey the urgency of addressing obesity, engage the public and partners in multiple sectors, and create synergy among all state and local efforts. The following ideas for implementation are drawn from suggestions made by one or more of the various work groups:

- **Develop a brand:** Create a healthy Michigan brand to be used in marketing and social media campaigns. The *Pure Michigan* brand was suggested by many work groups as a model, perhaps with a new component focused on healthy living.
- **Establish a state-level team of decision makers:** Convene a group of leaders, such as a Blue Ribbon Commission, to provide guidance for messaging and to create "synergy" among departments and policies.
- **Create clear and consistent messages about healthy eating and physical activity:** Create messages that include small, measurable steps individuals can take to be healthy and increase physical activity, encourage personal responsibility, promote a cultural shift from unhealthy eating and inactivity to healthy eating habits and higher levels of physical activity, reflect evidence-based standards of care, and are coordinated on a statewide basis. To support healthy messages, two work groups recommended that the state enact legislation which would limit advertising of junk food, fast food, and sugar-sweetened beverages to children.
- **Promote breastfeeding:** As part of the campaign, promote breastfeeding based on best practices, and provide leadership for the coordination of state-level policies supporting breastfeeding. Some work groups specifically recommended that the state provide coverage for portable breast pumps for Medicaid beneficiaries; shape policy to create breastfeeding friendly hospitals and worksites and promote the rights of women to breastfeed in any location; and develop insurance incentives for women who breastfeed.
- **Collect data:** Monitor and track progress by collecting appropriate data. For example, using electronic data transfer, integrate WIC and Head Start data systems to support and populate the new body mass index (BMI) module in the Michigan Care Improvement Registry (MCIR); add an adult BMI module to the MCIR; and share health indicators and evaluation strategies with partners.

Out of 218 participants who completed the *Take Action!* personal commitment form, 74 expressed support for development of a statewide healthy living campaign. Fifty individuals indicated specific steps they or their organization would be willing to take to help implement this strategy.

Support Community Coalitions

Several work groups recommended that the state utilize existing community coalitions and build new coalitions where needed to help move the new healthy living campaign forward. Community coalitions are effective because they bring together various stakeholders (e.g., businesses, schools, healthcare, government, foundations, faith-based organizations, residents) who know their community and understand the best ways to address issues locally while maximizing resources. As one work group put it, "change must happen at the local level." Coalitions can identify barriers, develop and implement plans, and provide education. Specific suggestions related to community coalitions and approaches to implementation that emerged from some of the work groups are as follows:

- **Engage community stakeholders:** Encourage various stakeholders (e.g., businesses, schools, healthcare, government, foundations, faith-based organizations, residents) to work together to develop a wellness plan, which would include identification of barriers, resources, and steps to implement change. To prevent and reduce obesity, one work group suggested developing a

"Coordinated Community Health Program" using the eight elements of the Coordinated School Health Program, as recommended by the Centers for Disease Control and Prevention (CDC), as a model.[2]

- **Create a statewide clearinghouse of evidence-based practices:** Conduct a statewide inventory of existing resources, policies, and best practices to share with coalitions across the state.
- **Engage businesses in the implementation of best practices:** Motivate stores and restaurants to provide healthy food and drink choices, help standardize information about healthy foods in eating establishments, and encourage provision of appropriate-sized portions. Work groups also recommend creating nutrition standards and encouraging public and private facilities (e.g., stadiums, parks, local businesses) to provide healthy food and less expensive alternatives to bottled water.
- **Develop toolkits:** Create toolkits that coalitions can use to support healthy living initiatives and provide consistent messages in the community. Toolkits can be designed for use by the community as a whole or tailored for restaurants, convenience stores, employers, schools, and healthcare providers. A toolkit for the community might include, for example, information on proper meal size; simple, low-cost recipes; and information to connect individuals or families to free or low-cost healthy living events. Toolkits created for worksites could include a health risk assessment tool; options for cultivating a healthy workplace (such as flex time to allow for physical activity and healthy food choices for meetings or cafeterias); information about family support systems such as mental health services; and a template for an online newsletter.
- **Monitor and reward progress:** Require coalitions to share reports and metrics on the progress they have made. Establish a system of recognition for accomplishments and exemplary programs or organizations that are promoting healthy living, such as a governor's stamp of approval.

Out of 218 participants who completed the *Take Action!* personal commitment form, 89 expressed support for development of community coalitions. Sixty-four individuals indicated specific steps they or their organization would be willing to take to help implement this strategy.

CREATE INCENTIVES TO ENCOURAGE HEALTHY CHOICES

Some work groups recommended creating incentives to encourage healthy choices on an individual as well as an organizational level. The various suggestions made by work groups are as follows:

- **Create business incentives:** Provide incentives to employers (e.g., tax breaks) to offer wellness programs (following CDC recommendations) in the workplace. Suggestions for employers include providing access to and time for physical activity and providing healthy food options for employees in cafeterias and during meetings.
- **Develop individual incentives:** Introduce a healthy behavior tax credit to provide an incentive for individual behavior change. Work with healthcare providers to determine the best criteria to measure individual progress.
- **Create community incentives:** Provide economic incentives for communities to make proactive public health choices (e.g., community master planning, development of a wellness plan).

[2] The eight elements of a Coordinated School Health Program are family and community involvement, comprehensive health education, physical education that stresses lifelong habits that promote physical activity, health services access (e.g., nurses in schools), nutrition services promoting healthy eating habits, counseling and mental health services, healthy environments (e.g., complete streets), and health promotion for team members.

- **Develop healthcare incentives:** Encourage health plans and providers to develop incentive and disincentive programs to improve population health. One example would be tying provider reimbursement to improved health outcomes for prevention of obesity. Health plans could be asked to develop their own set of incentives.

CREATE DISINCENTIVES TO DISCOURAGE UNHEALTHY CHOICES

In addition to incentives, the development of a tax on unhealthy foods and beverages was another recommendation that emerged from a number of work groups. Specific approaches suggested for introducing a "junk food tax" or "soda tax" were as follows:

- **Review best practices:** Examine what other states are doing and review existing models, such as the tobacco and liquor taxes, to develop a tax on unhealthy foods and beverages. Refer to nutritional standards to define which foods and beverages are "unhealthy" and are to be taxed.
- **Garner support:** Obtain support for disincentives from the food and beverage industry and enlist consumer support through grassroots campaigns.
- **Pilot disincentives:** Start by targeting a specific item such as sugar-sweetened beverages. Identify opportunities to pilot disincentives to encourage healthy eating (e.g., taxing retailers through city ordinances or implementing campus-wide vending machine restrictions). Evaluate the effectiveness of these pilots before expanding them statewide.

PROVIDE RESOURCES

Although work group participants acknowledge that the state has limited resources, they believe that the state needs to demonstrate its commitment to addressing the obesity crisis by devoting resources for implementation. Some work groups suggested the following ways to provide resources:

- **Maximize capacity of local communities:** Participants believe that momentum to reduce and prevent obesity is already present in many communities. Work groups recommended the state reduce duplication of effort by providing resources to build the capacity of community coalitions.
- **Reinvest revenue from taxes:** Sustain programs that support the reduction and prevention of obesity by reinvesting new revenue created by a "junk food tax" into local infrastructures, school health programs, and public health departments.
- **Create a dedicated fund:** Establish a Healthy Community Fund, similar to the federal Community Development Block Grant, and direct existing funds and new revenue to local health departments for establishment of programs at the local level.
- **Seek foundation support:** Pursue grant funds for development of a statewide healthy living campaign.
- **Obtain federal grants:** Increase state funds in order to leverage and maximize federal funding.

RECOMMENDATIONS SPECIFIC TO AREAS OF INTERVENTION

In addition to the overarching recommendations, many strategies specific to an area of intervention (i.e., worksites; family, home, and community; early childhood; schools; and healthcare) were recommended by work groups. These recommendations and ideas for implementation, organized by area of intervention, are described in detail below.

WORKSITES

- **Engage business leaders:** Convene a statewide group of business leaders to develop guiding principles and a wellness model for businesses to adopt. Communicate the stakes involved for businesses and the actions they can take. Provide incentives for businesses, such as a stipend to employers for developing an internal wellness coordinator or wellness council. Provide training and guidance for wellness coordinators on best practices.

- **Provide toolkits for worksites:** Develop comprehensive toolkits using language and images that will motivate businesses. Identify and engage experts to identify best practices and craft worksite wellness messages. Develop a brand for worksite wellness programs. (Note: This could be part of the new statewide healthy living campaign described earlier.)
- **Develop nutrition standards for worksites:** Create a "default choice" for healthy foods within workplaces across the state by creating nutrition guidelines and disseminating information on healthy food choices at meetings and in cafeterias. Encourage employers to remove or decrease availability of unhealthy food options. Educate vending machine suppliers and their customers on healthier food options to be made available for purchase. Create links between employers and local growers to increase the amount of local fruits and vegetables served in cafeterias.
- **Encourage worksite policies to increase physical activity:** Encourage employers to implement evidence-based policies, as recommended by the CDC, to create opportunities for employees to be more physically active, such as through flexible schedules.
- **Monitor progress:** Identify a method of accountability and assessment to monitor the progress of worksite wellness activities. Reward employers that are making progress, and help employers improve efforts. Conduct continuous evaluation and improvement with employers across the state.

FAMILY, HOME, AND COMMUNITY

- **Create a healthy living campaign:** Provide guidance (e.g., "where to start") that makes the goal of a healthy lifestyle obtainable. Develop clear messaging for small measurable steps that individuals and families can take to be healthy (e.g., the governor's 4x4 message). Have all state agencies use one message and brand it to make it specific to Michigan. Develop a strong social marketing campaign to support healthy living. (Note: This could be part of the new statewide healthy living campaign.)
- **Support and develop local coalitions:** Build coalitions at the local level and engage various stakeholders (e.g., businesses, schools, healthcare, faith-based organizations, foundations, residents, government) to provide local communities with consistent educational messages, identify barriers, maximize resources, and implement change. Provide funding and support to local coalitions for initiatives related to reducing and preventing obesity. (Note: This is part of the overarching recommendation for supporting community coalitions.)
- **Create incentives:** Provide financial incentives for individual behavior change by creating a healthy behavior tax credit for individuals and families. Work with healthcare providers to determine appropriate criteria.
- **Develop disincentives:** Increase disincentives by establishing a tax on unhealthy food and beverages and reinvest the revenue in local infrastructures and public health. Utilize standards for nutrition to define unhealthy foods. Address the consumption of sugar-sweetened beverages by restricting advertising and examine what other states are doing to address this issue. Gain the support of the Michigan food and beverage industry.
- **Develop community master planning standards:** Develop a "gold standard" for community master planning to include active transportation, complete streets (e.g., sidewalks, bike facilities), green space (e.g., parks), access to healthy foods and stores, zoning for community and school gardens and hoop houses, and public transportation. Assist community coalitions in providing best practice information to city planning committees to encourage use of non-sedentary options (e.g., safe streets, accessible stairs).
- **Develop nutrition standards for public facilities:** Review best practices and develop nutrition standards to encourage facilities open to the public (e.g., stadiums, parks, recreation areas) to provide healthy food options and less expensive alternatives to bottled water. Provide education on policies that promote breastfeeding in these venues.

- **Increase the availability of locally grown food:** Support state-level policies and agricultural incentives to disperse more food grown in Michigan into communities (e.g., farmers markets, corner stores, homes). Examples include increasing incentives for growing fruits and vegetables, providing forgiveness loans for hoop houses to increase year-round growing, and maximizing incentives at farmers markets (e.g., EBTs). Work with the agricultural sector to improve Good Agricultural Practices (GAP) certification to improve food safety.
- **Monitor progress:** Ensure there is an emphasis on data collection to monitor progress. Share indicators and evaluation strategies.

EARLY CHILDHOOD

- **Improve access to healthy foods for individuals and families:** Using the WIC program as a model, revise the food assistance program by creating a list of acceptable (e.g., fresh fruits and vegetables) and unacceptable (e.g., junk food, soda) foods for purchase, and provide nutrition education to individuals who receive food assistance. Subsidize the price of fruits and vegetables to increase purchase of fruits and vegetables and create incentives for increased production of Michigan fruits and vegetables.
- **Expand Michigan Nutrition Standards:** Require updated nutrition standards for all early learning and care programs by expanding Michigan Nutrition Standards to include children aged 0–5. Modernize the Child and Adult Care Food Program's (CACFP) payment program modeling WIC's success using electronic benefit transfer (EBT).
- **Reform Michigan's Supplemental Nutrition Assistance Program (SNAP):** Regulate how SNAP benefits are used and advocate for the state to continue to match federal funding.
- **Update licensing rules:** Strengthen child care licensing rules to require early childhood care providers to participate in physical activity and nutrition education as part of licensing requirements. Clarify regulations and strengthen monitoring of all childcare settings to ensure implementation of nutrition and physical activity requirements.
- **Promote breastfeeding:** Develop an education and marketing campaign on the evidence-based link between bottle feeding and obesity. (Note: This could be part of the new statewide healthy living campaign.) Eliminate formula-based gift bags in maternity units in hospitals and provide Medicaid (or other insurance) coverage of portable breast pumps.
- **Create a social marketing campaign:** Hire a social marketing firm to develop an obesity prevention campaign targeting early childhood using Facebook, Twitter, and other media. (Note: This could be part of the new statewide healthy living campaign.)
- **Consistent message:** Develop a consistent, evidence-based, standardized message for parents, healthcare providers, and the larger community. Educate providers about existing resources and connect them through existing networks. Train providers in motivational messaging to equip parents with nutrition and physical activity strategies. (Note: This could be part of the new statewide healthy living campaign.)
- **Develop a quality rating improvement system:** Work with the Early Childhood Investment Corporation (ECIC) to determine evidence-based interventions, such as those included in the Nutrition and Physical Activity Self-Assessment for Child Care (NAP SACC) program, to include in a quality rating improvement system to increase effectiveness of obesity prevention interventions.

SCHOOLS

- **Implement the Michigan Nutrition Standards statewide:** Mandate the use of the Michigan Nutrition Standards in all schools across the state, including implementing campus-wide policies in all school venues at all times. Work groups also recommended incorporating nutrition into the

curriculum, encouraging fundraising with healthy options, limiting snacks and availability of junk food in schools, cooking with fresh foods and produce in school cafeterias, and posting nutritional information and facts.

- **Improve physical education, and nutrition and health education in schools:** Adopt the Comprehensive School Physical Activity Program (CSPAP) which includes: quality physical education, physical activity during school (e.g., recess, classroom breaks), physical activity before and after school, promoting staff participation, and community involvement. Rebrand and enhance the image of physical education and nutrition and health education, and strengthen requirements to make them more comprehensive. Restructure the school day (or year) to allow for more emphasis on physical and health education.
- **Hold schools accountable following implementation of new standards:** Assess implementation by including questions on the MEAP related to health and physical education.
- **Develop and implement school health teams:** Broaden the focus and composition of school health improvement teams by including obesity prevention in their mission. Encourage school health councils to provide consistent health and education messages, pool resources, assess local needs, and develop outcome-based work plans.
- **Create school-based wellness coaches or coordinators:** Develop a position description for a dedicated health and wellness coordinator within each school to ensure and monitor adherence to nutrition and physical activity guidelines and to connect schools to wellness and physical activities in the community.
- **Increase funding for school health programs:** Tax unhealthy foods and beverages and direct new revenue toward improving school health programs.

HEALTHCARE

- **Promote coordination of services for comprehensive care for obesity prevention and treatment:** Implement policies that promote integrated care (e.g., integrating physical and mental health) to address chronic illness related to obesity. One method suggested for coordinating care is to incorporate obesity prevention and treatment into the Patient Centered Medical Home pilots running across the state. Recommendations include offering incentives to providers for achieving patient health outcomes, monitoring BMI, and implementing obesity interventions.
- **Implement complementary population management approaches:** To facilitate access to obesity-related services and encourage the implementation of evidenced-based interventions, expand the health information technology infrastructure for clinical and claims data and include adult BMI measures on the Michigan Care Improvement Registry (MCIR).
- **Restructure insurance coverage to include services for obesity prevention and treatment:** Provide incentives (e.g., pay for performance) to deliver services for obesity prevention and treatment. Provide insurance coverage for all weight-related healthcare issues across a continuum, starting with prevention. Include benefits not traditionally covered (e.g., transportation, counseling, nutrition education, breastfeeding support, home-based programs). Include coverage for specialists (e.g., exercise physiologists, bariatric surgeons, nutritionists) and over-the-counter medication for weight loss. Reimburse ongoing dietary nutritional counseling for people who are identified as at risk (e.g., pre-diabetes, high BMI, high cholesterol) before the disease process begins. Develop Centers of Excellence programs to implement best practices focused on obesity management.

- **Improve physician and other provider knowledge of obesity prevention:** Build provider capacity to initiate and conduct nutrition and physical activity counseling (including what a patient can do with BMI information). Require that continuing medical education (CME) include obesity-related issues, and provide ongoing training on motivational interviewing. Encourage medical and nursing schools and allied health education programs to build nutrition, physical activity, wellness, and self-management practices into their curriculums.
- **Ensure consistent messages from providers:** Make sure that all practitioners have the same nutrition information to share with patients and are using a similar message that complements what is happening in the community. Encourage stakeholders to agree on a message and develop a toolkit to share with doctors and other practitioners, similar to what the Michigan State Medical Society and the Michigan Chapter of the American Academy of Pediatrics are developing. Identify "champions in practice" to help others effectively use the message and detect challenges or barriers.
- **Promote breastfeeding:** Use culturally appropriate messages to promote the advantages of breastfeeding and increase women's freedom to breastfeed in public.
- **Engage the healthcare community:** Encourage community coalitions to choose strategies that include healthcare entities as partners. Identify key providers and connect them to existing coalitions.
- **Create a statewide campaign:** Create an alignment between policy and funding to support the full continuum of obesity prevention and treatment for the entire community, including the uninsured (e.g., children from pre-birth through adolescence to teenagers to adults). One work group recommends providing a consistent message to increase physical activity of youth.
- **Create a "sin tax":** Modeling the cigarette tax, create a consumer tax on the purchase of unhealthy foods and beverages. Use an educational grassroots campaign and social marketing to garner consumer support.

NEXT STEPS

Work group recommendations will be considered by the Michigan Department of Community Health as it works to develop a draft Michigan Action Plan to Prevent and Reduce Obesity. The MDCH Obesity Steering Committee will review and help finalize the action plan. Meanwhile, all summit participants are encouraged to consider the steps they or their organization can take now to help prevent and reduce obesity in Michigan.

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