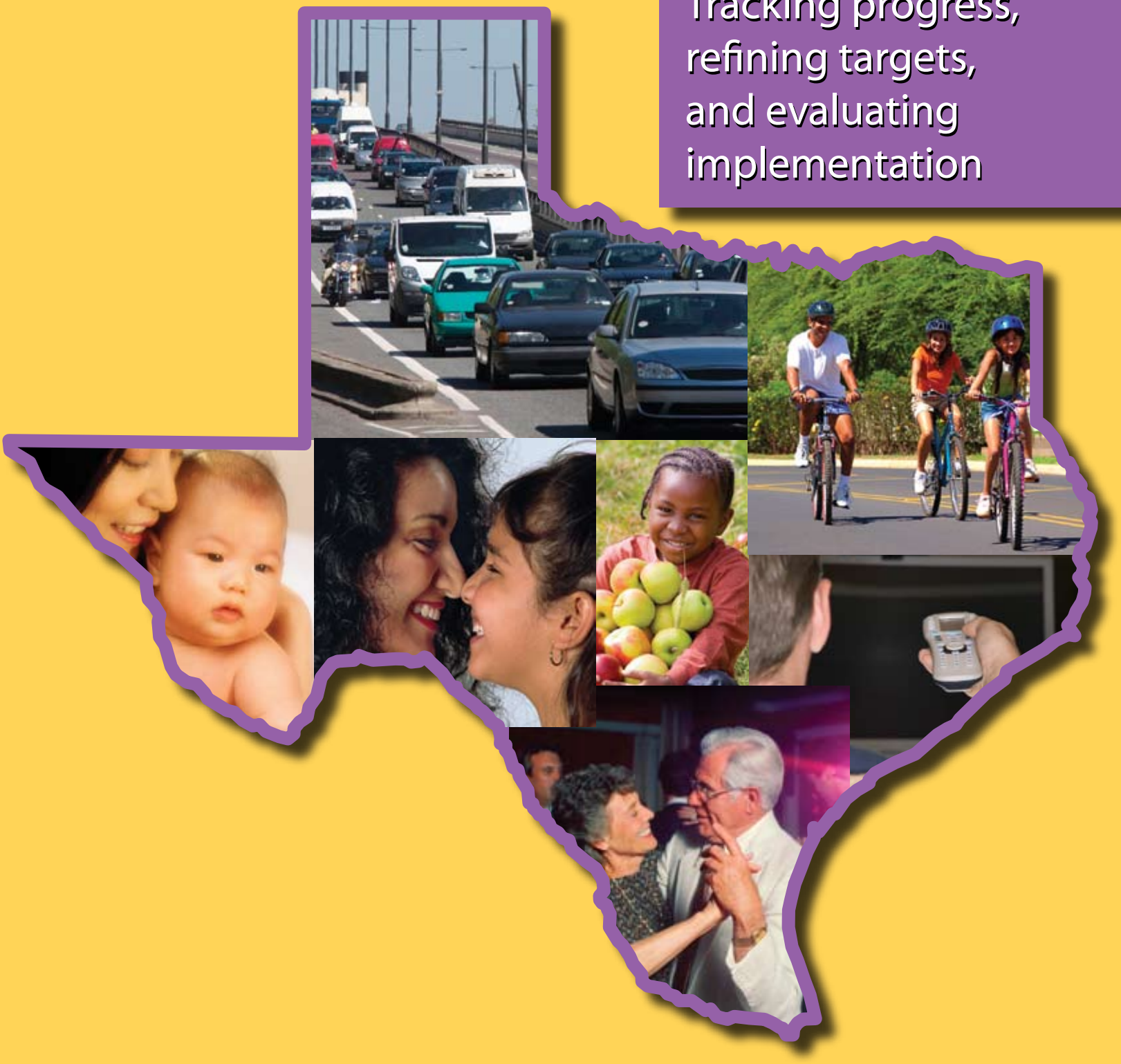
Updates for the Strategic Plan for the Prevention of Obesity in Texas

Tracking progress, refining targets, and evaluating implementation



Texas Department of State Health Services

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Introduction

Updates for the Strategic Plan for the Prevention of Obesity in Texas is intended to provide direction and focus as Texans move forward with implementation of the *Strategic Plan for the Prevention of Obesity in Texas*: *2005-2010*. The 43 Proposed Texas Targets from the 2005 state plan were narrowed to 19 key Targets; and as an evaluation plan was developed, 55 indicators were identified to track progress. As Texas partners continue to move forward with obesity prevention efforts, the indicators can serve as a menu of options for local projects to impact Texas on a statewide level. This update also contains key sections from the *2008 State Nutrition, Physical Activity and Obesity Program Technical Assistance Manual* (Centers for Disease Control and Prevention Division of Nutrition, Physical Activity and Obesity), including a thorough review of current evidence-based strategies for the six principal target areas: increase physical activity, increase consumption of fruits and vegetables, decrease consumption of sugar-sweetened beverages, reduce consumption of high-energy-dense foods, increase breastfeeding initiation and duration, and decrease television viewing (see Appendix A). The evaluation plan in this update will assist Texas in monitoring progress towards Targets and serve as a basis for planning improvements in the future. This is a living, breathing document, and an update on state plan implementation will be shared with partners annually. To access the full state plan, related documents, resources, and information on statewide activities, visit www.txbringinghealthyback.org.

History of the State Plan

The initial *Strategic Plan for the Prevention of Obesity in Texas* was developed through a statewide obesity taskforce during 2001-2003 with funding from the Centers for Disease Control and Prevention (CDC) to support nutrition and physical activity programs to prevent obesity and related chronic diseases in Texas. The primary focus of the state plan was prevention among children and families. The Texas Strategic Health Partnership, convened in 2002, formed the Goal A Workgroup that was charged to implement the *2003 Strategic Plan for the Prevention of Obesity in Texas*. As a result of the

consolidation of the Texas Department of Health and other state agencies into the Texas Department of State Health Services (DSHS) in 2004, members of the Goal A Workgroup were redirected to revise the state plan and were charged through funding from the CDC to expand the focus to all age groups, include strategies for breastfeeding and reduction in television viewing, and create S.M.A.R.T. objectives (specific, measurable, achievable, relevant, and time-based). In 2005, the state plan was revised with feedback from original members of the initial statewide obesity taskforce, community members, partners from the Texas Strategic Health Partnership, DSHS workgroups and senior management, as well as other key stakeholders from around the state. *The Strategic Plan for the Prevention of Obesity in Texas: 2005-2010* was released at the Texas Public Health Association's annual conference on April 24, 2006, in Plano, Texas.

Vision, Mission, and Goals

The original vision, mission, and overarching goals (see Appendix B) have remained the same from the 2003 state plan through the revision released in 2006. As DSHS worked with partners to fine-tune the targets and create an evaluation plan, it became clear that the vision and mission needed to be more clearly defined. While the original four goals are re-emphasized, the verbs have been refined to make them more outcome-oriented. Partner input from the original draft remains intact and the rewording includes an environmental perspective that is the best public health approach for obesity prevention.

Vision:
All Texans enjoy optimal quality of life, free from the negative impact of overweight and obesity and related chronic diseases.

Mission:
To make healthy foods and active lifestyles the easy choices for all Texans.

Texas Goals:
Goal 1: Improve quality of life for Texans by addressing obesity as a public health issue.
Goal 2: Create opportunities to choose lifestyles that promote healthy weight by mobilizing families, schools, and communities.
Goal 3: Implement policies and environmental changes that support healthful eating and physical activity.
Goal 4: Decrease obesity rates through the dissemination of evidence-based practices.

Updating the State Plan

Partner input was instrumental to the development of the following updates to the state plan, and to the development of the following comprehensive evaluation plan. As outlined below, partners were surveyed to learn about knowledge and use of the state plan and the role of DSHS in statewide implementation, and partners provided input to identify key objectives in the state plan. Additionally, prior to the release of this update, eight key partners representing all CDC principal target areas* critically reviewed the document. Their feedback was incorporated to ensure the document would be useful to Texas partners and aligned with current Texas partner needs.

Surveying Stakeholders

In 2007, 83 out of 144 contacted partners responded to the Texas Partners Stakeholder Survey designed to generate information on current obesity prevention activities, knowledge and use of the state plan, and the role of DSHS in statewide implementation. Not all respondents answered all questions; however 61 of the 83 respondents (73%) had some level of familiarity with the state plan, with 14 of those reporting that they were very familiar with the state plan. Fifty-four of 71 respondents (76%) had some level of agreement that DSHS should track the progress of Texas obesity prevention efforts. Forty-two of 51 respondents (82%) agreed that the state plan should be used by private and public organizations in the state to support obesity prevention and provide guidance for their activities; however, 42 of 49 respondents (86%) agreed that shortening the length of the state plan would encourage more widespread use. These results helped clarify the current state of the state plan and charged DSHS to move forward with a more user-friendly document and to develop a comprehensive evaluation plan for implementation. Detailed results of the Texas Partners Stakeholder Survey can be found in Appendix C.

Identifying Key Texas Targets

During the revision of the 2003 state plan, measurable objectives, referred to as Proposed Texas Targets (PTT), were created to evaluate the progress made towards accomplishing the Texas goals. The original 43 PTT were based on Healthy People 2010 objectives and Texas baseline data (see Appendix D). Early in 2007, DSHS Nutrition, Physical Activity and Obesity Prevention (NPAOP) Program began preliminary work to create a plan for evaluating the implementation of the state plan. While all of the PTT are important for tracking progress, NPAOP saw the need to identify a few key PTT that could serve as key objectives to identify indicators in tracking progress towards obesity prevention in Texas. No longer "proposed," these key Texas Targets have been determined and will now be referred to as *Targets*. In determining how best to "narrow" the original list of 43 PTT, two criteria stood out as most important:

1) A key Texas Target must have a measurable source of data that is already being collected in Texas.
2) A key Texas Target must be one that is identified as critically important by key partners in tracking progress for Texas obesity prevention.

DSHS NPAOP worked with an internal data group to identify relevant data sources to narrow down the 43 PTT to 19 objectives with linked data sources. Of these 19, 10 measure outcomes that necessitate their automatic inclusion in the final list of Targets (e.g., changes in weight status or changes in fruit and vegetable

* CDC principal target areas include: increase physical activity, increase consumption of fruits and vegetables, decrease consumption of sugar-sweetened beverages, reduce consumption of high-energy-dense foods, increase breastfeeding initiation and duration, and decrease television viewing.

consumption). Partners across the state were asked to help with the second step – ranking the other 9 Targets.

A brief web-based survey was distributed to partners across Texas, including those who contributed to the previous state plans, members of current or pre-existing obesity prevention-related coalitions, as well as newer partners who have emerged as key stakeholders in obesity prevention in Texas. For the purposes of the ranking activity, the specific numbers and timelines within the Targets were removed. Partners were asked to rank the indicators** relevant to each of the 19 Targets to ensure that the specific numbers contained in the Targets did not influence the ranking scores. Of almost 200 partners, 99 responded to rank the Targets as to how important they thought each one was for tracking progress in obesity prevention in Texas. Partners ranked the indicators "percentage of adults, who, on a typical day, spend 4 or more hours viewing any type of screen (television, computer, video) outside of work" and "percentage of school age children who view 3 or more hours of television per day" as the most important, however the average ranking scores did not vary greatly between the nine items. While the ranking activity did point out that a few key Targets were most important to partners, overall the results showed that none of the remaining Targets could be excluded from the list of key Targets (see Appendix E). Therefore, these 19 Targets are now considered key Targets and will be essential to tracking progress in the implementation of the state plan. Partner input was critical in determining which data are most relevant to the work that is being done in Texas, and which data would be most useful to those partners as our state continues to make progress. This feedback was also utilized to ensure that the forthcoming evaluation plan would be relevant to all partners in tracking Texas progress in obesity prevention on a statewide level. The 19 Targets are listed on the following page. For more details on Targets, please see the sidebar.

Additional Details for Targets

- Target dates were revised to 2012, since these key Targets were identified in 2007.
- As baseline data was identified, Target percentages were examined and adjusted as needed to ensure realistic Targets for 2012. For example, while Goal 4 is to reduce obesity, Target 1 provides a realistic objective for the time period of 2012. While it may not be possible to reduce obesity prevalence by this date, it may be possible to work towards a leveling off of obesity prevalence rates.
- In a few cases, additional related objectives were added to Targets after the partner ranking activity results were analyzed. This occurred only when additional sources of data were identified in researching sources for baseline data. For example, Target 19 related to school health was revised to include an objective for School Health Advisory Councils. This wording was not included during the partner ranking activity; however, it is closely related to all other wording within that Target.
- Baseline data sources are in parenthesis after each Target. Much of the baseline data is not available from 2007, and in this case the most recent data available is provided. As more recent data becomes available, this information will be updated.
- For Targets 3 and 5, current BRFSS and YRBSS questions ask the number of times that fruits and vegetables are consumed, and this current statistic is provided as a baseline. However, it is anticipated that the questions will change in the near future to reflect servings per day. Updates will be made as these changes are solidified.

** Indicators are variables used to measure, directly or indirectly, changes relevant to an outcome or target and to determine the progress made in addressing it. They also provide a basis for developing adequate plans for improvement.

Key Targets for the Prevention of Overweight and Obesity in Texas

Target 1:	Between 2007 and 2012, the percentage of adults in Texas who are overweight or obese (BMI≥25) will not increase from 65.8% *(BRFSS 2007)*.
Target 2:	Between 2007 and 2012, the prevalence of BMI≥85th percentile among school children in Texas will not increase from 42% among 4th graders, 39% among 8th graders, 36% among 11th graders *(SPAN 2004-2005)*; and 31.5% among high school students *(YRBSS 2007)*.
Target 3:	By 2012, 35% of adults will consume fruits and vegetables at least 5 times daily *(BRFSS 2007: 25.2% consumed fruits and vegetables 5 or more times per day).*
Target 4:	By 2012, 80% of mothers will initiate breastfeeding, 30% will exclusively breastfeed at 3 months, 10% will exclusively breastfeed through 6 months, and 25% will be breastfeeding (not necessarily exclusively) at one year *(CDC National Immunization Survey-State Breastfeeding Report Card 2007: 75% initiated, 25% exclusive 3 months, 7% exclusive at 6 months, and 19% at one year).*
Target 5:	By 2012, 15% of school age children will eat 3 or more servings of vegetables daily and 65% will eat 2 or more servings of fruit daily; and at least 25% of high school students will eat fruits and vegetables at least 5 times daily *(SPAN 2004-2005: 13% of 4th graders, 6% of 8th graders, and 5% of 11th graders reported eating 3 or more servings of vegetables; 60% of 4th graders, 47% of 8th graders, and 39% of 11th graders reported consuming at least 2 servings of fruits; YRBSS 2007: 17.4% of high school students ate fruits and vegetables at least 5 times daily).*
Target 6:	By 2012, 80% of all eligible school age children will participate in the National School Lunch Program *(Texas Department of Agriculture squaremeals.org FY07: 64.6% of eligible children participate).*
Target 7:	By 2012, the total number of farmers markets, other farm sales locations, and farm direct sales programs in Texas will increase by 25% *(Texas Department of Agriculture Pick Texas 2007 picktexas.com: 101 Texas farmers markets; 78 pick-your-own, roadside stands and/or freshpicked on-the-farm sales; Sustainable Food Center 2007: 4 Farm Direct projects (e.g., farm to institution or farm to work initiatives); National Farm to School Program 2007: 445 Texas Farm to School programs).*
Target 8:	Between 2007 and 2012, the percentage of Texas school districts with exclusive vending contracts will not increase *(Texas Department of Agriculture School District Vending Contract Survey 2003: 52.3% of Texas school districts have exclusive vending contracts).*
Target 9:	By 2012, increase the number of hospitals that officially initiated policies and practices to support breastfeeding initiation to at least 3 Baby-Friendly Hospitals and at least 65 Texas Ten Steps Facilities *(Baby-Friendly USA Baby-Friendly Hospital Initiative listings 2006: 0 facilities; DSHS Texas Ten Steps website listing 2006: 48 hospitals and 1 birthing center).*
Target 10:	By 2012, increase the number of worksites that have initiated policies and practices to support breastfeeding and lactation by at least 25% of baseline *(DSHS website listing of Mother-Friendly Worksites 2006: 163 worksites).*
Target 11:	By 2012, increase to 50% the proportion of adults who meet the recommended levels of moderate or vigorous physical activity *(BRFSS 2007: 46.5% of Texas adults meet recommendations for moderate or vigorous physical activity).*

Target 12:	By 2012, reduce to 20% the proportion of adults age 18 and older who engage in no leisure-time physical activity *(BRFSS 2007: 28.3% of adults engage in no leisure-time physical activity).*
Target 13:	By 2012, half (50%) of high school children in Texas will accumulate 60 minutes or more of physical activity per day on 5 or more days of the week *(YRBSS 2007: 45.2% of high school students were physically active for a total of 60 minutes or more per day on five or more of the past seven days).*
Target 14:	By 2012, increase the number of accessible Texas trails by 15% (*Texas Trails Network Database 2007: 582 Texas trails with accessible walking).*
Target 15:	By 2012, increase the number of communities that apply for funding to improve or enhance alternative modes of transportation by 15% *(Texas Department of Transportation Safe Routes to School 2007: 360 applicants).*
Target 16:	By 2012, reduce to 25% or less the proportion of adults who, on a typical day, spend 4 or more hours viewing any type of screen *(*television, computer, video) outside work *(BRFSS 2004: 28% adults spend 4 or more hours viewing any type of screen).*
Target 17:	By 2012, the percentage of school age children who view 3 or more hours of television per day will decrease by 5% from 32% among 4th graders, 52% among 8th graders, and 44% among 11th graders *(SPAN 2004-2005)*, and from 38.5% among high school students *(YRBSS 2007)*.
Target 18:	By 2012, the percentage of private/public sector worksites that adopt employee wellness programs that meet a qualified standard to address health risks related to physical activity, nutrition, and overweight/obesity will increase by 15% *(Baseline: To be determined).*
Target 19:	By 2012, 100% of all public school districts will have implemented an approved school wellness policy consistent with the Federal Child Nutrition Act, 100% will have established a School Health Advisory Council and 100% will have adopted an approved coordinated school health program consistent with state mandates *(Texas Department of Agriculture 2005-2006: 100% of school districts have an approved wellness policy, however there is no baseline data on policy implementation; Texas Education Agency to collect baseline for School Health Advisory Councils and coordinated school health programs through the School Health Survey to be disseminated in 2008).*

Behavioral Risk Factor Surveillance System (BRFSS): A population-based surveillance system to assess health behavioral risk factors of American adults (age 18+) that provides randomized national and state data on obesity trends, physical activity, and fruit and vegetable consumption.

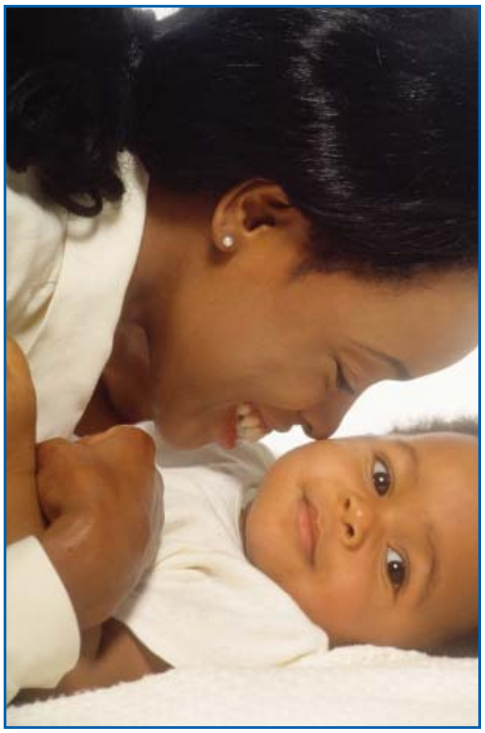
Body Mass Index (BMI): A tool for indicating weight status and risk for chronic disease. It is a measure of weight for height.

School Physical Activity and Nutrition (SPAN): A surveillance project to monitor the prevalence of overweight, dietary behaviors, and physical activity in school age children (4th, 8th, and 11th grade students) in Texas.

Youth Risk Behavioral Surveillance System (YRBSS): A surveillance system that monitors priority health risk behaviors among youth (9th through 12th grade students), including unhealthy diet behaviors, inadequate physical activity and overweight status.

A Basis for Tracking Progress and Key Targets

As partner input was solicited on the Targets, DSHS NPAOP simultaneously worked with an internal data group to fine-tune the Logic Model for Texas Obesity Prevention. Just as the state plan is a document for all Texas obesity prevention partners, this logic model intends to capture inputs, outputs and outcomes for any partner who works towards implementation of the state plan. DSHS NPAOP activities are represented, but the logic model details efforts of partners statewide.



The next step was to identify which specific areas within the logic model could be tracked for evaluation. The 19 Targets were linked directly into specific relevant short-term, medium-term, and long-term outcomes as well as the desired effects represented in the logic model. Pieces of the logic model that will be tracked for evaluation appear in bolded purple boxes within the logic model that follows. The remaining yellow boxes are still key in moving forward with Texas obesity prevention efforts; however, no relevant data sources for tracking have been identified to date. As other data sources become available, revisions will be made to the evaluation plan.

The process of linking the logic model to data sources resulted in the identification of 55 indicators to track progress of implementation of the state plan.

Indicators for Tracking Progress

The indicators are listed on the following pages, and where appropriate, the relevant Target is identified in parenthesis. The following list of indicators can serve as a menu of options for local coalitions, and partners are encouraged to use the indicators in local projects to help Texas make progress on a statewide level.

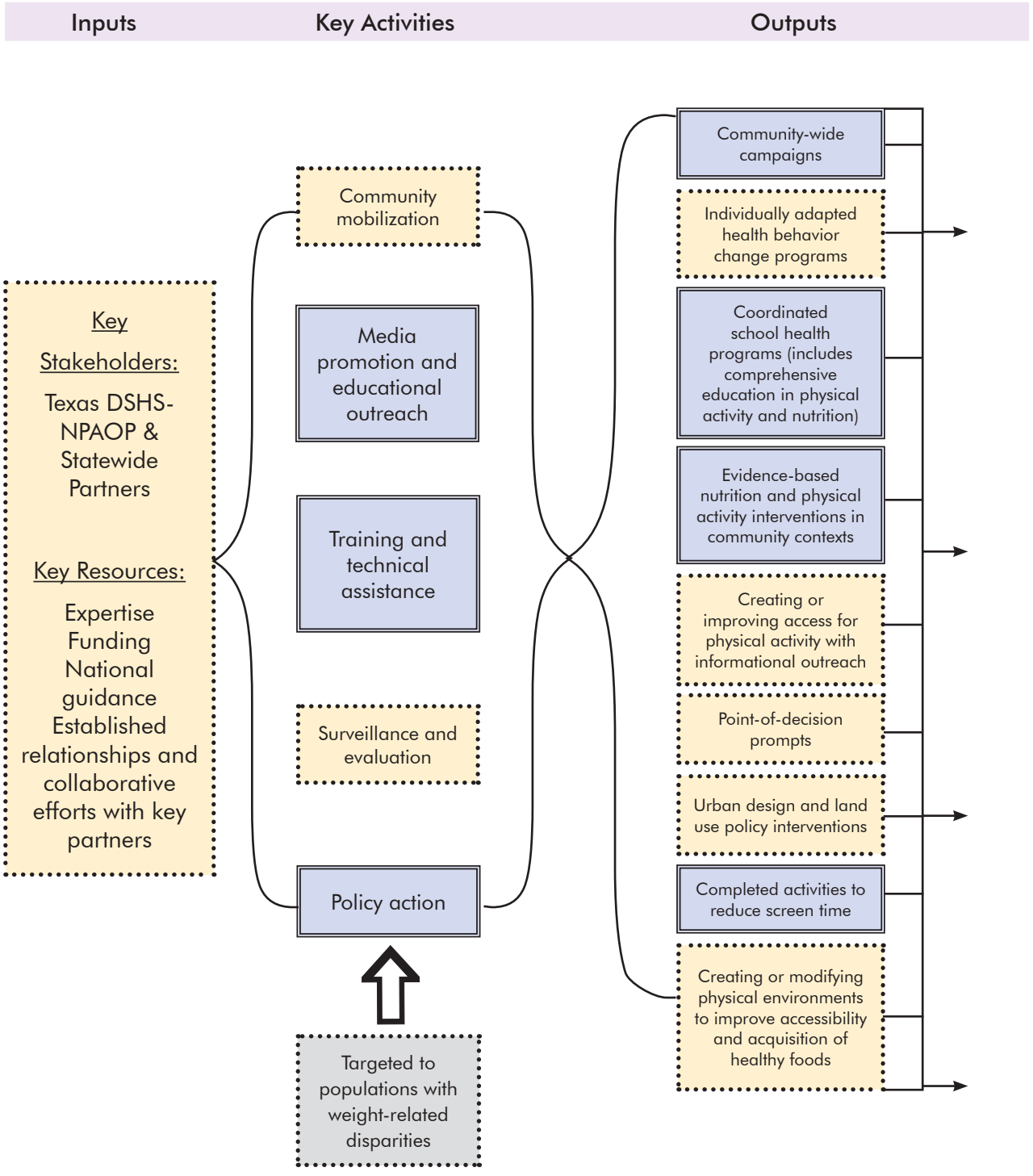
Indicators to Track Progress of Implementation of the State Plan

Indicator 1:	Number of media efforts (not including community-wide campaigns)
Indicator 2:	Number of technical assistance activities
Indicator 3:	Number of workshop/training activities
Indicator 4:	Number of legislative bills filed related to obesity prevention
Indicator 5:	Number of community-wide campaigns
Indicator 6 *(Target 19)*:	Percent of school districts that have adopted an approved coordinated school health program
Indicator 7:	Number of Healthier US Awards given to Texas schools
Indicator 8:	Number of interventions that meet the CDC definition of “interventions” for obesity prevention
Indicator 9:	Number of events held and number of children who participated in Nickelodeon Worldwide Day of Play
Indicator 10:	Number of activities that target screen time reduction
Indicator 11:	Number of coalitions focusing on obesity or related chronic diseases
Indicator 12 *(Target 19)*:	Percentage of school districts with established School Health Advisory Councils
Indicator 13:	Percent of partners who use the goals and strategies in the state plan in their current work
Indicator 14:	Number of communities funded by DSHS Chronic Disease programs for activities related to nutrition, physical activity, and/or obesity prevention
Indicator 15:	Number of communities recognized through Heart and Stroke Healthy City Recognition Program
Indicator 16:	Number of Women, Infants, & Children Program (WIC) clinics funded by DSHS WIC for obesity prevention activities
Indicator 17:	Percent of partners who implement specific items from the state plan that are related to their work
Indicator 18:	Number of chronic disease state plans (housed within DSHS Chronic Disease Branch) that incorporate evidence-based strategies for obesity prevention
Indicator 19:	Number of policy and/or environmental changes
Indicator 20:	Number of legislative bills passed related to obesity prevention
Indicator 21 *(Target 6)*:	Percent of eligible children participating in the National School Lunch Program
Indicator 22 *(Target 18)*:	Number of worksites that have adopted worksite wellness programs that meet a qualified standard
Indicator 23 *(Target 19)*:	Percent of school districts that have implemented an approved school wellness policy
Indicator 24:	Percent of schools with a school health committee or advisory group
Indicator 25 *(Target 7)*:	Number of farmers markets, direct other farm sales locations
Indicator 26 *(Target 7)*:	Number of farm direct programs
Indicator 27 *(Target 7)*:	Number of farm to school programs
Indicator 28 *(Target 9)*:	Number of hospitals with supportive policies and practices for breastfeeding initiation

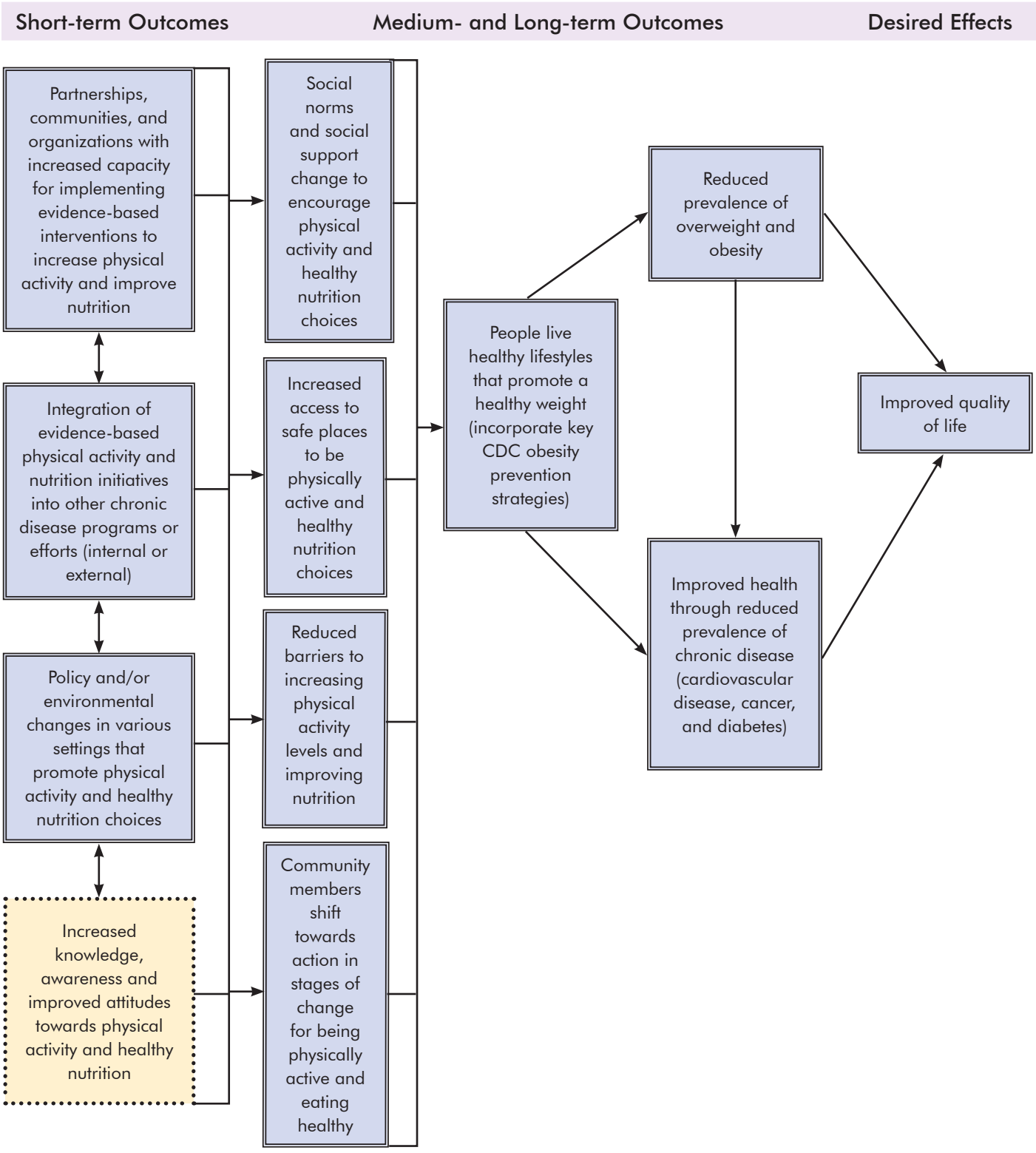
Indicators to Track Progress of Implementation of the State Plan

Indicator 29 *(Target 10)*:	Number of Mother-Friendly Worksites
Indicator 30 *(Target 14)*:	Number of accessible Texas trails
Indicator 31:	Number of schools participating in the Fresh Fruit and Vegetable Program
Indicator 32 *(Target 8)*:	Percent of school districts with exclusive vending contracts
Indicator 33 *(Target 15)*:	Number of communities that apply for funding to improve or enhance alternative modes of transportation
Indicator 34:	Percent of Texans who shift one stage of change for being physically active
Indicator 35:	Percent of Texans who shift one stage of change for healthy eating
Indicator 36:	Redemption rates of the WIC Farmers Market Nutrition Program
Indicator 37:	Redemption rates of the WIC fresh fruit and vegetable vouchers
Indicator 38:	Number of employees who participate in Farm to Work
Indicator 39 *(Target 3)*:	Percent of adults who consume fruits and vegetables at least 5 times daily
Indicator 40 *(Target 4)*:	Percent of mothers who initiate breastfeeding, percentage who exclusively breastfeed at 3 months, percentage who breastfeed exclusively at 6 months, and percentage who breastfeed at one year (not necessarily exclusively)
Indicator 41 *(Target 5)*:	Percent of school age children who eat 3 or more servings of vegetables daily, percent of school age children who eat 2 or more servings of fruit daily, and percent of high school students who eat fruits and vegetables at least 5 times daily
Indicator 42 *(Target 11)*:	Percent of adults who meet recommended levels of moderate or vigorous physical activity
Indicator 43 *(Target 12)*:	Percent of adults who engage in no leisure-time physical activity
Indicator 44 *(Target 13)*:	Percent of high school children who accumulate 60 minutes or more of physical activity per day on 5 or more days per week
Indicator 45 *(Target 16)*:	Percent of adults, who, on a typical day, spend 4 or more hours viewing any type of screen (television, computer, or video) outside of work
Indicator 46 *(Target 17)*:	Percent of school age children who view 3 or more hours of television per day
Indicator 47 *(Target 1)*:	Percent of adults overweight or obese (Body Mass Index [BMI] ≥25)
Indicator 48 *(Target 2)*:	Percent of school age children with BMI≥85th percentile
Indicator 49:	Percent of adults with diabetes
Indicator 50:	Percent of adults with cardiovascular disease or stroke
Indicator 51:	Incidence rate of obesity-related cancer
Indicator 52:	Percent of adults who report 5 or more days of poor physical health
Indicator 53:	Percent of adults who report general health fair to poor
Indicator 54:	Percent of adults kept from doing usual activities for 5 or more days due to poor physical or mental health
Indicator 55:	Percent of adults with 5 or more days of poor mental health

Logic Model for Texas Obesity Prevention*



*Logic model components addressing nutrition, healthy foods, or healthy eating will only focus on the following target areas: increasing consumption of fruits and vegetables; decreasing consumption of high-energy-dense foods; decreasing sugar-sweetened beverage consumption; and increasing breastfeeding initiation, duration and exclusivity.


Short-term Outcomes
Medium- and Long-term Outcomes
Desired Effects
Partnerships, communities, and organizations with increased capacity for implementing evidence-based interventions to increase physical activity and improve nutrition
Integration of evidence-based physical activity and nutrition initiatives into other chronic disease programs or efforts (internal or external)
Policy and/or environmental changes in various settings that promote physical activity and healthy nutrition choices
Increased knowledge, awareness and improved attitudes towards physical activity and healthy nutrition
Social norms and social support change to encourage physical activity and healthy nutrition choices
Increased access to safe places to be physically active and healthy nutrition choices
Reduced barriers to increasing physical activity levels and improving nutrition
Community members shift towards action in stages of change for being physically active and eating healthy
People live healthy lifestyles that promote a healthy weight (incorporate key CDC obesity prevention strategies)
Reduced prevalence of overweight and obesity
Improved health through reduced prevalence of chronic disease (cardiovascular disease, cancer, and diabetes)
Improved quality of life

Evaluation Plan for Implementation of the State Plan

Evaluation provides information that can be used to improve the effectiveness of the implementation of the state plan. Evaluation is key for sustaining support, obtaining resources, and for guiding Texas obesity prevention efforts. Just as the state plan is a tool for all of Texas, the evaluation plan also provides a framework for all partners. The evaluation plan that follows shows the link between the logic model, 55 identified indicators, and 19 Targets. It also includes identified data sources, baseline data and a timeline for tracking progress.***

Logic Model Component	Indicator(s)	Relevant Target
INPUTS AND KEY ACTIVITIES		
Media promotion and educational outreach	Indicator 1: # of media efforts (not including community-wide campaigns)	n/a
Training and technical assistance	Indicator 2: # of technical assistance activities	n/a
	Indicator 3: # of workshop/ training activities	n/a
		n/a
Policy action	Indicator 4: # of legislative bills filed related to obesity prevention (contains key words not limited to: nutrition, physical activity, breastfeeding, or obesity)	n/a

*** Several indicators with no identified source of data have been highlighted in yellow in the evaluation plan table.

Data Source	Baseline	Timeline for Tracking Progress
DSHS Program Management and Tracking System	Dec. 2007: 12 for DSHS NPAOP, 285 for Diabetes, n/a for School Health (297 total); for Diabetes, this includes all media efforts, including community-wide campaigns	Annual
DSHS Program Management and Tracking System	Dec. 2007: 326 for DSHS NPAOP, 1329 for Diabetes, 1554 for School Health (3209 total)	Annual
DSHS Program Management and Tracking System	Dec. 2007: 31 for DSHS NPAOP, n/a for Diabetes, 421 for School Health (452 total)	Annual
Texas Breastfeeding Coalition	Dec. 2007: 0 trainings to implement the Health Services and Resources Association's Business Case for Breastfeeding (trainings will begin in 2008)	Annual
Texas Legislature online www.capitol.state.tx.us	2007: 73 bills filed with key words related to nutrition, physical activity, breastfeeding, or obesity	Every two years

Logic Model Component	Indicator(s)	Relevant Target
OUTPUTS		
Community-wide campaigns	Indicator 5: # of community-wide campaigns	n/a
Coordinated school health programs (includes comprehensive education in physical activity and nutrition)	Indicator 6: % of school districts that have adopted an approved coordinated school health program	Target 19: By 2012, 100% of all school districts will have implemented an approved school wellness policy consistent with the Federal Child Nutrition Act, 100% will have established a School Health Advisory Council and 100% will have adopted an approved coordinated school health program consistent with state mandates.
	Indicator 7: # of Healthier US Awards given to Texas schools (gold, silver or bronze)	n/a
Evidence-based nutrition and physical activity interventions in community contexts	Indicator 8: # of interventions that meet CDC definition for obesity prevention	n/a
Completed activities to reduce screen time	Indicator 9: # of events held and # of children who participated in Nickelodeon Worldwide Day of Play	n/a
	Indicator 10: # of activities that target screen time reduction	n/a

Data Source	Baseline	Timeline for Tracking Progress
DSHS Program Management and Tracking System	Dec. 2007: 5 for DSHS NPAOP, n/a for Diabetes, n/a for School Health (5 total)	Annual
Texas Education Agency	School Health Survey 2008: data to be disseminated in 2008 NOTE: 2006-2007 School Year: DSHS School Health Program surveyed districts and 680 respondents indicated they had implemented an approved coordinated school health program. However, response to this survey was voluntary, and only elementary schools were required to implement coordinated school health at that time.	As determined by repeat cycle of School Health Survey
United States Department of Agriculture Food and Nutrition Service http://www.fns.usda.gov/TN/HealthierUS/silvergoldtn.html	School Years 2007-2009: 1 Healthier US Award winning school (gold)	Annual
DSHS Program Management and Tracking System	Dec. 2007: 3 for DSHS NPAOP, n/a for Diabetes, n/a for School Health (3 total)	Annual
Nickelodeon Public Affairs	2007: 72 events held in Texas and 1500 children participated	Annual
DSHS Program Management and Tracking System	Dec. 2007: 72 for DSHS NPAOP, n/a for Diabetes, n/a for School Health (72 total)	Annual

Logic Model Component	Indicator(s)	Relevant Target
SHORT-TERM OUTCOMES		
Partnerships, communities, and organizations with increased capacity for implementing evidence-based interventions to increase physical activity and improve nutrition	Indicator 11: # of coalitions focusing on obesity or related chronic diseases	n/a
		n/a
	Indicator 12: % of school districts with established School Health Advisory Councils	Target 19: By 2012, 100% of all school districts will have implemented an approved school wellness policy consistent with the Federal Child Nutrition Act, 100% will have established a School Health Advisory Council and 100% will have adopted an approved coordinated school health program consistent with state mandates.
	Indicator 13: % of partners who use the goals and strategies in the state plan in their current work	n/a
	Indicator 14: # of communities funded by DSHS Chronic Disease programs for activities related to nutrition, physical activity, and/or obesity prevention	n/a
	Indicator 15: # of communities recognized through Heart and Stroke Healthy City Recognition Program	n/a
	Indicator 16: # of WIC clinics funded by DSHS WIC for obesity prevention activities	n/a

Data Source	Baseline	Timeline for Tracking Progress
DSHS Program Management and Tracking System	Dec. 2007: 13 for DSHS NPAOP, 38 for Diabetes (51 total); School Health conducted 212 activities in collaboration with coalitions or community groups.	Annual
Texas Breastfeeding Coalition	Dec. 2007: 10 local breastfeeding coalitions, 1 statewide breastfeeding coalition	Annual
Texas Education Agency	School Health Survey 2008: data to be disseminated in 2008 NOTE: 2006-2007 School Year: DSHS School Health Program surveyed districts and 680 respondents indicated they had implemented an approved coordinated school health program. However, response to this survey was voluntary, and only elementary schools were required to implement coordinated school health at that time.	As determined by repeat cycle of School Health Survey
Texas Stakeholder Survey	2007: 69% of respondents in agreement	Annual
DSHS Chronic Disease Programs	FY08: In 2007, 15 communities were funded for obesity prevention and related activities (Obesity=2, Diabetes=13).	Every two years
DSHS Cardiovascular Health and Wellness Program	2006-2007: 2 mid size communities and 8 metro and small communities recognized	Every two years
DSHS WIC	2007: 26 local WIC agencies funded for obesity prevention activities	Annual

Logic Model Component	Indicator(s)	Relevant Target
SHORT-TERM OUTCOMES, CONT.		
Integration of evidence-based physical activity and nutrition initiatives into other chronic disease programs or efforts (internal and external)	Indicator 17: % of partners who implement specific items from the state plan that are related to their work	n/a
	Indicator 18: # of chronic disease state plans (housed within DSHS Chronic Disease Branch) that incorporate evidence-based strategies for obesity prevention (weight control, fruits and vegetables, healthy eating/nutrition, breastfeeding, screen time, and/or physical activity)	n/a
Policy and/or Environmental changes that promote physical activity and healthy nutrition choices	Indicator 19: # of policy and/or environmental changes	n/a
	Indicator 20: # of legislative bills passed related to obesity prevention (nutrition, physical activity, breastfeeding, or obesity)	n/a

Data Source	Baseline	Timeline for Tracking Progress
Texas Stakeholder Survey	2007: 85% of respondents in agreement	Annual
DSHS Chronic Disease Program state plans	2006: Out of all current chronic disease state plans, 5 include weight control, 2 include fruits and vegetables, 4 include healthy eating/nutrition, 5 include physical activity, and 1 includes screen time	Monitored as chronic disease programs revise state plans
DSHS Program Management and Tracking System	Dec. 2007: 7 for DSHS NPAOP, 17 for Diabetes, n/a for School Health (24 total)	Annual
Texas Legislature online www.capitol.state.tx.us	2007: 21 bills passed with key words related to nutrition, physical activity, breastfeeding or obesity (out of 72 filed)	Every two years

Logic Model Component	Indicator(s)	Relevant Target
MEDIUM- AND LONG-TERM OUTCOMES		
Social norms and social support change to encourage physical activity and healthy nutrition choices	Indicator 21: % of eligible children participating in National School Lunch Program	Target 6: By 2012, 80% of all eligible school age children will participate in the National School Lunch Program.
	Indicator 22: # of worksites that have adopted worksite wellness programs that meet a qualified standard	Target 18: By 2012, the percentage of private/public sector worksites that adopt employee wellness programs that meet a qualified standard to address health risks related to physical activity, nutrition, and overweight/obesity will increase by 15%.
	Indicator 23: % of school districts that have implemented an approved school wellness policy	Target 19: By 2012, 100% of all school districts will have implemented an approved school wellness policy consistent with the Federal Child Nutrition Act, 100% will have established a School Health Advisory Council and 100% will have adopted an approved coordinated school health program consistent with state mandates.
	Indicator 6: % of school districts that have adopted an approved coordinated school health program	Target 19: By 2012, 100% of all school districts will have implemented an approved school wellness policy consistent with the Federal Child Nutrition Act, 100% will have established a School Health Advisory Council and 100% will have adopted an approved coordinated school health program consistent with state mandates.

**** Several indicators with no identified source of data have been highlighted in yellow in the evaluation plan table.

Data Source	Baseline	Timeline for Tracking Progress
Texas Department of Agriculture squaremeals.org	FY07: 64.6% of eligible children participate	Annual
To be determined	To be determined	To be determined
Texas Department of Agriculture	2005-2006 School Year: 100% of Texas school districts submitted an approved local wellness policy, however there is no baseline data on policy implementation.	Updated as new data becomes available
Texas Education Agency	School Health Survey 2008: data to be disseminated in 2008 NOTE: 2006-2007 School Year: DSHS School Health Program surveyed districts and 680 respondents indicated they had implemented an approved coordinated school health program. However, response to this survey was voluntary, and only elementary schools were required to implement coordinated school health at that time.	As determined by repeat cycle of School Health Survey

Logic Model Component	Indicator(s)	Relevant Target
MEDIUM- AND LONG-TERM OUTCOMES, CONT.		
Social norms and social support change to encourage physical activity and healthy nutrition choices, cont.	Indicator 12: % of school districts with established School Health Advisory Councils	Target 19: By 2012, 100% of all school districts will have implemented an approved school wellness policy consistent with the Federal Child Nutrition Act, 100% will have established a School Health Advisory Council and 100% will have adopted an approved coordinated school health program consistent with state mandates.
	Indicator 7: # of Healthier US Awards given to Texas schools (gold, silver or bronze)	n/a
	Indicator 24: % of schools with a school health committee or advisory group	n/a
Increased access to safe places to be physically active and healthy nutrition choices	Indicator 25: # of farmers markets, # of direct other farm sales locations	Target 7: By 2012, the total number of farmers markets, other farm sales locations, and farm direct sales programs in Texas will increase by 25%.
	Indicator 26: # of farm direct programs	Target 7: By 2012, the total number of farmers markets, other farm sales locations, and farm direct sales programs in Texas will increase by 25%.
	Indicator 27: # of farm to school programs	Target 7: By 2012, the total number of farmers markets, other farm sales locations, and farm direct sales programs in Texas will increase by 25%.
	Indicator 28: # of hospitals with supportive policies and practices for breastfeeding initiation	Target 9: By 2012, increase the number of hospitals that officially initiated policies and practices to support breastfeeding initiation to at least 3 Baby-Friendly Hospitals and at least 65 Texas Ten Steps Facilities.

Data Source	Baseline	Timeline for Tracking Progress
Texas Education Agency	School Health Survey 2008: data to be disseminated in 2008 NOTE: 2006-2007 School Year: DSHS School Health Program surveyed districts and 680 respondents indicated they had implemented an approved coordinated school health program. However, response to this survey was voluntary, and only elementary schools were required to implement coordinated school health at that time.	As determined by repeat cycle of School Health Survey
United States Department of Agriculture Food and Nutrition Service http://teamnutrition.usda.gov/HealthierUS/silvergoldtn.html	School Years 2007-2009: 1 Healthier US Award winning school (gold)	Annual
CDC School Health Profiles	2004: 67% of schools had a school health committee or advisory group	Every two years
Texas Department of Agriculture Pick Texas	2007: 101 Texas farmers markets; 78 pick-your-own, roadside stands and/or fresh-picked on-the-farm sales	Annual
Sustainable Food Center Farm Direct Program	2007: 4 farm direct programs (farm to institution or farm to work)	Annual
National Farm to School program listings http://www.farmtoschool.org	Dec 2007: 445 farm to school programs	Annual
Baby-Friendly Hospital Initiative listing http://www.babyfriendlyusa.org DSHS Texas Ten Steps website listing	2006: 0 Baby-Friendly facilities; 48 hospitals and 1 birthing center-Texas Ten Steps Facilities	Annual

Logic Model Component	Indicator(s)	Relevant Target
MEDIUM- AND LONG-TERM OUTCOMES, CONT.		
Increased access to safe places to be physically active and healthy nutrition choices, cont.	Indicator 29: # of Mother-Friendly Worksites	Target 10: By 2012, increase the number of worksites that have initiated policies and practices to support breastfeeding and lactation by at least 25% of baseline.
	Indicator 30: # of accessible Texas trails	Target 14: By 2012, increase the number of accessible Texas trails by 15%.
	Indicator 31: # of schools participating in the Fresh Fruit and Vegetable Program	n/a
	Indicator 23: % of school districts will have implemented an approved school wellness policy	Target 19: By 2012, 100% of all school districts will have implemented an approved school wellness policy consistent with the Federal Child Nutrition Act, 100% will have established a School Health Advisory Council and 100% will have adopted an approved coordinated school health program consistent with state mandates.
	Indicator 6: % of school districts that have adopted an approved coordinated school health program	Target 19: By 2012, 100% of all school districts will have implemented an approved school wellness policy consistent with the Federal Child Nutrition Act, 100% will have established a School Health Advisory Council and 100% will have adopted an approved coordinated school health program consistent with state mandates.
	Indicator 7: # of Healthier US Awards given to Texas schools (gold, silver or bronze)	n/a

Data Source	Baseline	Timeline for Tracking Progress
DSHS Mother-Friendly Worksite website listing	2006: 163 Mother-Friendly Texas Worksites	Annual
Texas Trails Network Database	2007: 582 Texas trails with accessible walking	Annual
Texas Department of Agriculture	2007: 25 schools participating	Annual
Texas Department of Agriculture	2005-2006 School Year: 100% of Texas school districts submitted an approved local wellness policy, however there is no baseline data on policy implementation.	Updated as new data becomes available
Texas Education Agency	School Health Survey 2008: data to be disseminated in 2008 NOTE: 2006-2007 School Year: DSHS School Health Program surveyed districts and 680 respondents indicated they had implemented an approved coordinated school health program. However, response to this survey was voluntary, and only elementary schools were required to implement coordinated school health at that time.	As determined by repeat cycle of School Health Survey
United States Department of Agriculture Food and Nutrition Service http://teamnutrition.usda.gov/HealthierUS/silvergoldtn.html	School Years 2007-2009: 1 Healthier US Award winning school (gold)	Annual

Logic Model Component	Indicator(s)	Relevant Target
MEDIUM- AND LONG-TERM OUTCOMES, CONT.		
Reduced barriers to increasing physical activity levels and improving nutrition	Indicator 32: % of school districts with exclusive vending contracts	Target 8: Between 2007 and 2012, the percentage of Texas school districts with exclusive vending contracts will not increase.
	Indicator 15: # of communities recognized through Heart and Stroke Healthy City Recognition Program	n/a
	Indicator 22: # of worksites that have adopted worksite wellness programs that meet a qualified standard	Target 18: By 2012, the percentage of private/public sector worksites that adopt employee wellness programs that meet a qualified standard to address health risks related to physical activity, nutrition, and overweight/ obesity will increase by 15%.
Community members shift towards action in stages of change for being physically active and eating healthy	Indicator 33: # of communities that apply for funding to improve or enhance alternative modes of transportation	Target 15: By 2012, increase the number of communities that apply for funding to improve or enhance alternative modes of transportation by 15%.
	Indicator 34: % of Texans who shift one stage of change for being physically active	n/a
	Indicator 35: % of Texans who shift one stage of change for eating healthy	n/a
	Indicator 36: Redemption rates of the WIC Farmers Market Nutrition Program	n/a
	Indicator 37: Redemption rates of the WIC fresh fruit and vegetable vouchers	n/a
	Indicator 38: Number of employees who participate in Farm to Work	n/a
People live healthy lifestyles that promote a healthy weight (incorporate key CDC obesity prevention strategies)	Indicator 39: % of adults who consume fruits and vegetables at least 5 times daily	Target 3: By 2012, 35% of adults will consume fruits and vegetables at least 5 times daily.

***** Several indicators with no identified source of data have been highlighted in yellow in the evaluation plan table.

Data Source	Baseline	Timeline for Tracking Progress
Texas Department of Agriculture School District Vending Contract Survey	2003: 52.3% districts with exclusive vending contracts	Will monitor if survey is repeated in the future
DSHS Cardiovascular Health and Wellness Program	2006-2007: 2 mid size communities and 8 metro and small communities recognized	Every two years
To be determined	To be determined	To be determined
Texas Department of Transportation Safe Routes to School	2007: 360 applicants	Annual
To be determined	To be determined	To be determined
To be determined	To be determined	To be determined
Texas WIC	2007: 40.1% statewide redemption rate of WIC Farmers Market Nutrition Program	Annual
Texas WIC	Unavailable: New food package to be implemented in 2009	Annual
DSHS Nutrition, Physical Activity and Obesity Prevention Program (Farm to Work ordering website)	Dec. 2007: 380 employees participated in Farm to Work (DSHS Main Campus and Austin State Hospital)	Annual
Behavioral Risk Factor Surveillance System	2007: 25.2% adults consume fruits and vegetables at least 5 times per day	Every two years

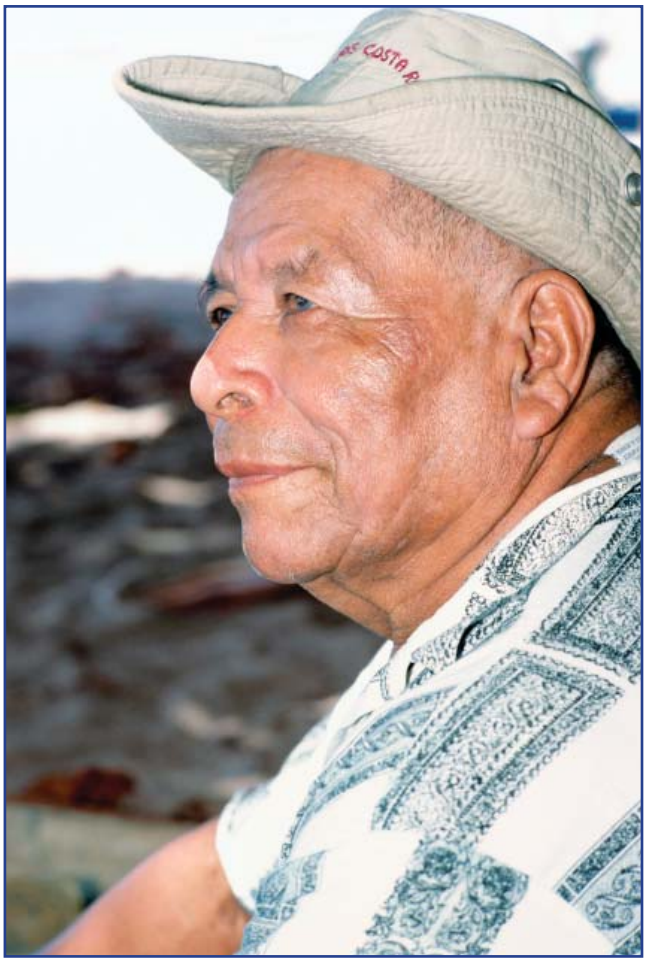
Logic Model Component	Indicator(s)	Relevant Target
MEDIUM- AND LONG-TERM OUTCOMES, CONT.		
People live healthy lifestyles that promote a healthy weight (incorporate key CDC obesity prevention strategies), cont.	Indicator 40: % of mothers who initiate breastfeeding, % who exclusively breastfeed at 3 months, % who exclusively breastfeed at 6 months, and % who breastfeed at one year (not necessarily exclusively)	Target 4: By 2012, 80% of mothers will initiate breastfeeding, 30% will exclusively breastfeed at 3 months, 10% will exclusively breastfeed through 6 months, and 25% will be breastfeeding (not necessarily exclusively) at one year.
	Indicator 41: % of school age children who eat 3 or more servings of vegetables daily; % of school age children who eat 2 or more servings of fruit daily; % of high school students who eat fruits and vegetables at least five times daily	Target 5: By 2012, 15% of school age children will eat 3 or more servings of vegetables daily and 65% will eat 2 or more servings of fruit daily; and at least 25% of high school students will eat fruits and vegetables at least 5 times daily.
	Indicator 42: % of adults who meet recommended levels of moderate or vigorous physical activity	Target 11: By 2012, increase to 50% the proportion of adults age 18 and older who meet the recommended levels of moderate or vigorous physical activity.
	Indicator 43: % of adults who engage in no leisure-time physical activity	Target 12: By 2012, reduce to 20% the proportion of adults age 18 and older who engage in no leisure-time physical activity.
	Indicator 44: % of high school children who accumulate 60 minutes or more of physical activity per day on 5 or more days of the week	Target 13: By 2012, half (50%) of high school children in Texas will accumulate 60 minutes or more of physical activity per day on 5 or more days of the week.
	Indicator 45: % of adults who, on a typical day, spend 4 or more hours viewing any type of screen (television, computer, or video) outside work	Target 16: By 2012, reduce to 25% or less the proportion of adults who, on a typical day, spend 4 or more hours viewing any type of screen (television, computer, video) outside work.
	Indicator 46: % of school age children who view 3 or more hours of television per day	Target 17: By 2012, the percentage of school age children who view 3 or more hours of television per day will decrease by 5% from 32% among 4th graders, 52% among 8th graders, and 44% among 11th graders; and from 38.5% among high school students.

Data Source	Baseline	Timeline for Tracking Progress
CDC National Immunization Survey-State Breastfeeding Report Card	2007: 75% of mothers initiated breastfeeding, 25% were exclusively breastfeeding through 3 months, 7% exclusively breastfed through 6 months, and 19% breastfed (not necessarily exclusively) at 12 months.	Will monitor state report card as it is repeated
School Physical Activity and Nutrition Survey (SPAN) Youth Risk Behavioral Surveillance System (YRBSS)	SPAN 2004-2005: 13% of 4th graders, 6% of 8th graders, and 5% of 11th graders reported eating 3 or more servings of vegetables; 60% of 4th graders, 47% of 8th graders, and 39% of 11th graders reported consuming at least 2 servings of fruits; YRBSS 2007: 17.4% of high school students ate fruits and vegetables at least 5 times daily	Annual (YRBSS); will monitor SPAN if it is repeated in the future
Behavioral Risk Factor Surveillance System	2007: 46.5% of adults meet recommendation for moderate or vigorous physical activity	Every two years
Behavioral Risk Factor Surveillance System	2007: 28.3% of adults engage in no leisure-time physical activity	Annual
Youth Risk Behavioral Surveillance System	2007: 45.2% of high school students were physically active for a total of 60 minutes or more per day on 5 or more of the past seven days	Annual
Behavioral Risk Factor Surveillance System	2004: 28% of adults spend 4 or more hours viewing any type of screen daily (outside of work)	Will monitor as module is repeated
School Physical Activity and Nutrition Survey (SPAN) Youth Risk Behavioral Surveillance System (YRBSS)	SPAN 2004-2005: 32% of 4th graders, 52% of 8th graders, and 44% of 11th graders view 3 or more hours of television per day; YRBSS 2007: 38.5% of high school students view 3 or more hours of television per day	Annual (YRBSS); will monitor SPAN if it is repeated in the future

Logic Model Component	Indicator(s)	Relevant Target
MEDIUM- AND LONG-TERM OUTCOMES, CONT.		
Reduced prevalence of overweight and obesity	Indicator 47: % of adults overweight or obese (Body Mass Index [BMI] ≥25)	Target 1: Between 2007 and 2012, the percentage of adults in Texas who are overweight or obese (BMI≥25) will not increase from 65.8%.
	Indicator 48: % of school age children with BMI≥85th percentile	Target 2: Between 2007 and 2012, the prevalence of BMI≥85th percentile among school children in Texas will not increase from 42% among 4th graders, 39% among 8th graders, 36% among 11th graders; and 31.5% among high school students.
Improved health through reduced prevalence of chronic disease (cardiovascular disease, cancer, diabetes, etc.)	Indicator 49: % of adults with diabetes	n/a
	Indicator 50: % of adults with cardiovascular disease or stroke	n/a
	Indicator 51: Incidence rate of obesity-related cancer for past 5 years	n/a
DESIRED EFFECTS		
Improved quality of life	Indicator 52: % of adults who report 5 or more days of poor physical health	n/a
	Indicator 53: % of adults who report general health fair to poor	n/a
	Indicator 54: % of adults kept from doing usual activities for 5 or more days due to poor physical or mental health	n/a
	Indicator 55: % of adults with 5 or more days of poor mental health	n/a

Data Source	Baseline	Timeline for Tracking Progress
Behavioral Risk Factor Surveillance System	2007: 65.8% adults overweight or obese	Annual
School Physical Activity and Nutrition Survey (SPAN) Youth Risk Behavioral Surveillance System (YRBSS)	SPAN 2004-2005: 42% of 4th graders, 39% of 8th graders, 36% of 11th graders at-risk-for-overweight or overweight; YRBSS 2007: 31.5% of high school students at-risk-for-overweight or overweight	Annual (YRBSS); will monitor SPAN if it is repeated in the future
Behavioral Risk Factor Surveillance System	2007: 10.3% of adults have been diagnosed with diabetes	Annual
Behavioral Risk Factor Surveillance System	2006: 8.3% of adults diagnosed with cardiovascular disease or stroke	Annual
Texas Cancer Registry	2001-2001: 205.0 (calculated per 100,000) - includes breast, cervix uteri, colon, corpus uteri/ endometrium, kidney, gallbladder, prostate, esophageal, and ovary	Annual
Behavioral Risk Factor Surveillance System	2006: 16.7% of adults report 5 or more days of poor physical health	Annual
Behavioral Risk Factor Surveillance System	2007: 19.6% of adults report general health fair to poor	Annual
Behavioral Risk Factor Surveillance System	2006: 11.1% of adults kept from doing usual activities for 5 or more days due to poor physical or mental health	Annual
Behavioral Risk Factor Surveillance System	2006: 16.9% of adults with 5 or more days of poor mental health	Annual

Summary and Future Plans



With input from internal and external partners, the state plan was narrowed down to 19 Targets, the logic model was finalized, and an evaluation plan for the implementation of the state plan was developed. While all of the original 43 Proposed Texas Targets are important for moving forward in statewide efforts, partners are encouraged to focus on the 19 Targets outlined in this report. The list of indicators can serve as a menu of options for local coalitions, and partners are encouraged to use the indicators in local projects to help Texas make progress on a statewide level. Partners can also continue to use the strategies and action items arranged by sectors contained in the last version of the state plan, which can be found at www.txbringinghealthyback.org. The current document was organized under key strategies rather than sectors, because strategies are generalizable to all sectors of the population.

In creating the evaluation plan, every effort was made to identify accurate and comprehensive data sources for tracking the state of obesity prevention in Texas, however this evaluation plan must be considered a work in progress. It is a living document and indicators may need to be expanded as Texas progresses. For example, the current plan tracks the number of obesity-related bills that are filed and passed, however the content of those bills is not taken into account. In addition, clinical-based treatment of obesity is not included in this version. While the logic model is based on prevention activities, obesity rates will not fall without a focus on both prevention and treatment. Future revisions may incorporate evidence-based clinical models. Furthermore, several indicators with no identified source of data have been highlighted in yellow in the evaluation plan table. Future updates may identify missing data sources and indicators, provide a mechanism for weighting certain indicators for quality, and further fine-tune the evaluation plan. In the coming year, NPAOP looks to integrate with other DSHS Chronic Disease Programs' state plans so that we are all working synergistically to track progress with similar indicators and Targets. DSHS NPAOP will diligently track progress towards Targets using the evaluation plan and will report updates and progress to partners on an annual basis through email communication and our website: www.txbringinghealthyback.org. DSHS NPAOP will continue to refine tracking efforts, identify new sources of data, and solicit partner input as we all work together to move obesity prevention efforts forward in Texas.

Appendices

Appendix A

Excerpts from the *2008 State Nutrition, Physical Activity and Obesity Program Technical Assistance Manual* (CDC Division of Nutrition, Physical Activity and Obesity)

Excerpts from the *2008 State Nutrition, Physical Activity and Obesity Program Technical Assistance Manual* (CDC Division of Nutrition, Physical Activity and Obesity)

Introduction

The national Nutrition, Physical Activity, and Obesity (NPAO) Program supports state efforts to work with communities to develop, implement, and evaluate interventions that address behaviors related to the following six principal target areas:

- Increase physical activity
- Increase consumption of fruits and vegetables
- Decrease the consumption of sugar-sweetened beverages
- Reduce the consumption of high-energy-dense foods
- Increase breastfeeding initiation and duration
- Decrease television viewing

This section of the manual provides the background and rationale for the target area, intervention strategies and examples of interventions. The example interventions are provided as illustrations of the strategy only; therefore, materials may not be available to replicate the intervention. The summary of intervention strategies for each target area describes systematic reviews of the effectiveness of interventions. If a systematic review is not available, the summary includes the best evidence available from the peer-reviewed literature. This manual is a living document, and it will be updated as more evidence related to the effectiveness of interventions is reported in the literature.

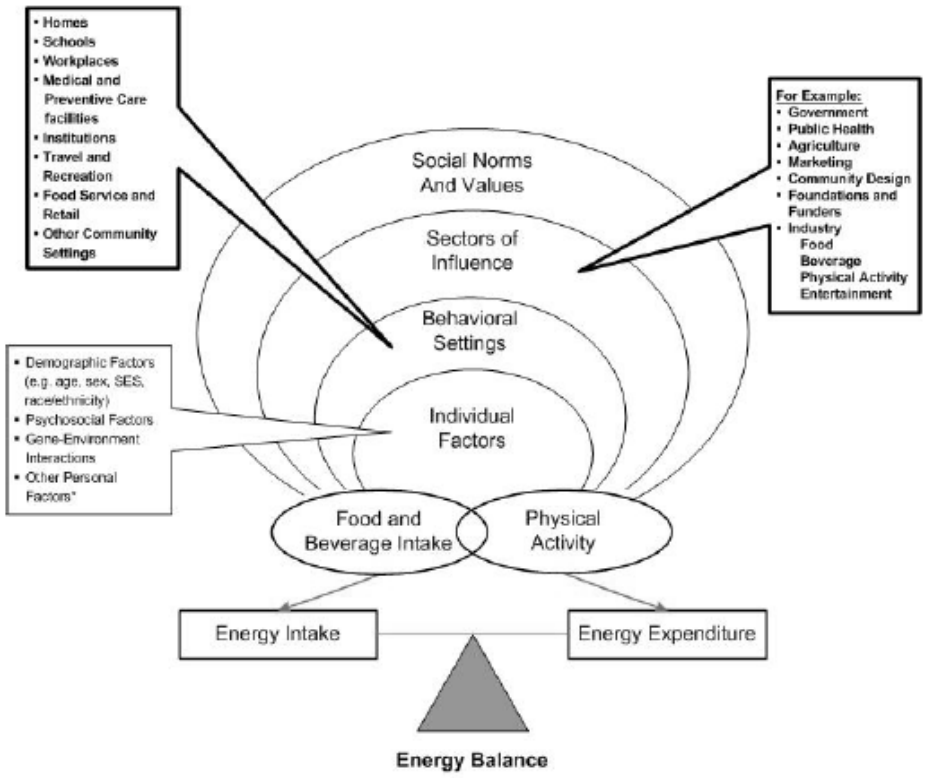
Design and Implement Strategies and Interventions

Public health practitioners can implement interventions at every level of the Social-Ecological Model (societal, community, organizational, interpersonal, and individual levels). The Socio-Ecological Model in the figure on the next page shows the various behavioral settings and stakeholders that commonly exist in a community.

Interventions to prevent and control obesity should include an approach that creates environments, policy and practices that support both the increase in physical activity and improvement in dietary behaviors within the target audience. Interventions that are multi-component (education with skill-building, creating access with campaigns for awareness, etc.) go beyond the audience acquiring new knowledge and toward building skills and practicing the desired behavior. Approaches and interventions selected should be determined only after formative assessment of the target audience. Further assessment of the target audience and their needs, barriers and goals will direct the practitioner to the most appropriate intervention to reach the target population's nutrition and physical

activity goals. Evaluation planning in the early stages of developing interventions is also critical.

Community Framework for Addressing Overweight and Obesity



*Note: Other relevant factors that influence obesity prevention interventions are culture and acculturation; biobehavioral interactions; and social, political, and historical contexts.
Sources: Adapted from IOM (2007); CDC (2006)

Evidence-Based Intervention Strategies

The paragraph titled “Effectiveness” included for each strategy describes the effectiveness of interventions reported in systematic reviews and individual studies published in peer-reviewed journals. One of the most rigorous types of evidence is the scientific reviews of published studies conducted by the Task Force on Community Preventive Services. From these reviews, the Task Force makes recommendations that are published as part of the *Guide to Community Preventive Services*, commonly referred to as the Community Guide. The Community Guide has several reviews in process; however, only a few recommendations have been published related to physical activity, nutrition, and obesity. The Community Guide has found sufficient evidence to recommend eight community interventions that include informational; behavioral and social; and environmental and policy approaches to increase physical activity. It also found sufficient evidence to recommend that interventions in the worksite that combine nutrition and physical activity are effective in helping employees lose weight and keep it off in the short term.

Additional resources on interventions and strategies are also available.

- The national NPAO Program has a Prevention Research Center cooperative agreement special interest project with the University of North Carolina Center of Excellence for Training and Research Translation to develop a Web site, www.center-trt.org that provides practitioners with the best available evidence for interventions and strategies related to the prevention and control of obesity.

- The Community Guide recommendations are available on their Web site, www.thecommunityguide.org. A link in the Community Guide's "Research Tested Intervention Programs" provides access to the next Web site:

- http://cancercontrolplanet.cancer.gov/index.html. This site provides general examples and access to materials sorted by the Community Guide strategies. It is important however, to tailor interventions to the needs, cultures, and barriers of the target audience. Additional tools are also provided on this Web site to assist in properly adapting evidence-base programs: http://cancercontrol.cancer.gov/use_what_works/start.htm

Terminology Used in This Section of the Manual

Intervention strategy: The term strategy is not used consistently in evidence summaries and literature reviews of interventions. In this manual the term strategy is used to describe an approach, course of action, or method used to achieve an objective, which in turn is a means to achieving a goal. A strategy may be a health intervention at the individual or population level, but it can also refer to such things as a systems change initiative. Please note that the Community Guide does not use the term strategy to describe the eight community interventions that are recommended to promote physical activity. However, they are defined as strategies in this manual so a consistent term can be used throughout the document.

Intervention: Any kind of planned activity or group of activities (including programs, policies, and laws) designed to prevent disease or injury or promote health in a group of people.

Intervention example: Examples of interventions are provided as illustrations of the strategy. They were obtained from the Community Guide review, other objective reviews, or peer-reviewed articles. Other interventions consistent with the strategy may also exist. Users of this manual may not always find available materials to replicate the interventions described in this manual.

Sources for the Community Framework for Addressing Overweight and Obesity:

Sobush K, Dunet D, Kettel Khan L. Common community measures for obesity prevention. Draft Methodology Report. Atlanta, GA: CDC, 2007.
Institute of Medicine. 2007. Progress in preventing childhood obesity: how do we measure up? Washington, DC: The National Academies Press, 2007.

Target Area: Physical Activity

Background and Rationale

Regular physical activity helps maintain good health across the life stages. It substantially reduces the risk of coronary heart disease—the nation's leading cause of death and decreases the risk for stroke and breast and colon cancer. It also contributes to healthy bones, muscles, and joints and promotes healthy growth and development in children and reduces the risk of falls among older adults. Physical activity reduces the risk of anxiety and depression and promotes psychological well-being, and is associated with fewer hospitalizations, physician visits, and medications. Regular physical activity is effective, recommended treatment for many chronic diseases, including arthritis, heart disease, high blood pressure, high blood cholesterol, osteoporosis, diabetes, and chronic lung disease. In addition, physical activity, combined with appropriate calorie intake, is an important component of weight control. In both adults and children, physical activity reduces the adverse effects of overweight and obesity, such as elevated blood pressure, hyperlipidemia, and glucose intolerance (1-3).

Despite these well-documented benefits, 52% of U.S. adults in 2005 did not engage in recommended amounts of physical activity; during that same time, 27.5% of adult men and 23.2% of adult women did not engage in any physical activity during their leisure time (4) [BRFSS 2005]. There is also cause for concern among adolescents: In 2003, for example, 10% of surveyed youth had not participated in any moderate or vigorous physical activity during the prior week (4) [YRBSS 2005].

Barriers for individuals include lack of time, energy, motivation, skills, resources, and supportive social environments; concerns about injury; inclement weather; age-related loss of fitness and health problems (5-7). Community barriers for physical activity include lack of access to quality recreational facilities (i.e., parks, trails, and gyms) and public transit (bicycle and pedestrian infrastructure and connectivity)(8-9).

Changing physical activity behaviors requires an understanding of how factors at each level of the social ecological model affect the individual's physical activity. Therefore, understanding the determinants of physical activity becomes the cornerstone in setting policies, recommendations, and guidelines that better enable individuals and communities to engage in physical activity as part of a healthier lifestyle and helps to guide the development, implementation, and evaluation of interventions. Physical activity resources for health professionals may be found on CDC's Web site: http://www.cdc.gov/nccdphp/dnpa/physical/health_professionals/index.htm

Overview of Strategies

The Community Guide recommends the following eight community-level physical activity intervention strategies (10-12). Though they are described separately, these interventions are typically multi-component and can share the same components in practice. For example, community-wide campaigns can simultaneously use social support and point-of-decision prompts to create or enhance access to places for physical activity. For any intervention strategy to be selected, decision-makers should consider these interventions in light of factors such as community resources, needs, priorities, and constraints.

Community Guide Approaches and Interventions

Informational

- Community-wide campaigns
- Point-of-decision prompts

Behavioral and social

- Individually adapted health behavior change programs
- Enhanced school-based physical education
- Social support interventions in community settings

Environmental and policy

- Creation of or enhanced access to places for physical activity combined with informational outreach activities
- Community-scale urban design/land-use policies and practices
- Street-scale urban design/land-use policies and practices

Promising Interventions

- Safe Routes to School

References

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3. Strong WB, Malina RM, Limkie CJ, et al. Evidence based physical activity for school-age youth. J Pediatr 2005; 146:732-7.
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11. CDC. Guide to preventive services: systematic reviews and evidence-based recommendations—physical activity 2005. (http://www.thecommunityguide.org/pa/)
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Physical Activity Strategy 1: Community-Wide Campaigns

Description (1-5)

Community-wide campaigns can successfully integrate multiple strategies in community settings to positively affect levels of physical activity and related outcomes.
The following are general characteristics of community-wide campaigns:

- They are large-scale, intense, and highly visible, with messages directed to large audiences through various media, including television, radio, newspapers, movie theaters, billboards, and mailings.

- They include non-media components such as:
  - partnerships
  - environmental change (e.g., new walking trails)
  - policy change
  - social support (e.g., buddy system, self-help groups)
  - physical activity counseling

Examples

- *Wheeling Walks* (6) used paid advertising to encourage walking among sedentary older adults. The program's campaign activities included paid newspaper, TV and radio advertising; weekly press conferences and news coverage; worksite programs; Web site exposure; and other public health education programs implemented by physicians, health professionals, and

ministers. The results indicate that 30% of Wheeling's sedentary residents increased their walking to the recommended level compared to a 16% increase in a control community.

- *BC Walks* (7) promoted 30 minutes or more of moderate-intensity daily walking among insufficiently active residents of Broome County, New York, aged 40 to 65 years. Promotion activities included paid advertising, media relations, and community health activities. Impact was determined by pre-intervention and post-intervention random-digit-dial cohort telephone surveys in intervention and comparison counties. Exposure to the campaign was reported by 78% of Broome County survey respondents. Sixteen percent of Broome County participants changed from nonactive to active walkers compared to 11% in the comparison county. Forty-seven percent of Broome County respondents reported any increase in total weekly walking time compared to 36% in the comparison county.

Effectiveness (2-4)

- The Community Guide rates the evidence for community-wide campaigns as strong.
- The recommendation for community-wide campaigns is based on review of 10 studies in which the median effect size suggests these campaigns result in a 5% increase in the proportion of the population that is physically active, and a 16% increase in average, individual energy expenditure.
- In addition to increasing physical activity, community-wide campaigns were often shown to improve community capacity by developing or strengthening social networks and by improving community members' sense of cohesion as well as their collective ability to bring about change.
- This strategy is effective among diverse populations (e.g., different racial/ethnic and socioeconomic groups) and in diverse settings (e.g., rural, urban).

References

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Physical Activity Strategy 2: Point-of-Decision Prompts for Stairwell

Description (1-5)

Point-of-decision prompts are low-cost, easy to implement, and effective ways to increase levels of physical activity by increasing the number of individuals who use stairs instead of elevators or escalators in worksites and elsewhere in the community. Most interventions are multi-component involving physical change of stairwell, promotion of stairwell as a means of daily physical activity and sometimes include a challenge or competition. The following are general characteristics of Point-of-Decision Prompts for Stairwells:

- Visual cues (e.g., signs or banners posted near elevators, escalators, or moving walkways) designed to encourage individuals to use stairs.
- A variety of messages highlighting the benefits of physical activity, weight loss, and saving time. Examples (6) include: “Your heart needs exercise, use the stairs.” “Improve your waist line, use the stairs.”
- Signs designed to be highly visible (e.g., through placement and size).
- Reminders to people that opportunities to be more physically active are nearby.
- Making stairs a viable and appealing option by ensuring stairwells are accessible, safe, well-lighted, and clean, and by providing music or displaying art.

Example

- *Stairwell to Better Health* (6) was a study conducted by CDC’s Division of Nutrition and Physical Activity to determine if making physical changes to a stairwell in the Atlanta-based, Koger Center Rhodes Building, along with adding music and motivational signs would motivate employees to use the stairs instead of the elevator.

Effectiveness (2-4)

- The Community Guide rates the evidence for point-of-decision prompts as sufficient.
- The recommendation for point-of-decision prompts is based on review of six studies in which the median effect size suggests that these prompts increase stair use by 54%.
- This intervention is effective among diverse populations (e.g., men, women, the obese, older adults) and in diverse settings (e.g., malls, subways, trains, bus stations, university libraries).

References

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Physical Activity Strategy 3: Individually Adapted Health Behavior Change Programs

Description (1-3)

Individually adapted health behavior change programs can increase physical activity in diverse settings and among diverse populations. The following are general characteristics of individually adapted health behavior change programs:

- Targeting participants in a variety of community settings (through workshops and seminars) or larger populations (through web-based programs, mail, or telephone) which may provide opportunities to reach larger numbers of people at less expense.
- Tailoring to an individual's specific interests, preferences, and readiness for change.
- Follow-up phone calls or monitoring by a counselor or coach.

- Teaching of behavioral skills such as:
  - setting goals and monitoring progress
  - building social support for new behavioral patterns
  - reinforcing behavior through self-reward and positive self-talk
  - problem solving geared toward maintenance of behavior change
  - preventing relapse into sedentary behaviors

Examples

- *The Strong for Life Program* (4) was cited by the Community Guide as one example of an evidenced-based program to increase physical activity in sedentary older adults. The program consisted of a 35-minute videotaped program of 11 exercises performed by a trained leader. Participants used color-coded elastic bands of varying resistance. Those in the program also received two home visits by a physical therapist who also reviewed behavioral techniques to maintain program adherence and progression such as goal setting, rewards, behavioral contracts and self-monitoring. This program resulted in significant improvements in the intervention group as opposed to the control group (those on waiting list) in the areas of hip extension, hip abduction, shoulder abduction in addition to a significant reduction (18%) in overall disability.

- *Active Choices* (5): One of the Active for Life interventions developed at the Stanford Prevention Research Center, Active Choices is a telephone-assisted physical activity counseling program for older adults that helps to incorporate more physical activity into their daily lives. The program includes an introductory face-to-face session with a health educator in order to determine realistic, individualized exercise plans. Written information on physical activity is also provided to help increase understanding of the different aspects of physical activity and to motivate behavior change. This initial session is followed by regular telephone contacts initiated by the health educator. This program was shown to be effective from pretest to posttest in increasing moderate-to-vigorous physical activity and total physical activity. In addition, participants reported improvements in satisfaction with body appearance, body function, depressive symptoms, perceived stress, and decreased BMI.

Effectiveness (1-3)

- The Community Guide rates the evidence for individually adapted health behavior change interventions as strong.
- The recommendation for individually adapted behavior change is based on review of 18 studies in which the median effect size suggests this intervention increases an individual's physical activity by 35% and energy expenditure by 64%.

- Individually adapted behavior change increases other measures of physical activity, such as the percentage of people starting exercise programs and the frequency of physical activity.
- These interventions are effective among diverse populations (e.g., different racial/ethnic minority and socioeconomic groups) and in diverse settings (e.g., communities, worksites, schools).

References

1. CDC. Increasing physical activity; a report on recommendations of the Task Force on Community Preventive Services. MMWR 2001;50(RR18):1-16.
2. CDC. Guide to preventive services: systematic reviews and evidence-based recommendations—physical activity. 2005. http://www.thecommunityguide.org/pa/
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Physical Activity Strategy 4: Enhanced Physical Education (PE) in Schools

Description (1-3)

School-based PE interventions have been shown to increase the amount of time youth are moderately to vigorously physically active in PE classes. Characteristics of this intervention could also be applied in a variety of youth-oriented settings, such as after-school programs and community and recreation centers. The following are general characteristics of enhanced physical education programs:

- Increase in the amount of time a child is physically active in class.
- Increase in length and frequency of classes.
- Increase in the number of children moving as part of a game/activity. by modifying game rules (e.g., in softball, having the entire team run the bases) or changing activities (e.g., replacing softball with soccer, so more students are active).
- High equipment-to-student ratio (e.g., at least every other student has a ball or jump rope).
- Active instruction and class management (e.g., students walk during roll call or engage in an activity while returning equipment).

- Use of limited and appropriate competition (e.g., no individual competition, a reduced emphasis on winning).
- Enthusiastic role models and reinforcement for active students.
- Focus on activities that are enjoyable to the children.
- Classroom instruction and/or behavior change strategies, such as goal setting, decision-making, and self management.
- Health-education activities.

Examples

- *CATCH (Coordinated Approach to Child Health)* (4) uses a multi-component behavioral health intervention to be delivered in grades 3, 4, and 5 to students of diverse communities. CATCH consists of components that are school-based (school food service, physical education, and classroom curricula) and family-based (home curricula, family fun nights), and are aimed at decreasing consumption of fatty and salty foods and increasing physical activity. Curricula are implemented by classroom teachers over a specific time period during the school year. CATCH has been shown to increase moderate-to-vigorous physical activity in PE classes and exceeds the Healthy People 2010 goal of greater than 50% of (PE) class time should be devoted to moderate-vigorous activity.

- *SPARK (Sports, Play, and Active Recreation for Kids)* (5) promotes high levels of enjoyable physical activity among fourth- and fifth-grade students during physical education classes and outside of school. SPARK consists of a physical education component and a self-management component. The physical education includes health fitness activities such as aerobic dance, aerobic games, walking/jogging, and jump rope, combined with skill-fitness activities such as basketball and soccer. The self-management program teaches behavioral change skills to help children generalize regular physical activity outside of school. Students spent significantly more minutes being physically active in specialist-led and teacher-led classes than in control groups. Also, two years later, girls in specialist-led classes were superior in abdominal strength and cardiorespiratory endurance than girls in control classes.

Effectiveness (1-3)

- The *Community Guide* rates the evidence for school-based PE as strong.
- The recommendation for school-based PE is based on review of 14 studies, in which the median effect size suggests that PE interventions result in an 8% increase in aerobic fitness among school-aged children.
- This strategy is effective among diverse populations (e.g., different racial/ethnic minority and socioeconomic groups, boys and girls, elementary- and high-school students) and in diverse settings (e.g., rural, urban).

References

1. CDC. Increasing physical activity: a report on recommendations of the Task Force on Community Preventive Services. MMWR 2001;50(RR18):1-16.
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Physical Activity Strategy 5: Social Support in Community Settings

Description (1-3)

Social support interventions can create, strengthen, and/or maintain new or preexisting social networks that provide supportive relationships for physical activity behavior change and which address barriers to exercise and negative perceptions about activity. The following are general characteristics of social support interventions in community settings:

- Buddy systems.
- Making contracts with others to complete specified levels of physical activity
- Walking or other activity groups to provide companionship, friendship, and support while being physically active.
- Monitoring of progress (e.g., through phone calls from other participants or project staff to encourage continued participation).

Examples

- *Physical activity training for weight loss in Latinas* was a controlled trial (4) that consisted of a support group that attended 10 weekly one-hour sessions and included self-monitoring using diaries and exercise, as well as describing the assistance received from an assigned buddy. Additionally, women were taught problem-solving skills such as identifying weight-related or exercise-related problems, generating a plan for solving the problem, implementing the plan, evaluating the outcome, as well as re-

evaluating and revising the plan if not successful. Women participating in this study showed significant reductions in body mass index, waist-to-hip ratio, waist circumference, and hip circumference, and increases in fitness, as well as frequency of walking for exercise.

- *Healthy Mothers On the Move (MOMs), (Madres Saludables en Movimiento)* (5) is a community-based program that consists of a 10-week curriculum designed to increase knowledge, skills, and reduce physical and social environmental barriers to stress management, health-promoting exercise, and dietary practices for pregnant and post-partum Latino women. Women's Health Advocates (WHA's) lead curriculum-focused meetings as well as make phone calls and home visits to the participants. Weekly group discussions garner social support (through mothers addressing their concerns, ideas, and successes) as well as provide skill-building activities (food demonstrations, exercise classes, stress management lessons, etc.). Participants in the program report an increase in physical activity as well as healthier eating.

Effectiveness (1-3)

- The Community Guide rates the evidence for community social support as strong.
- The recommendation is based on review of nine studies, in which the median effect size suggests this intervention results in a 44% increase in time spent being physically active and a 20% increase in energy expenditure.
- This intervention is effective with diverse populations (e.g., men, women, adults of different ages, sedentary individuals, physically active individuals) and in diverse settings (e.g., communities, worksites, universities).

References

1. CDC. Increasing physical activity: a report on recommendations of the Task Force on Community Preventive Services. MMWR 2001;50(RR18):1-16.
2. CDC. Guide to preventive services: systematic reviews and evidence-based recommendations—physical activity 2005. ((http://www.thecommunityguide.org/pa/))
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Physical Activity Strategy 6: Create or Enhance Access to Places for Physical Activity Combined with Informational Outreach Activities

Description (1-5)

This intervention provides and promotes physical activity opportunities for the target population by creating or improving access, combined with distribution of information. The following are general characteristics of interventions that create or enhance access to places for physical activity, combined with informational outreach activities:

- Creating access such as building a new facility or walking trail or providing access to an existing nearby facility in a community where an opportunity for physical activity did not exist.
- Enhancing or improving access or eliminating barriers to improve physical activity opportunities such as adding new equipment or extending facility hours of operation, extending or improving walking trails.
- Involving the efforts and partnerships of various community entities (e.g., worksites, coalitions, agencies, and community members) to create an ongoing and sustainable supportive environment for physical activity.
- Multi-component interventions that promote and sustain environmental or policy changes (e.g., promotion/awareness, skill-building, health education, referrals to physicians or additional services, health and fitness programs, and support or buddy systems).

Examples

- The Stanford University's Health Improvement Program (HIP) (6) was an employee health program that aimed to increase physical activity and decrease weight. The intervention was a 16-week exercise program on a nearby worksite paracourse that consisted of 19 different activity stations placed around a 1½ mile course. Also, free ninety-minute exercise classes, occurring immediately after work, were offered to employees twice a week. Participants were also provided exercise-related information about potential health benefits of regular aerobic activity and were encouraged to exercise at least one additional time per week outside of class in order to reach the program goal of exercising at least three times a week. Those attending the classes showed significant increases in fitness and decreases in weight and significantly greater confidence concerning their ability to exercise regularly and increased energy relative.

- *The Physical Activity for Risk Reduction (PARR*) (7) project sought to promote physical activity among low-income and low-education African American residents of public housing and rental communities in Birmingham, Alabama. PARR enhanced access to existing facilities and physical activity programming by providing childcare, transportation, enhanced safety, and peer-led programming. To ensure enhanced access to facilities and programming, the PARR staff recruited and extensively trained individuals from each community and paid them as part-time leaders for the local activity sessions. Each participating community also received physical activity tools as well as incentives for participants that included weightlifting equipment, supplies for aerobics programs (including audiotapes and boom boxes), tools for screening participants (scales, stethoscopes and sphygmomanometers), and prizes for participation (mugs, t-shirts, certificates for free laundry, etc). As part of data collection prior to program implementation, several barriers to physical activity were addressed such as childcare, transportation, organized and facilitated walking groups, safer walking routes, and waived fees at local community recreation centers for a full year. Sixty-nine percent of community members attended at least one event.

Effectiveness (2-4)

- The Community Guide rates the evidence for creating or enhancing access combined with informational outreach to places for physical activity as strong.
- The recommendation for creating or enhancing access to places for physical activity is based on review of 10 studies in which the median effect size suggests this intervention results in a 25% increase in the proportion of the population who are physically active at least three times per week.
- Most of the studies reported weight loss or decrease in body fat among participants.
- This intervention is effective among diverse populations (e.g., different racial/ethnic minority and socioeconomic groups) and in diverse settings (e.g., low-income communities, industrial plants, universities, federal agencies).

References

1. Brownson RC, Haire-Joshu D, Luke DA. Shaping the context of health: a review of environmental and policy approaches in the prevention of chronic diseases. Ann Rev Public Health 2006;27:341-70.
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Physical Activity Strategy 7: Street-Scale Urban Design and Land-Use Policies and Practices

Description (1,2)

Using street-scale urban design and land-use policies and practices can help increase physical activity among target populations. The following are general characteristics of street-scale urban design and land-use policies and practices:

- They are implemented in small geographic areas, generally a few blocks.
- Urban-design elements and practices include:
  - ensuring sidewalk construction or improvements
  - increasing the ease and safety of crossing streets
  - introducing or enhancing traffic-calming and speed-reduction measures (e.g., speed bumps, traffic circles)
  - improving street lighting
  - enhancing aesthetics of the street landscape
  - addressing safety issues (e.g., perception of crime)
- Land-use policies and practices include:
  - environmental changes
  - roadway design standards
  - zoning regulations
  - building codes
  - builders' practices
- A broad array of disciplines and expertise are used, such as public health professionals, urban planners, architects, engineers, and developers.

Example

- *Sunnyside Piazza* (3) was a neighborhood revitalization effort, the goal of which was to convert a neighborhood intersection that was in disrepair into an attractive community gathering place. They used artistic features intended to foster a sense of community, and they enhanced the street landscape, repaired and improved sidewalks, including the installation of a canopy. The intersection was enhanced by including a large sunflower street mural, a community kiosk with a solar-powered lamp, an art wall, seating areas adorned with glass mosaic, and overarching trellised hanging gardens in front of nearby homes. The multidisciplinary team for the project included local nonprofit organizations that addressed city repairs, resident landscape designers and architects, advocates, and other community members.

Effectiveness (1-3)

- The Community Guide rates the evidence for street-scale urban design and land-use policies and practices as sufficient.
- The recommendation for street-scale urban design is based on review of six studies, in which the median increase in physical activity across all effect measures (difference or change in people walking, number active, or users of path or cyclists) was 35%.
- Other potential benefits include improvements in green space, increased sense of community, decreased isolation, and reduction in crime and stress.

References

1. CDC. Guide to preventive services: systematic reviews and evidence-based recommendations–physical activity *2005. (*http://www.thecommunityguide.org/pa/)
2. Heath GW, Brownson RC, Kruger K, Miles R, et al. The effectiveness of urban design and land use and transport policies and practices to increase physical activity: a systematic review. J Physical Activity and Health 2006;3(Supp 1):S55-S76.
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Physical Activity Strategy 8: Community-Scale Urban Design and Land-Use Policies and Practices

Description (1,2)

Community-scale urban design and land-use regulations, policies and practices commonly strive to create more livable communities. The following are general

characteristics of Community-scale urban design and land-use policies and practices:

- Typically represent large geographic areas, generally several square miles or more and involve a broad array of disciplines and expertise, such as public-health professionals, urban planners, architects, engineers, and developers.
- Design elements and practices, such as:
  - ensuring sidewalk construction or improvements
  - increasing the ease and safety of crossing streets
  - introducing or enhancing traffic-calming and speed-reduction measures (e.g., speed bumps, traffic circles)
  - improving street lighting
  - enhancing aesthetics of the street landscape
  - addressing safety issues (e.g., perception of crime)
  - considering community design, density, and diversity by planning mixed-development communities; addressing the density and diversity of residential and commercial development; and locating stores, jobs, schools, and recreation areas within walking distance of where people live
- Land-use policies and practices, such as:
  - environmental changes
  - roadway design standards
  - zoning regulations
  - building codes
  - builders' practices

Example:

- *The Montgomery County, Maryland Pedestrian Safety Advisory Committee* (3-5) appointed a Blue Ribbon Panel on Pedestrian and Traffic Safety in June 2000 under growing concerns about pedestrian safety and access amidst increasing pedestrian fatalities. As part of their research, the panel, consisting of 40 multidisciplinary members, analyzed trends and examined all aspects of hazardous driving from both behavioral and engineering perspectives.

  The panel released a report of their work in 2002 that outlined 54 recommendations organized by a) education, b) enforcement, c) engineering, and d) legislation. The report recommended a pedestrian impact statement as a requirement for all construction projects. The statement includes assessment of connectivity with destinations within two miles; master plan items for sidewalks, bikeways, and streetscape requirements; existing conditions related to pedestrian walkability and safety; and recommended improvements and their related costs. Developers in Montgomery County were encouraged to assess pedestrian impact on both new and existing projects.

Following this report, a recommendation was made to create the Pedestrian Safety Advisory Committee to oversee the implementation of the recommendations made in the Blue Ribbon Panel report. The Pedestrian Impact Statement Policy was formally adopted in May 2004. Collaboration with developers was key, but most were already conducting similar assessments so the new county policy was adopted with little resistance.

In July 2007 legislation was approved to require all capital improvement projects to submit bicycle and pedestrian impact statements. The Pedestrian Safety Advisory Committee continues to sustain itself as a committee within the county executive government and continues to set the agenda and report on the status of the implementation of the recommendations made by the Blue Ribbon Panel Report.

Effectiveness (1-3)

- The Community Guide rates the evidence for community-scale urban design and land use policies and practices as sufficient.
- The recommendation for this intervention is based on review of 12 studies in which the median increase across a variety of measures of physical activity related to these interventions was 161%.
- Other potential benefits include improvements in green space, increased sense of community, decreased isolation, and reductions in crime and stress.

References

1. CDC. Guide to preventive services: systematic reviews and evidence-based recommendations–physical activity 2005. (http://www.thecommunityguide.org/pa/)
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Physical Activity Strategy 9: Safe Routes to School

Description

Safe Routes to School interventions are designed to increase the number of youth walking or bicycling to school. These interventions are referred to in a number of ways (e.g., Active Transportation to School, KidsWalk, Walk to School, Walking School Bus) and are of particular interest to public health because of their potential to increase physical activity and improve health among a large number of youth (1-7). Central to this intervention is the creation of an action plan to identify strategies and their solutions across the four "E's": 1) Education programs that teach motorists, pedestrians and bicyclists about their responsibilities and about traffic rules; 2) Enforcement enlists the help of local law enforcement to focus efforts in problem areas and increase community awareness of school safety issues; 3) Engineering tools include a variety of street design techniques that can reduce traffic volumes, decrease speed, and improve safety; and 4) Encouragement which includes developing awareness and building enthusiasm for walking and biking. Therefore, these interventions include multiple components including those recommended by the Community Guide (i.e., promotional campaigns, urban design and land-use policies and practices at both the street- and community-scale levels.)

Specific examples of components in Safe Routes to School programs include:

- Addressing infrastructure (8-10):
  - ensuring sidewalk construction or improvements (e.g., continuity of sidewalks
  - increasing the ease and safety of crossing streets
  - introducing or enhancing traffic-calming and speed-reduction measures (e.g., speed bumps, traffic circles)
  - improving street lighting
  - enhancing aesthetics of the street landscape
  - addressing safety concerns and issues (e.g., perception of crime, bullying)
  - providing and securing bicycle facilities
- Changing policy or practices (11-13):
  - environmental changes
  - roadway design standards
  - zoning regulations
  - building codes
  - builders' practices
- Promoting and/or changing behavior (13):
  - safety campaigns
  - walking and bicycling skill building
  - active transport campaigns

- penalties for disobeying of traffic or pedestrian laws
- Involvement of partners (8,9,11,12,13):
  - a broad array of community members, disciplines and expertise, such as students, parents, teachers, school administrators, public-health professionals, urban planners, architects, engineers, and developers.

Safe Routes to School legislation was passed in 2005 as part of SAFETEA-LU (Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users [Public Law 109-59]) (14). The law provides funding for state departments of transportation to create and administer programs to make walking and bicycling to school a safe and viable option for children in grades in grades K–8. Construction and capital improvement projects must be located within approximately two miles of a primary or middle school (grades K - 8). Updates on how states are using these funds are available at the National Center for Safe Routes to School Clearinghouse (15).

Example

- *Safe Routes to School*: Arlington County, Virginia, board spearheaded a county-wide initiative to increase active transportation (i.e., walking and bicycling to school) at all public schools, joining the national Safe Routes to School effort. Schools across the county have integrated four key components:
  - □ Engineering—The Department of Public Works conducted an in-depth safety evaluation of existing conditions at 32 county schools. Design issues that were identified included minor changes such as improving signage and markings at crosswalks and school zones. Major design issues that were identified included new sidewalks and traffic-calming measures, such as pedestrian refuge islands and curb extensions within a quarter mile of schools.
  - □ Education—Education occurred on multiple levels: Teachers provided or reviewed safe walking tips by integrating the material into their curriculum, while parents reinforced these lessons at home. Students were provided maps that identified things like stop and yield signs, marked crosswalks, crossing guards, and bus stops. Through local media and messages on utility bills, the public information office disseminated a comprehensive public awareness campaign promoting Safe Routes to School, encouraging residents' cooperation, and discouraging parents from driving to school to ease traffic congestion.
  - □ Enforcement—Police increased their presence during student travel time and also ticketed for violations such as speeding, illegal turns, and crosswalk obstruction. Speed trailers were prominently displayed, and crossguards were given cell phones to report dangerous situations quickly.

□ Encouragement—The campaign praised the efforts of those walking to school and continually highlighted the health and community benefits of children walking to school.

The case study (link below) on the Arlington County project reported that more than half of the students in Arlington County are now walking to school and some schools report that as many as 95% of students walk every day. See the following description of the Arlington County program, *Community Rallies Around Safe Routes to School Program,* in the Active Living by Design Web site: http://www.activelivingbydesign.org/index.php?id=342

Effectiveness

Though the Community Guide did not include these interventions in their review, individual studies suggest that these interventions can be effective (1,4-7).

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Target Area: Increased Consumption of Fruits and Vegetables

Background and Rationale

Fruits and vegetables contain essential vitamins, minerals, fiber, and other compounds that may help prevent many chronic diseases. Compared with people who consume a diet with only small amounts of fruits and vegetables, those who eat more generous amounts as part of a healthful diet are likely to have reduced risk of chronic diseases, including stroke and perhaps other cardiovascular diseases, and certain cancers (1-3). Fruits and vegetables are also relatively low in calories per volume of food because of their high fiber and water content; thus, in their natural form they are low in energy density. Substituting fruits and vegetables for higher-energy-dense foods, such as those high in fat and added sugars, can therefore be part of a successful weight management strategy (4,5). The CDC publication, *Can eating fruits and vegetables help people to manage their weight*? (Research to Practice Series, Number 1) examines the evidence from available studies to determine whether or not eating fruits and vegetables can help with weight management (5).

Despite evidence supporting the health benefits of consuming fruits and vegetables, very few Americans consume the recommended amounts. The *Healthy People 2010* objectives for the nation (6) include increasing to 75% the percentage of persons who eat at least two daily servings of fruit and increasing to 50% the proportion of persons who eat at least three daily servings of vegetables. In 2005, only 1 in 3 adults (32.6%) met the fruit objective and 1 in 4 adults (27.2%) met the vegetable intake (7). The 2005 Dietary Guidelines (8) recommend 2 cups of fruit daily and 2 ½ cups of vegetables per day for many Americans (based on their level of physical activity and caloric needs). However, an assessment of fruit and vegetable intake found that about 1 in 10 Americans consume the recommended amounts and even fewer consume adequate variety including those delivering vital micronutrients such as dark green and orange vegetables (9). In general, Americans with lower consumption include men, younger adults, and those with less education and lower incomes.

Public health approaches for eating behavior change in populations have focused on increasing individual knowledge and awareness through educational approaches. The National Fruit and Vegetable Alliance (NFVA) is a national partnership dedicated to coordinating efforts across key public and private organizations to increase the amount of fruits and vegetables consumed by Americans. CDC is the lead federal agency and health authority for the NFVA. The Fruits & Veggies—More Matters® brand[1] that was developed by the NFVA is used to promote fruit and vegetable consumption through health education campaigns, printed materials, and consumer Web sites: http://www.fruitsandveggiesmorematters.org/ and http://www.fruitsandveggiesmatter.gov.

[1] The Fruits & Veggies—More Matters brand replaced the 5 A Day for Better Health brand in 2007.

Many barriers prevent adequate consumption of fruits and vegetables including lack of knowledge about health benefits, availability, cost, individual taste preferences, social support, preparation skills, and time available for preparing food. Studies also show disparities in access to fruits and vegetables as measured by type of stores, geographic distance, or store concentration (10). Choosing healthy foods is difficult in environments where retail establishments are comprised mainly of convenience and stores and fast food restaurants or for individuals dependent on public transportation for supermarket access.

Overview of Strategies

Several multi-component interventions that include behavioral and environmental approaches to increase fruit and vegetable consumption are published. Many of these multi-component interventions to increase fruit and vegetable consumption are included in comprehensive intervention programs to prevent cardiovascular disease or obesity that may include other interventions for dietary or physical activity behaviors. However, the term multi-component is used here to describe the different components included in the interventions to increase consumption of fruits and vegetables such as a curriculum, parent newsletters, or modifications of cafeteria menus and not multiple behaviors that the intervention program may have addressed. Efforts that show evidence of success in increasing fruit and vegetable consumption, at least in short-term assessments, have been reviewed and include interventions in schools (11,12), worksites (13-16), health care settings (14) and other community settings such as faith-based organizations (17) and childcare settings (18). Typical environmental strategies used in these interventions include changes in food availability (physical access or environmental opportunity), price (economic access, incentives), or promotional, advertising, and point-of-purchase information whereas policy strategies include the setting of standards for training of staff or foods served in cafeterias or meetings. Recently, greater attention has been given to the role of environmental influences on food choices and to policies that might increase access and availability to fruits and vegetables. In this manual the term access includes geographic accessibility to a food retailer (e.g., the distance to stores), the type of food retailer in the vicinity (e.g., supermarkets, small stores, or farmers' markets), and public transportation systems that provide access to food retailers. The term availability includes the number and types of fruits and vegetables offered. Increasing the availability of fruits and vegetables can be achieved through a variety of ways such as training food-service staff on how to make existing menu items more healthful by adding fruits and vegetables and partnering with the food system to provide more fruit and vegetable options.

Environmental and policy strategies address local area barriers such as access, availability, and cost of fruits and vegetables. For example, without access to grocery stores that offer a wide variety of quality, nutritious foods at lower prices, poor and minority communities may not have the ability to purchase and consume a variety of healthy food (19). Policies aimed at improving fruit and

vegetable consumption should consider the physical environment, economic determinants (cost, income), and promotion strategies (marketing and advertising) with consideration of the many factors influencing decisions on food choice. Decisions related to food choice include biological determinants such as hunger, appetite, and taste; education, skills (e.g., cooking) and time; social determinants such as culture, family, peers and meal patterns; and, attitudes, beliefs and knowledge about food (20). Therefore, efforts to develop policy and environmental strategies should consider use of a social-marketing approach in the same way that planners of behavioral change strategies do. This approach will help planners understand barriers to and determinants of fruits and vegetable purchases and consumption among different demographic groups; shopping and purchasing behaviors; and how the prices of fruits and vegetables and perceptions of their quality and affordability influence purchases and ultimately consumption.

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Fruit and Vegetable Strategy 1: Multi-component Interventions in Schools

Description

Studies of multi-component interventions to increase consumption of fruits and vegetables in schools have shown that these interventions affect fruit and vegetable consumption among children positively (1). The following are general characteristics of multi-component interventions in schools:

- A classroom curriculum that involves interactive learning through skill-building and problem-solving exercises that familiarize students with fruits

and vegetables such as school gardens, exercises that teach them how to prepare these foods, and also how to promote them at home.
- Parental involvement, especially for primary-school-aged children.
- Information on recipes, tips on purchasing and preparing fruits and vegetables at home, and short family assignments.
- Training for food service staff on the purchase, preparation, and promotion of fruits and vegetables.
- Training for teachers on nutrition education, fruit and vegetable promotion, and/or how to integrate the intervention goals into existing curriculum.

Examples

- *Active Programme Promoting Lifestyles Schools Study (APPLES)* (2) The intervention schools received the active programme promoting lifestyle education in schools (APPLES) that consisted of teacher training, modifications of school meals to increase fruits and vegetables, and the development and implementation of school action plans designed to promote healthy eating and physical activity over one academic year. The school action plans that targeted the health curriculum, physical education, tuck shops, and playground activities were developed based on their perceived needs. The intervention targeted the whole school community including parents, teachers, and catering staff. The increase in fruit and vegetable consumption was statistically significant among children in the intervention group compared to the control group (mean difference 0.3 servings/day).

- *5 a Day Power Plus Program* (3) consists of four components: behavioral curricula for the 4th and 5th grades, parental involvement/education, school food service changes, and industry support and involvement. The food service intervention encouraged consumption of fruits and vegetables through four strategies: 1) point-of-purchase promotion of fruits and vegetables, 2) enhancing the attractiveness of fruits and vegetables, 3) increasing the variety served, and 4) providing an additional fruit item on the days that a baked food was served. The industry component provided the produce, educational materials, and incentive materials. The increase in fruit and vegetable consumption was statistically significant among children in the intervention group compared to the control group (mean difference 0.4 servings/day).

- *5 a Day Power Play! Campaign* (4) included two levels of interventions: school only and a more intensive school plus community involvement. The school only included a behavioral curricula for 4th and 5th grades, parental involvement/education, school food service changes, and industry support and involvement. The intensive school plus community involvement intervention group received the school only components plus independent work in classrooms, canteens, and with families, community

youth organization activities, point-of-purchase education and promotion in produce markets, public service announcements on local television, and fruit and vegetable competitions sponsored by the fruit and vegetable industry. The increase in fruit and vegetable consumption was statistically significant among children in the intervention group compared to the control group (mean difference 0.7 servings/day).

- *Planet Health* (5) aims to improve activity and dietary behaviors among 6th, 7th, and 8th grade students. Planet Health uses an interdisciplinary curriculum approach, placing intervention materials in language, arts, math, science, social studies, and physical education classes, using grade-level and subject-appropriate skills and competencies. The Planet Health approach increases the efficiency of program delivery by using classroom teachers with minimal health education training to implement the materials. The program enhances its effectiveness by involving multiple classes and frequent use of different approaches to learning. The lessons on increased consumption of fruits and vegetables resulted in an increase in fruit and vegetable consumption that was statistically significant among children in the intervention group compared to the control group (mean difference 0.32 servings/day).

Effectiveness

School-based interventions effectively improve fruit and vegetable consumption among participants. One systematic review of interventions to increase fruit and vegetable consumption found an increase in fruits and vegetables servings that ranged from 0.3 to 0.99 per day (1). The review included 14 school-based interventions.

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Fruit and Vegetable Strategy 2: Multi-component Interventions in Childcare Settings

Description

Of the nation's 21 million preschool-aged children, 13 million spend a substantial part of their day in childcare facilities (1). Given that food and physical activity preferences are formed early in life, childcare settings offer opportunities to develop and evaluate effective strategies to increase the consumption of fruits and vegetables among young children (2). However, few studies have been published. Efforts that may affect fruit and vegetable consumption in childcare settings include:

- Curricula that a) incorporate color, music, and the senses to teach children that healthy food and physical activity are fun and b) hand puppets used to initiate nutrition activities reflecting messages from the food pyramid.
- Parent component including newsletters and homework assignments for parents.
- Parent education with a focus on interactive cooking lessons and recipes that fit the topic of the lesson such as fruits and vegetables and dietary fiber.
- Staff training on the importance of healthy eating and physical activity for young children as well as for staff.
- Self-assessment of the childcare setting's nutrition and physical activity environments.

Because there are few interventions, there are not general characteristics across interventions for this strategy.

Examples

- *Nutrition and Physical Activity Self-Assessment for Child Care (NAP SACC* (3,4) is an environment and policy intervention that uses self-assessment by childcare centers and technical support provided by local health consultants to effect changes in the policies, practices, and environment for healthy eating and regular physical activity of children in childcare. The nutrition areas of focus included fruits and vegetables; fried food and high-fat meats; beverages; menus and variety; meals and snacks; food items outside of regular meals and snacks; supporting healthful eating; nutrition education for children, parents and staff; and nutrition policy. The center director completes a self-assessment instrument with help from key staff, such as the cook, teacher, or program planner. Based on the assessment the director chooses a key area to improve, such as availability of fruits and vegetables. Local health consultants then provide technical assistance on the key area. Results of this pilot study suggest that the intervention centers improved their scores

on the self-assessment instrument and made tangible nutrition and physical activity environmental improvements, whereas comparison centers demonstrated minimal change. However, given the small sample size for the comparison group, it could not be concluded that the increase in total score on the self-assessment instrument was or was not statistically significant. A larger study is presently underway to test effectiveness of this intervention and look more closely at changes in fruit and vegetable consumption.

- *Color Me Healthy* (5) is a curriculum designed to promote physical activity and healthful eating among children ages 4-5 through a variety of fun, interactive learning opportunities. Designed to be used in family daycare homes, Head Start classrooms, and childcare centers, the *Color Me Healthy* kit contains materials needed to implement the program. In North Carolina where the curriculum was developed by the state cooperative extension program, implementation among the state's childcare agencies included training of childcare providers by cooperative extension personnel who partnered with county personnel. Childcare providers indicated that using *Color Me Healthy* increased the children's knowledge about healthy eating. Of participating providers, 79.0% indicated that the children were more willing to try new foods, and 82.0% reported that the curriculum had improved fruit and vegetable recognition.

Effectiveness

Although childcare education can be a major force in shaping children's diet only a few published studies are available on behavioral and environmental approaches to increase consumption of fruits and vegetables in childcare settings. Additional studies are needed to confirm these positive findings from environmental self assessment tools and curricula.

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Fruit and Vegetable Strategy 3: Multi-component Interventions in Worksites

Description

Worksites offer access to a large portion of the adult population and serve as a vehicle for delivering interventions across multiple levels of influence (intrapersonal, interpersonal, and environmental) within one setting. Studies show that multi-component worksite interventions increase fruit and vegetable consumption among adults (1). The following are general characteristics of multi-component interventions in worksites:

- Nutrition-education strategies focusing on individuals include nutrition lectures and workshops as well as educational materials such as self-help manuals, personalized feedback, Web-based learning, and newsletters.
- Interpersonal approaches include combining education with social activities such as peer support and family-related activities.
- Environmental supports include nutrition displays, cafeteria point-of-purchase information, healthful food preparation or choices, and exposure to 5 a Day events.
- Environmental strategies to increase access to fruits and vegetables may include increasing healthful offerings in cafeterias, vending machines, and at meetings. Other environmental changes may include providing breakroom facilities for food preparation and storage (refrigerators).
- Polices include setting standards for food at meetings and in cafeterias.
- Creation of worker-staffed advisory boards to plan and implement interventions.

Examples

- *Treatwell 5 a Day* (2) used an advisory board, a core education program (18 sessions), cafeteria point-of-purchase labeling, behavior change strategies, health fairs, taste tests, and food and cooking demonstrations. The *Treatwell 5 a Day program* has a family-support component, including the use of a family learn-at-home program, family newsletter, and annual family picnic. Outcome measures showed that workers receiving family support fared better than those who did not. The increase in fruit and vegetable consumption was statistically significant among in the intervention group compared to the control group (mean difference 0.48 servings/day).

- *Health Works for Women (HWW)* (3) was a 5-year worksite promotion intervention that focused on rural, blue-collar women working in small- to medium-size manufacturing industries. The two-pronged intervention included individualized computer-tailored "women's magazines" that provided 1) personalized feedback, strategies for change and community resource information, and 2) a natural helpers intervention that trained women in the workplace to diffuse information and provide support for healthy behavior changes. The increase in fruit and vegetable consumption was statistically significant among the intervention group compared to the control group (mean difference 0.7 servings/day).

Effectiveness

Worksite interventions have been shown to effectively increase fruit and vegetable consumption among diverse ethnic groups as well as the general population. These efforts can improve dietary practices with positive effects on dietary fat and fiber as well as fruit and vegetable consumption. One systematic review of interventions to increase fruit and vegetable consumption found an increase in fruits and vegetables servings that ranged from 0.13 to 0.70 per day (1). The review included 11 worksite interventions.

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Fruit and Vegetable Strategy 4: Multi-component Interventions in Faith-Based Organizations

Description

Studies show that multi-component interventions in faith-based organizations increase fruit and vegetable consumption among adults (1). Faith-based organizations offer access to a large portion of the adult population and serve as a vehicle for delivering interventions across multiple levels of influence. However, few studies have been published. Efforts that may affect fruit and vegetable consumption in faith-based settings include:

- Use of peer education, lay advisors, lectures, workshops, and speakers

- Motivational interview phone calls that provide personal counseling and education
- Printed materials such as cookbooks and videos on fruits and vegetables that use spiritual messages
- Nutrition displays and promotions in the cafeteria as well as healthy choices in the cafeteria
- Pastor support and community involvement

Because there are few interventions, there are not general characteristics across interventions for this strategy.

Examples

- *Black Churches United for Better Health (BCUBH)* (2) was an intervention trial that aimed at increasing availability of fruits and vegetables at church functions and grocery store promotions; produced computer-tailored newsletters; and provided lay health advisors who conducted education sessions and cooking classes and distributed printed education materials. The pastor also gave support to the project. The increase in fruit and vegetable consumption was statistically significant among the intervention group compared to the control group (increase of 0.85 servings/day).

- *Eat for Life* (3) was a intervention trial to increase fruit and vegetable consumption that included Eat for Life self-help (SH group) materials and motivational interview (MI group) phone calls. The self-help materials consisted of an *Eat for Life* cookbook that contained recipes from church members and the video "Forgotten Miracles." The cookbook also included information about the health benefits of fruits and vegetables, tips for shopping and storing fruits and vegetables, and cooking techniques. The video "Forgotten Miracles" promoted fruit and vegetable consumption using both spiritual and secular motivational messages. Dieticians conducted three motivational interview phone calls with each participant. The increase in fruit and vegetable consumption was statistically significant among the intervention group compared to the comparison group. The net difference between the MI group and the comparison group was around 1.2 servings/day and the net difference between the MI and SH groups was around 1.0 servings/day.

- *Body and Soul* (4) is a intervention that was developed using key components of the Black Churches United for Better Health and the Eat for Life interventions. The Body and Soul intervention includes churchwide nutrition interventions, self-help materials, and motivational interviewing. The churchwide activities include a kick-off event, development of a project coordination committee, at least three churchwide nutrition events plus one additional event involving the pastor, and at least one policy change. The self-help materials include the Eat for Life cookbook and the

video “Forgotten Miracles.” Lay counselors conduct two motivational interview phone calls with each participant. The increase in fruit and vegetable consumption was statistically significant among the intervention group compared to the control group. Post-test differences were 0.7 and 1.4 servings for the 2-item and the 17-item fruit and vegetable frequency measures, respectively.

Effectiveness

These three interventions in African American churches produced an increase in fruit and vegetable consumption from 0.7 to 1.4 servings per day (1).

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Fruit and Vegetable Strategy 5: Multi-component Interventions in Health Care Settings

Description

Multi-component interventions in the health care setting can improve fruit and vegetable consumption. This strategy aims to influence dietary behavior primarily on the individual and interpersonal level (1). Nutrition information is often prepared on the basis of theoretical constructs such as stages of change, transtheoretical model, or the health belief model (1). The following are general characteristics of multi-component interventions in healthcare:

- Individual approaches that may consist of dietary assessment followed by tailored counseling, computer-tailored messages, personalized letters, role-playing, teaching self-monitoring, training to overcome barriers to selecting healthful foods, goal-setting, and guidance in food shopping and preparation (1).

- Interpersonal approaches that often include social support via cooking workshops, food demonstrations, lectures, discussion groups, and field trips to grocery stores or farmers' markets (2).

Examples

- *Puget Sound Eating Patterns Study (PEP)* (3) was a tailored, multi-component self-help intervention designed to promote lower fat consumption and increase fruit and vegetable consumption among enrollees of a large health maintenance organization. The tailored self-help intervention included a manual that provided information about short- and long-term benefits of increasing fruit and vegetable consumption, information about grocery shopping, dining out, and modifying meals to increase fruit and vegetable consumption. The specialized dietary-change materials included tip sheets, refrigerator magnets, recipe cards, shopping lists, and self-evaluations. Each participant received a dietary analysis and a computer-tailored letter with motivational and behavioral feedback based on the diet analysis as well as one motivational interview phone call. In addition, semi-monthly newsletters were sent to participants.

- *Computer-Tailored Print Materials:* A study (4) was conducted among healthy adults enrolled in a North Carolina health maintenance organization to determine the effectiveness of different computer-tailored nutrition newsletters to improve the number and variety of fruits and vegetables consumed. The intervention groups received non-tailored nutrition newsletters, tailored nutrition newsletters without a goal-setting component, or tailored nutrition newsletters with a tailored goal-setting component. All newsletters contained strategies for improving fruit and vegetable consumption. Tailored newsletters used computer algorithms to match a person's baseline survey information with the most relevant newsletter messages for promoting dietary change. All three newsletter groups had significantly higher daily intake and variety scores compared with the control group. Although there was a trend of improved intake and variety with each added newsletter element, there were no significant differences at follow-up among the newsletter groups.

Effectiveness

Multi-component Interventions based in health care settings have been shown to modestly increase fruit and vegetable intake among adults eligible for primary care. Increases in fruit and vegetable consumption vary with the type of intervention. One systematic review of interventions to increase fruit and vegetable consumption found an increase in fruits and vegetables servings that ranged from 0.1 to 1.4 servings per day (1). The review included nine healthcare interventions. More impact was found with adults at risk for diet-related chronic disease and adults motivated to make dietary changes (2).

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Fruit and Vegetable Strategy 6: Increasing Access to Fruits and Vegetables

Description

Increasing access makes it easier for people to obtain fruits and vegetables. To date, research has focused on defining the relationship between where people live and their access to fruits and vegetables. Little research has evaluated the impact of policy and environmental changes designed to increase access to fruits and vegetables. Factors related to access of fruits and vegetables include geographic accessibility (e.g., the distance to stores), the type of food retailer in the vicinity (e.g., supermarkets, small stores, or farmers' markets), as well as access to homegrown or local produce. In some communities, food access is a transportation problem. Increasing access in these communities includes making sure people can get to food-service outlets that offer fruits and vegetables, either by ensuring that public transportation is available or by bringing food retailers to their neighborhood (1,2). Communities are seeking innovative ways to improve food access through solutions that focus on improving transportation options, supporting urban agriculture and farmers' markets, and expanding food options at the corner grocery store. However, few studies have been published. Practical strategies that may increase the access to fruits and vegetables include:

- Local Food Policy Committees that represent a wide range of organizations with a stake in the local food system that develop policies to improve access to fruits and vegetables and support local agriculture.
- Economic and urban planning land-use policies that include establishing new grocery stores, improving convenience stores, and promoting community gardens and farmers' markets.
- Federal and local transportation policies that support walking, bicycling, and public transit to grocery stores and to farmer's markets.

- Direct marketing of farm-to-plate policies and programs, such as community-supported agriculture, farm-to-work and farm-to-school programs, and farmers' markets.
- Because there are few interventions, there are not general characteristics across interventions for this strategy.

Examples

- *Penrith Food Project* (1) is a case study of a 10-year evolution of a local intersectoral project designed to improve components of a community's food system as an approach to improving nutrition. The project established a standing Food Policy Committee, which plans and oversees project implementation and promotes local food system reform consistent with community nutrition objectives. Members of the Food Policy Committee are directors or supervisors representing a wide range of organizations with a stake in the local food system. The five key areas identified by the Food Policy Committee were 1) improving access to food retail outlets and related transportation services, 2) expanding the availability of healthy choices in food outlets and food services, 3) increasing community facilities and support for breastfeeding, 4) promoting local agriculture, and 5) increasing the safety of food sold. Policies that the Food Policy Committee developed cover food access in planning new housing developments; home-delivery fruit and vegetable services; establishment of fruit stands in business districts; home-delivery of groceries for homebound seniors; and bus route changes to improve access to grocery stores.

- *Philadelphia Food Marketing Task Force* (3) is a group convened by the city council to research the lack of supermarkets in Philadelphia. The Task Force released a report, "Stimulating Supermarket Development: A New Day for Philadelphia," containing ten recommendations to increase the number of supermarkets in Philadelphia's underserved communities. The Philadelphia Food Marketing Task Force has also inspired two new state-level financing tools for supermarket development and support of local agriculture, the Fresh Food Financing Initiative and First Industries. The Fresh Food Financing Initiative is using a $20-million infusion of public funds to leverage an $80-million financing pool for supermarket development. So far the fund has contributed to the establishment of eight new grocery stores. First Industries is an economic stimulus program that provides grants, loans, and loan guarantees to agriculture-related business.

- *Farmers' Market Salad Bar Program* (4) was launched in 1997 by the Santa Monica-Malibu Unified School District (SMMUSD) at McKinley Elementary School. The program was designed to incorporate fresh locally grown fruits and vegetables into the district's school lunch program.

The pilot program had the dual purpose of increasing students' consumption of fresh fruit and vegetables and supporting local farmers by purchasing produce directly from them at local farmers' markets. On the basis of the 1997 pilot project, the program was expanded in the SMMUSD district by the year 2000 from one to 11 schools—nine elementary schools and two middle schools. As the Santa Monica-Malibu salad bar program progressed, project evaluation showed that the model was economically viable from the district's point of view and provided a consistent income to local farmers.

- *The Seniors Farmers' Market Nutrition Program* (SFMNP) (5) provides vouchers to low-income seniors for use at local farmers' markets. The purposes of the vouchers are to 1) provide resources in the form of fresh, nutritious, unprepared, locally grown fruits, vegetables, and herbs; 2) increase the domestic consumption of agricultural commodities by expanding or aiding in the expansion of domestic farmers' markets, roadside stands, and community support agriculture programs; and 3) develop or aid in the development of new and additional farmers' markets, roadside stands, and community support agriculture programs. Farmers reported benefits from the program, have a positive attitude about it, and are willing to make certain accommodations to participate in it again.

Effectiveness

Although there is agreement that policy and environmental changes to increase fruit and vegetable consumption are important, few published studies are available to document their effectiveness in changing fruit and vegetable consumption. Policy and environmental interventions to increase fruit and vegetable consumption need to be created and evaluated.

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Fruit and Vegetable Strategy 7: Increasing Availability of Fruits and Vegetables

Description

Increasing the availability, variety, and convenience of fruits and vegetables are important policy and environmental strategies to increase consumption. Availability focuses on the number and types of fruits and vegetables offered. Increasing the availability of fruits and vegetables can be achieved through a variety of ways such as training food-service staff on how to make existing menu items more healthful by adding fruits and vegetables, and partnering with the food system to provide more fruit and vegetable options such as in retail outlets including restaurants, food courts, cafeterias, lunch wagons, deli counters, take-out food sources, bars and coffee shops that serve food and food service businesses and catering services (1-4). However, few studies have been published. Practical strategies that may increase the availability to fruits and vegetables include:

- Marketing of food products such as bagged, prewashed spinach and salad or “snack-pack” baby carrots and celery sticks, which provide consumers with convenient preparation and take-out options.
- Modifications of school food service menu options to improve the variety and quality of fruits and vegetables including salad bars and a la carte options.
- Modifications of worksite cafeteria menu options and vending machine policies to increase the availability of fruits and vegetables.
- Modification of menu options by restaurants and other food establishments to include more fruits and vegetables in mixed dishes, salad bars, and broth-based soups; and adding more green salads as appetizers and a variety of fruit as dessert options to provide people with healthier choices.
- Promoting more variety of fruits and vegetables in grocery stores including increased placement and shelf space with or without labeling and signage strategies.
- Increasing fruit and vegetable offerings in other retail food markets such as farmers markets.

Because there are few interventions, there are not general characteristics across interventions for this strategy.

Examples

- *5 a Day Power Plus Program* (5) consisted of four components: behavioral curricula for the 4th and 5th grades, parental involvement and education, school food service changes, and industry support and involvement. The food service intervention encouraged consumption of fruits and vegetables via four strategies: 1) point-of-purchase promotion of fruits and vegetables, 2) enhancing the attractiveness of fruits and vegetables, 3) increasing the variety served, and 4) providing an additional fruit item on the days that a baked food was served. The industry component provided the produce, educational materials, and incentive materials. The increase in fruit and vegetable consumption was statistically significant among children in the intervention group compared to the control group (mean difference 0.4 servings/day).

- *The North Karelia Project* (6) was launched in Finland in 1972-1977 in response to the local petition to get urgent and effective help to reduce the great burden of exceptionally high coronary heart disease mortality rates in the area. The intervention used multiple strategies: from innovative media and communication activities and systematic involvement of primary health care to environmental and policy changes in collaboration with food industry and agriculture. An innovative intervention example was the berry project. Over the years, many people voiced concerns about the dietary aims of the project in the area, which was initially strongly devoted to dairy farming. With people sharply reducing their consumption of butter and fatty dairy products, economic problems emerged for dairy farmers and the dairy industry. People were also unsatisfied with the message promoting the consumption of products that were mostly imported, such as fruit and vegetables. During these discussions, the community and project representatives considered the feasibility of growing berries in the northern climate. This led to a major collaborative project between berry farmers, industry, various commercial sectors and the health authorities, which was financed by the Ministry of Agriculture and the Ministry of Commerce. Sales campaigns, new product development and various supportive activities were also involved, in addition to education. Local berry consumption rose gradually, and many farmers switched from dairy to berry production.

- *A supermarket study* (7) examined the retail price, newspaper advertising, display space, and display location quality for selected fruits and vegetables using a fractional factorial research design in four large supermarkets. The resulting impact on rates of sale was analyzed for four classes of items; hard fruit, cooking vegetables, salad vegetables, and soft fruit. The “bonus space” for products in stores increased sales, and improving the quality of the foods' locations significantly increased sales of hard fruit and cooking vegetables.

Effectiveness

Evidence suggests that increasing that availability of healthful food can improve eating habits in a variety of settings and among diverse populations (5-8). In many cases, this strategy has been combined with other healthful-eating strategies, such as point-of-purchase labeling or economic incentives. Additional studies are needed to confirm these positive findings.

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Fruit and Vegetable Strategy 8: Economic Incentives

Description

The cost or affordability of fruits and vegetables is a commonly cited reason why consumers do not eat more of these healthy foods (1). Economic incentives that

consist of pricing policies are strategies that are geared toward increasing the sales and/or consumption of healthful foods such as fruits and vegetables. Economic incentives usually take the form of reduced prices, discount coupons, vouchers redeemable for fruit and vegetable purchases, or bonuses tied to the purchase of fruits and vegetables. Bonuses and voucher approaches used by Food Stamps and WIC are expected to influence food choice through the price effect (effectively lowering the price of fruits and vegetables) and the income effect (giving the participant additional income to spend on food). Often economic incentives are combined with other healthful-eating strategies, such as point-of-purchase labeling or nutrition education. However, few studies have been published. Practical economic incentive strategies that may affect fruit and vegetable consumption include:

- Price reductions of fruits and vegetables in a worksite cafeteria.
- Price reductions of fresh fruits and vegetables in a school cafeteria.
- Food Stamp pilot bonus program providing participants with additional financial bonuses for every $1 of food stamps spent on fresh produce.
- WIC and supplemental food program vouchers redeemable for fruit and vegetable purchases at grocery stores and farmers' markets.

Because there are few interventions, there are not general characteristics across interventions for this strategy.

Examples

- *Fruit and Salad Purchases in a Worksite Cafeteria* (2)*:* This intervention involved two changes from usual cafeteria service. First, the selection of fruits and salad bar choices was increased. Six fruit choices were made available daily throughout the intervention period rather than three, and three additional fresh vegetables were added to the salad bar. Second, the price of salad and fruit was reduced by 50%, from 50 to 25 cents for a piece of fruit and from four to two dollars per pound for salad. The intervention was advertised by posting signs in the cafeteria daily and by a flyer placed in each employee's mailbox. Fruit and salad purchases increased threefold in the intervention period compared to those in the nonintervention period.

- *Fruit and Salad Purchases in a School Cafeteria* (3)*:* The intervention component of the study of this intervention involved two changes from the usual high school cafeteria service. First, baby carrots were a new item that was offered to students. Second, the prices for fresh fruit, baby carrots, and salad purchases were reduced by 50%. During the low-price period, attractive signs promoting the target items were placed near the area where fruit, carrots, and salad were sold. In addition, public address announcements were made during the first week of the low-price period. Fruit sales increased about fourfold, carrot sales increased about twofold,

and there was no significant intervention effect on sales of salad during the low-price period. These intervention results suggest that lower pricing for fruits and vegetables with minimal promotion increases the sales of these items among high schools students.

- *Healthy Purchase Program* (4) is a pilot bonus program passed by the California legislation. Under this program, for every $1 of food stamps spent on fresh produce, participants receive a specified portion back as a bonus. These bonus or voucher approaches could be expected to influence food choices through a price effect (they lower the price of the target food) and through an income effect (they give the participant additional income to spend). If price is the barrier to fruit and vegetable consumption, lower prices should result in food stamp households purchasing more fruits and vegetables. This bonus program includes nutrition education related to fruits and vegetables that may increase the likelihood that food stamp participants will use the additional income to purchase more fruits and vegetables.

- *WIC in Los Angeles County* (5)*:* The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) in Los Angeles conducted a study of the impact of vouchers for purchasing fresh fruits and vegetables among low-income mothers. WIC mothers were issued $10 worth of vouchers per week to buy produce of the participant's choice at either a supermarket or a year-round farmers' market. Participants' consumption of fruits and vegetables and the redemption rates of the vouchers were tracked over the 14-month period of the study. The redemption rates for the farmers' market and the supermarket were similar, 90.7% and 87.5%, respectively. Overall, participants reported purchasing 27 and 26 different fruits and 34 and 33 different vegetables in the farmers' market and supermarket, respectively. These high redemption rates and the larger numbers of different produce consumed confirmed that low-income families highly value the ability to purchase and consume a wide variety of fresh produce.

Effectiveness

There is evidence that economic incentives in the form of reduced prices can increase sales and/or consumption of fruits and vegetables (2-5). Additional studies are needed to confirm these positive findings.

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Target Area: Decrease Consumption of Sugar-Sweetened Beverages

Background and Rationale

A large proportion of added sugar in the American diet comes from the consumption of sugar-sweetened beverages (SSB). From 1994–1996, approximately one-third of added sugar intake came from regular (non-diet) carbonated soft drinks and 10% came from regular fruit drinks/ades and punches (not 100% juice) (1). Soft drink intake has increased dramatically since the 1970s. The percentage of youth who consumed any carbonated soft drinks (regular and low calorie) increased from 37% in 1977–1978 to 56% in 1994–1998. Among adults, consumption of carbonated soft drinks (regular and low calorie) and fruit drinks/ades (not 100% juice) increased by at least 100% between 1977–1978 and 1994–1995 (1). While restaurants, fast food outlets, and vending machines frequently promote and sell carbonated soft drinks, data from the National Food Consumption Survey (NFCS) show that the home is where most children and youth aged 6-17 years of age obtained carbonated soft drinks. During 1994-1998 34% of youth obtained soft drinks at home. Carbonated soft drinks are also widely available in schools; the 2006 School Health Policies and Programs Study (SHPPS) reported that 12.9% of elementary schools, 28.7% of middle schools, and 58.2% of high schools allowed students to purchase soda, fruits drinks that are not 100% juice, or sports drinks from a vending machine or in a school store, canteen, or snack bar during lunch periods.

Beverage companies use extensive advertising and marketing to increase consumption of sugar-sweetened beverages. A 2006 report from the Institute of Medicine concluded that intensive advertising to children and youth influences children's preferences and their requests for high-calorie and low-nutrient-dense foods and beverages (2). Additionally, other studies have shown that portion sizes of SSB have increased over time, as has access to SSB in restaurants, vending machines, schools and the home (1). Larger portion sizes and increased access to SSB can lead to excessive caloric intake. Furthermore, studies

suggest that people do not compensate for the additional calories they consume from SSBs by reducing calorie intake from other foods, and this can also result in excess total calorie intake (3,4).

Potential health problems associated with high intake of sugar-sweetened beverages include weight gain, overweight, or obesity as a result of the additional calories in the diet (1); displacement of milk consumption which can contribute to reduced calcium intake with an attendant risk of osteoporosis and fractures (5,6); displacement of other key nutrients (5,6); and dental caries and potential enamel erosion (7). Several longitudinal observational and experimental studies among adults and youth have found a positive association between intake of SSB and body weight or body mass index (1).

Decrease Consumption of Sugar-Sweetened Beverages: Intervention Strategies

Description

While evidence supports the association between consumption of sugar-sweetened beverages and increased caloric intake and weight gain, the number of published interventions designed to reduce intake of sugar-sweetened beverages is limited, and the interventions have had varying success (1). CDC's 2006 publication, *Does drinking beverages with added sugars increase the risk of overweight?* (Research to Practice Series, Number 3) (1) examines the relationship between drinking beverages with added sugar and weight management. Six interventions to reduce the intake of sugar-sweetened beverages are evaluated in this research to practice report. These interventions included changes in the home and school environments, behavioral counseling, a school-based curriculum, a day camp, a family-based intervention, and a after-school program. Environmental changes to reduce the intake of sugar-sweetened beverages in the home-based and school-based interventions include making water and low-calorie beverages the easy choice by ensuring that water and low-calorie beverage options are available and limiting access to sugar-sweetened beverages (8,9). The school-based curriculum, after-school programs, and the day camp program included interactive sessions on decreasing consumption of sugar-sweetened beverages and drinking more water (10-13). The home-based program also included monthly calls to provide motivational counseling (8).

In recent years, efforts to limit the availability and sale of sugar-sweetened beverages in schools have ranged from legislation affecting all schools in a particular state to changes in a single school setting. The federal government, beverage companies, parents and schools are working to improve school environments. The American Beverage Association (ABA) is working with the Alliance for Healthier Generation to implement the School Beverage Guidelines that limit the number of calories in beverage products. The ABA and the three

companies (Cadbury Schweppes Americas Beverages, Coca-Cola, and PepsiCo) will encourage their bottlers to work with schools and school districts to amend existing contracts to change the product mix to include only beverages included in the policy. The ABA with the Alliance for Healthier Generation will encourage independent food and beverage distributors to adopt this policy by the 2009-2010 school year. Beginning in August 2007 and annually thereafter, the ABA will support an annual analysis that will disclose the status of this initiative. In addition, the recently published IOM report, *Nutrition Standards for Foods in Schools: Leading the Way Toward Healthier Youth* includes school nutrition standards that limit the availability of low-nutrition, high-calorie competitive foods and beverages (14). The term "competitive foods" refers to all foods and beverages sold outside of the federal school lunch and breakfast programs in venues such as vending machines, a la carte offerings in the cafeteria, snack bars, school stores and fundraisers. The nutrition standards take into account the varying needs and responsibility of children and teens—for example, by limiting the sale of caffeine-free diet soda in high schools after school only, and by recommending smaller juice portions for younger children.

Because there are few interventions, there are not general characteristics across interventions for this strategy.

Examples

- A home-based intervention (8) for 13- to 18-year-old adolescents who regularly consumed SSBs was implemented during a 25-week period and included an environmental component to reduce access to sugar-sweetened beverages (soft drinks, juice drinks, punches, lemonades, iced teas, and sports drinks) and provided behavioral counseling. Non-caloric beverages were sent to the participants' households based on participant selection of bottled water and diet beverages. Participants received motivational counseling to help them reduce their intake of SSBs through monthly phone calls. The home-based intervention reduced the consumption of sugar-sweetened beverages by 82% in the intervention group and there was a significant change in BMI among intervention participants at the upper-baseline BMI tertile.

- A four-year school-based intervention (9) promoted environmental change that reduced availability of SSBs among Native American high school students. The intervention was designed to enhance students' knowledge of diabetes, increase their physical activity and their fruit and vegetable intake, and reduce consumption of SSBs. At the study's outset, sugar-free drinks were not available in school vending machines and palatable drinking water was not available at the school because the water source was high in sulfur and iron. As a result, students relied on soft drinks rather than water as the main source of dietary fluids (15). The intervention provided palatable water in coolers for students; sugar-free

drinks were added to vending machines in years 1 and 2; and only sugar-free beverages were available in years 3 and 4. A comparison of the percentage of sugar-sweetened beverages consumed by Zuni youth in year 1 versus year 3 reveals a statistically significant change in consumption patterns. By year 3, students were consuming virtually no sugar-sweetened beverages at school, down from 24 ounces/week/student of sugar-sweetened beverages at the start of the intervention. Sugar-sweetened beverages were replaced by 24 ounces/week/student of water from the water coolers and 7.8 ounces/week/student of diet soda.

- A year-long curriculum intervention (10) in England for children 7-11 years of age provided four one-hour sessions, one in each of four academic terms. The curriculum focused on reducing the intake of "fizzy" drinks (sweetened and unsweetened), and promoting a healthy diet including drinking water. The curriculum incorporated health messages promoting water consumption, demonstrations of the effect of carbonated soft drinks on tooth enamel, a music competition, art activities, and a classroom quiz based on a popular television game. The mean carbonated soft drink (sweetened and unsweetened) intake was reduced over 3 days by 0.6 glasses/3 days in the intervention group and increased by 0.2 glasses/3 days in the control group.

Effectiveness

In four of the six intervention studies (8-13), a statistically significant decrease in consumption of sugar-sweetened beverages was achieved after participating in the interventions. The two studies that did not show a significant decrease in consumption of sugar-sweetened beverages were intervention sites included in the Girl's Health Enrichment Multi-site Studies (GEMS).

The school-based curriculum and home-based interventions reduced the intake of carbonated drinks (sweetened and unsweetened) or decreased the energy intake of sugar-sweetened beverages while the environmental intervention decreased the availability of sugar-sweetened beverages. While the results of these interventions are promising, they are not conclusive and more research is needed.

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Target Area: Increase Breastfeeding Initiation, Duration, and Exclusivity

Background and Rationale

Infants who are not breastfed have a higher risk for ear and respiratory infections, atopic dermatitis, gastroenteritis, necrotizing enterocolitis, type 2

diabetes, and sudden infant death syndrome (SIDS). Benefits of breastfeeding for mothers include decreased risk of breast and ovarian cancer and type 2 diabetes (1). Research shows that the longer a child breastfeeds, the less likely he or she is to be overweight. Three meta-analyses examining the relationship between breastfeeding and pediatric overweight using studies primarily conducted in developed countries suggested that breastfeeding reduced the odds of childhood overweight by 15-30% (2-4). The duration of breastfeeding is inversely related to pediatric overweight (3), and exclusive breastfeeding appears to have a stronger protective effect than breastfeeding combined with formula feeding (4), but more research is needed to understand this relationship. The 2007 CDC publication, *Does breastfeeding reduce the risk of pediatric overweight?* (Research to Practice Series No. 4), summarizes the evidence for public health practitioners (5).

Both *Healthy People 2010* (6) and the *HHS Blueprint for Action on Breastfeeding* (7) recommend an increase in breastfeeding initiation, exclusivity, and duration rates. Despite overwhelming evidence supporting the numerous health benefits of breastfeeding, far too few U.S. infants are breastfed, and durations of exclusive and any breastfeeding are shorter than recommended. Almost a third of newborns are never breastfed and only 42% are breastfed for 6 months. At 3 months, only 31% of infants are exclusively breastfed and this figure drops to 11% by 6 months. Rates of breastfeeding are considerably lower among non-Hispanic African American infants; only 56% have ever been breastfed (8-9).

Many barriers make it difficult for mothers to meet their breastfeeding goals. Routine practices in hospitals often interfere with establishment of early breastfeeding. Mothers often do not receive or have access to support from health care professionals when they encounter difficulties with breastfeeding. Mothers encounter social disapproval from society when they choose to breastfeed in public places. When they choose to work outside the home, they encounter rigid schedules, lack of support from employers and coworkers, and difficulties in finding the time to breastfeed or express milk for their infants (10).

Overview of Strategies

CDC developed *The CDC Guide to Breastfeeding Interventions* to help states select the most appropriate breastfeeding initiatives for particular settings and populations (10). Information is based on scientific evidence provided through individual peer-reviewed studies as well as systematic reviews from the Cochrane Library, a comprehensive collection of up-to-date information on the effects of health care interventions. *The CDC Guide to Breastfeeding Interventions* includes effective strategies for increasing breastfeeding initiation, duration, and exclusivity rates, as well as strategies with limited evidence of effectiveness. Decision-makers should consider these strategies in light of

factors such as community resources, needs, priorities, and constraints. Evidence-based strategies included in *The CDC Guide to Breastfeeding Interventions* are:

- Maternity-care practices
- Support for breastfeeding in the workplace
- Peer support
- Educating mothers
- Professional support
- Media and community-wide campaigns

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Breastfeeding Strategy 1: Maternity Care Practices

Description

Maternity care practices related to breastfeeding take place during immediate prenatal care, care during labor and birthing, and postpartum care. The mother's experience during this time influences breastfeeding initiation, exclusivity, and duration (1). Institutional changes supporting breastfeeding can be the initiation of individual, evidence-based interventions such as rooming-in (2), or discontinuing policies that are not evidence-based such as routine supplemental feeds for breastfed infants. These efforts can also be part of a comprehensive set of changes such as those implemented when a hospital is seeking Baby Friendly Hospital Initiative (BFHI) designation. Those with this designation implement the WHO/UNICEF "Ten Steps to Successful Breastfeeding" (10 Steps), which describes maternity-care practices essential to the support of breastfeeding in maternity-care facilities (3, 4). Incremental Steps *to* BFHI may be more realistic in some cases, by building gradual change in hospitals. Research on the five of the 10 Steps that mothers can report (early initiation of breastfeeding, rooming-in, breastfeeding on demand, no pacifiers, and no supplementation) indicated that mothers participating in these steps were more likely to still be breastfeeding at 6 weeks (5). The "Ten Steps to Successful Breastfeeding" include the following practices:

Have a written breastfeeding policy that is routinely communicated to all health care staff.

- Train all health care staff in skills necessary to implement this policy.
- Inform all pregnant women about the benefits and management of breastfeeding.
- Help mothers initiate breastfeeding within one-half hour after birth.
- Show mothers how to breastfeed and how to maintain lactation, even if they are separated from their infants.
- Ensure that newborns consume no food or drink other than breast milk, unless medically indicated.
- Allow mothers and infants to remain together 24 hours a day (rooming-in).
- Encourage breastfeeding on demand.
- Give no artificial teats or pacifiers to breastfeeding infants.
- Help form breastfeeding-support groups and refer new mothers to these groups when they are discharged.

Examples

- *Baby-Friendly Hospital Initiative (BFHI)* (4) promotes a comprehensive set of changes in hospitals, based on standards set by the World Health Organization/UNICEF, including implementation of the WHO/UNICEF 10 Steps. Boston Medical Center, an inner-city hospital with a high minority and immigrant patient population, showed significant increases in breastfeeding as a result of the changes made to achieve BFHI status.

Effectiveness

- A study conducted in the Boston Medical Center showed an increase of both initiation and exclusive breastfeeding when comparing breastfeeding rates before implementation to full implementation of the 10 Steps leading to BFHI designation (4). A study conducted in Scotland among all birthing facilities with at least 50 births per year showed that women who delivered babies between 1995 and 2002 were 28% more likely to be breastfeeding at 7 days postpartum if they delivered in a BFHI designated facility (5). In addition, one study found that mothers experiencing none of the 10 steps during their hospital stay were eight times more likely to stop breastfeeding before 6 weeks than those experiencing all five of the steps that mothers can report (6). A 2001 study of 17,000 dyads in 31 hospitals and clinics found that the 3-month exclusive breastfeeding rate was nearly seven times higher among BFHI sites than in sites without this designation. The BFHI sites also had significantly higher rates of women still breastfeeding at 12 months (7).

- A Cochrane review of 3,730 women (8) found a negative effect on exclusive breastfeeding of hospital distribution of infant formula marketing items in the form of bags filled with samples and information known as “discharge packs.” Mothers most affected were those at high risk for early termination of breastfeeding, including first-time mothers and those who were non-white, had less formal education, and were ill postpartum (8). Another study of 547 women demonstrated that even educational materials on breastfeeding produced by manufacturers of infant formula and distributed to pregnant women who were intending to breastfeed without actual product samples substantially reduced breastfeeding exclusivity and duration. Women with uncertain or short breastfeeding goals were those most affected (9).

- A Cochrane review of eight studies (10) looking at early skin-to-skin contact (SSC)—i.e., laying the naked baby, prone, on the mother’s bare chest immediately or as soon after birth as possible and covering both with a blanket—found that mothers practicing SSC were twice as likely to be breastfeeding at 1-3 months than those who were not practicing SSC,

and that their infants breastfed an average of 42 days longer than those who were separated.

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Breastfeeding Strategy 2: Support for Breastfeeding in the Workplace

Description

As of July 2007, 13 states had laws requiring employers to accommodate breastfeeding mothers who return to work (1). Essential elements of a successful workplace breastfeeding intervention are space, time, support, and helpful

gatekeepers (managers and human resource professionals) (2). Many factors, such as how many women need support and the resources available, help determine the most appropriate program components for a given setting. Employers can use a variety of strategies to ensure time for breastfeeding or milk expression, such as flexible work schedules or job-sharing. CDC has developed a *Healthier Worksite Initiative Worksite Lactation Program Toolkit* that has examples and instructions on how to create a comprehensive lactation support program for nursing mothers at the worksite. The toolkit was developed by CDC for federal employment worksites as a primary audience; however, it can easily be adapted for use in state and local government worksites, as well as private employment sites http://www.cdc.gov/nccdphp/dnpa/hwi/toolkits/lactation/index.htm (2). The following are general characteristics of interventions that support breastfeeding in the workplace:

- A written workplace policy that clearly states the mother's rights to express milk or breastfeed at work and lists components approved by the worksite, such as time (paid or unpaid) allowed, space provided, and organizational support available.
- Education for all employees on the policy with a focus on pregnant employees, and support resources available in the community or provided by the organization.
- Facility for expression of breast milk or for breastfeeding. An ideal space for breastfeeding is private; well-lit and ventilated; and has an electrical outlet, sink, and comfortable seating. At a minimum, the space should be private (not in a bathroom), clean, and well-lit.

Examples

- *Worksite Lactation Program for WIC Employees* (3) implemented in all Los Angeles County WIC sites includes prenatal education, perinatal (in-hospital) lactation assistance, breast pumps, accommodations for staff to pump at work, ongoing individualized support for employees from Trained Lactation Counselors (TLCs), and public (among staff) recognition for achievement of breastfeeding milestones. All employees from clerical staff to dietitians are eligible to participate in the program.

- *Mutual of Omaha Lactation Program* (4) is an employee lactation program that includes a series of prenatal breastfeeding classes for employees and their partners/spouses, support for breastfeeding mothers as they transition back from maternity leave to work, and worksite accommodations for mothers to express milk.

Effectiveness

- A 2007 Cochrane Review (5) found no randomized or quasi-randomized controlled trials looking at the effectiveness or impact of lactation programs in the workplace. However, individual program evaluations demonstrate that worksite support for breastfeeding mothers makes it possible for women who work outside the home to meet the American Academy of Pediatrics' breastfeeding recommendations.

- The effect of worksite lactation programs on breastfeeding behaviors as well as measures of participant satisfaction and perceptions related to workplace programs have been evaluated. As a result of a worksite intervention for employees of the Los Angeles County WIC sites, nearly 100% of employees who were new mothers initiated breastfeeding, 87.6% breastfed for at least 6 months, and 68.6% for at least 12 months. In addition, more than 48% never provided infant formula to their infants. These rates are all well above Healthy People 2010 goals. The most important factors contributing to high rates of breastfeeding duration and exclusivity, as reported by the employees, were intent to exclusively breastfeed, delayed introduction of formula, presence of breastfeeding support groups at the worksite, and availability of breast pumps at the worksite (3). Participants in the Mutual of Omaha lactation program breastfed an average of 8.26 months, while at the time of the study only 29% of women nationally were still breastfeeding (4). One study of two worksite breastfeeding interventions in California found that approximately 75% of participating mothers continued breastfeeding at least 6 months after they gave birth. Nationally, only 10% of mothers employed full-time were still breastfeeding at six months during that same time (6).

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Breastfeeding Strategy 3: Peer Support

Description

Postpartum hospital stays for women in the United States are short, increasing the need for community-based breastfeeding support. Programs providing one-to-one peer support facilitate access to breastfeeding education and assistance during the perinatal period. Women's social networks are highly influential in their decision-making processes. New mothers prefer to get child-rearing information from other mothers (1). Mothers provide one another with support and counseling to help address barriers to breastfeeding and prevent and manage breastfeeding problems. Ideally, these "peer mothers" have similar socio-cultural backgrounds as those whom they are supporting (2). One model to ensure peer support for new mothers, which is also a core element of the breastfeeding support provided by WIC, is to set up a network of Peer Counselors (mothers of similar backgrounds who have personal breastfeeding experience) to make available to new mothers who might need support and guidance on breastfeeding. The following are general characteristics of breastfeeding peer support programs:

- Leadership and support from health care facility management, as well as ongoing supervision of the peer counselors.
- Peer support program identified as an integral component of services offered through a health care facility as this seems to contribute to ongoing program maintenance (3).
- Provision of standardized and timely training, continuing education, and ongoing support for the peer counselors.
- Access to International Board Certified Lactation Consultants (IBCLCs) and community partnerships for making and receiving referrals.
- Program offered in a variety of easily accessible settings such as community facilities, clinics, or hospitals.
- Contact by peer counselors with mothers by telephone, in the home, or in the clinical setting.
- Support groups facilitated by peer counselors.

Examples

- *WIC Peer Counseling Programs* are funded by the USDA Food and Nutrition Service in each WIC state agency to establish or expand peer counseling programs. The program is comprehensive, providing a training module, templates for forms, recommended policies, standards for

providing support to WIC participants, and requirements for hiring and supervising peer counselors (3,4).

- *Hartford Hospital Peer Counseling Program* was established in a hospital-based setting that serves a predominantly Latino population. The hospital has established the peer counseling intervention as a component of existing multifaceted breastfeeding programs (5). The essential elements of the peer counseling program are one prenatal visit, daily visits during perinatal hospitalization, three postpartum home visits, and monthly phone calls through 6 months postpartum from a peer counselor.

Effectiveness

- One systematic review found that peer-support programs effectively increase rates of breastfeeding initiation and duration, especially among women who expressed interest in breastfeeding and requested support from a peer counselor (6). A subsequent Cochrane review reported that not only did peer counseling positively impact overall breastfeeding rates, it also had a significant impact on the duration of exclusive breastfeeding in the first 3 months. This review also found that face-to-face interaction was more effective than telephone-based support (7).

- Multifaceted interventions that include peer support also are effective in increasing breastfeeding initiation and duration (6). Peer support interventions cover many population groups, including disadvantaged and low-income populations (7). Peer support has been used successfully among middle-income women as well (8). A randomized controlled trial of peer support among low-income Latina women found that women receiving individual peer counseling were more likely to breastfeed at one and three months postpartum than those who received only routine breastfeeding support; in addition, more women in the intervention group initiated breastfeeding (9).

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Breastfeeding Strategy 4: Educating Mothers

Description

This strategy aims to improve mothers' breastfeeding knowledge and skills and to influence their attitudes toward breastfeeding. The following are general characteristics of breastfeeding education programs:

- Usually targets pregnant or breastfeeding women, but may include fathers and others who support the women (1).
- Includes instruction by someone with expertise or training in lactation management.
- Typically occurs in a small, informally structured group setting but may be given one-on-one.
- May be provided in a variety of locations such as medical, community, or worksite settings.

Examples

- *Early Experiences and Counseling for Effective Lactation (EXCEL)* (2), a program in the Guam WIC Program, is designed to provide consistent and ongoing breastfeeding education to adolescent WIC participants tailored to their individual beliefs and expectations. The intervention addresses the breastfeeding barrier of returning to school. Education using culturally appropriate materials is offered as classes in the high schools and individual education in the WIC clinics. The program also provides breastfeeding support after delivery. The intervention resulted in a significant increase in breastfeeding among the adolescents receiving the

intervention compared to a group of adolescents who were not exposed to the intervention but received usual care at WIC and from their physicians.

- *The National WIC Breastfeeding Promotion Project* (3), a comprehensive program based on social marketing principles, was implemented and evaluated in 54 WIC state, territorial, and tribal agencies. Program components included breastfeeding promotion, education, and support. Education of WIC participants was based on a 3-step counseling approach designed for the project, resulting in participant-centered education and counseling provided by health professionals.

Effectiveness

A 2003 review by the U.S. Preventive Services Task Force found that maternal education is the single most effective intervention for increasing breastfeeding initiation and short-term duration (4). One of every three to five women who attended such education sessions continued to breastfeed for up to 3 months. The review defined education as including information on the benefits of breastfeeding, principles of lactation, myths, common problems, solutions, and skills training. In addition, a 2005 Cochrane review concluded that breastfeeding education significantly increases breastfeeding initiation among low-income women in the United States (5).

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Breastfeeding Strategy 5: Professional Support

Description

The primary focus of professional support is counseling, encouragement, and managing lactation crises; education is secondary. This strategy includes any breastfeeding counseling or behavioral interventions provided by health professionals to mothers during pregnancy and after they return home from the hospital. General characteristics of interventions that provide professional support are (1):

- Support is rendered in person or over the telephone, in a group or individual setting, or in a clinic or home setting.
- Support is provided during prenatal and postpartum periods and can be given by an International Board Certified Lactation Consultant (IBCLC) or other health professional, depending on the mother's needs and the availability of services.
- Assistance is provided with infant latch and positioning, management of lactation crises, counseling mothers returning to work or school, and addressing any other concerns from mothers or their families.

Examples

- *Carolinas Medical Center Outpatient Clinic Lactation Education and Follow-up* Program in Charlotte, North Carolina provides education and follow-up for breastfeeding mothers in an out-patient setting to increase breastfeeding duration. The program provides education and counseling in the early postpartum period, a critical period in which many mothers stop breastfeeding (2).

Effectiveness

- The US Prevention Services Task Force found fair evidence that providing ongoing professional support to mothers through in-person visits or telephone contact increased the proportion of women who continue breastfeeding up to 6 months (2).
- A Cochrane review of 34 studies in 14 countries found that professional support was effective at increasing breastfeeding initiation. When combined with lay support, professional support increased duration and exclusivity of breastfeeding (3).

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Breastfeeding Strategy 6: Media and Community-Wide Campaigns

Description

Media campaigns, particularly TV campaigns, can improve attitudes toward breastfeeding and also help increase breastfeeding rates. A comprehensive social-marketing approach including interventions to increase public awareness, can increase rates of breastfeeding initiation and duration while also improving community support for breastfeeding. The following are general characteristics of media and community-wide campaigns to support breastfeeding (1):

- Includes marketing, such as promotions and advertising to support and encourage breastfeeding, and uses imagery to strengthen perceptions of breastfeeding as a normal, accepted activity.
- May take a broad approach using traditional advertising methods, or a narrow focus with methods such as professional endorsements, providing items to targeted audiences, and sponsoring events focused on a specific demographic group.
- May use channels such as television, radio, printed materials, or outdoor advertising.

Example

- *Loving Support Makes Breastfeeding Work* (2-4) is a community-wide campaign for breastfeeding implemented and evaluated in Mississippi that used a social-marketing approach. Results of the Mississippi campaign provided a basis for USDA to provide funding to several states to implement a communitywide version of this campaign. The new campaign, called *Using Loving Support to Build a Breastfeeding-Friendly Community,* helps states develop strategies in the areas of mobilizing staff, client and family education, public awareness, health provider outreach, and community partnerships.

Effectiveness

A 2000 Cochrane review suggests that media campaigns, particularly TV commercials, improve attitudes toward breastfeeding and increase breastfeeding rates (5). Social marketing is established as an effective behavior-change model for a wide variety of public health issues (6). Evaluations of the *Loving Support Makes Breastfeeding Work* strategy found that the comprehensive social-marketing approach, including interventions to increase public awareness through media and other outlets, increased rates of breastfeeding initiation and duration while improving perceptions of community support for breastfeeding (2-4).

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Target Area: Reduce the Consumption of High-Energy-Dense Foods

Background and Rationale

Research shows that people eat a fairly consistent amount of food on a day-to-day basis. This finding holds true whether the amount of food contains many or few calories. Therefore, the number of calories in a particular amount or weight of food (i.e., the food's energy density) affects the total number of calories a person consumes (1). Foods with a lower energy density provide fewer calories per gram than foods with higher energy density. In general, foods with a lower energy density (e.g., fruits, vegetables, and broth-based soups) tend to be foods with either a high water content, a high fiber content, or little fat. High-energy-dense foods are often high in refined grains, added sugar and fats, and tend to be palatable, inexpensive, and convenient (2).

While the influence of dietary energy density on body weight has not been extensively investigated, several observational studies suggest that a relationship exists between consuming an energy-dense diet and obesity. For example, one cross-sectional study with a nationally representative group of adults found that normal weight individuals consumed diets that were lower in energy density than obese individuals (3). In another cross-sectional study, diets with higher energy density were predictive of higher body mass index (BMI) values and had more added fat and sugar (2). A prospective study found that consumption of high-energy-dense diets was a risk factor for higher BMI in both men and women across five different ethnic groups (4). Analyses of cross-sectional data found that dietary energy density has been identified as a correlate of obesity, elevated fasting insulin levels, and metabolic syndrome in U.S. adults (5).

The current food supply contains a significant amount of high-energy-dense foods. Many of these are processed foods that are high in fat and/or sugar and low in nutrients. Portion sizes in this country have also increased over the past two decades in restaurants, grocery stores, and vending machines. Portion sizes for manufactured and restaurant foods in the United States appear to have increased concurrently with obesity prevalence; they began to rise in the 1970s, increased dramatically in the 1980s, and have continued to grow gradually (6). Current portion sizes of French fries, hamburgers and sodas are 2-5 times larger than when they were originally offered in fast food restaurants (7). In addition, the number of eating establishments in the United States increased by 75% between 1977 and 1991. A recent review paper concluded high-energy-dense foods are lower in cost, have high palatability, and are associated with higher energy intakes (8).

Overview of Strategies

The evidence about what works to decrease consumption of high-energy-dense foods is not definitive, but promising strategies include substituting low-energy-dense foods for high-energy-dense foods, decreasing the portion size of high-energy-dense foods, and limiting the availability of high-energy-dense foods.

Encouraging people to eat more foods low in energy density and to substitute these foods for those higher in energy density helps them decrease their caloric intake while eating satisfying portions of food and controlling hunger (9-11). Short-term studies (12-14) show that controlling portion sizes and decreased consumption of high-energy dense foods helps limit calorie intake. A recent study showed that manipulations that decreased portion size and energy density (i.e., substituting fruits and vegetables or incorporating these low-energy-dense foods into mixed dishes) independently influence energy intake, and that these effects were additive and sustained from meal to meal (15). Although both manipulations influenced energy intake, energy density manipulations were stronger than those of portion size. Understanding how energy density and portion size work together can lead to more effective nutrition education messages than simply encouraging people to eat less. People should be encouraged to meet their caloric needs by eating satisfying portions of foods with a low energy density.

School and worksite environments are important influences on food behavior. Increasing attention has focused on the need to establish school nutrition standards that restrict or limit the availability of low-nutrition, high-calorie competitive foods and beverages that are sold outside of the federal school lunch and breakfast programs such as food in vending machines, a la carte offerings in the cafeteria, snack bars, school stores and fundraisers. Several studies have related the availability of snacks and drinks sold in schools to higher intakes of total energy, total fat and saturated fat, and lower intakes of key nutrients, fruits, vegetables, and milk (16). The Institute of Medicine (IOM) recently published *Nutrition Standards for Foods in Schools*, which promotes healthful food choices by limiting high-energy-dense foods (17).

Worksite environments provide opportunities and exposures that also influence individual food choices. Potential worksite policy and environmental change interventions include limiting the availability of high-energy-dense foods and improving the availability of healthful food choices in vending machines as well as changes in menu options and portion sizes of food in the cafeteria (18).

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Reduce Consumption of High-Energy-Dense Foods Strategy 1: Substitute Low-Energy-Dense Foods for High-Energy-Dense Foods

Description

Randomized control trials and a quasi-experimental study (1-3) on lowering energy density for weight control have been reported in the literature. In the quasi-experimental study, participants (1) consumed a reduced-energy diet emphasizing foods that were low in energy density, such as fruits, vegetables, whole grains, and beans. The participants lost an average of 7.3 kg. A randomized control trial (2) examined the effectiveness of incorporating either a low-energy-dense food (broth-based soup) or a high-energy-dense food (dry snack food) into a reduced-energy diet. Participants were provided with one of the following items to incorporate into their daily diet: one serving of soup, two servings of soup, two servings of a dry snack food, or no special food. Participants who consumed two servings per day of low-energy-dense soup experienced 50% greater weight loss than participants who consumed two servings per day of high-energy-dense dry snacks (7.2 kg vs. 4.8 kg). The other

randomized control (3) trial examined two strategies to reduce the energy density of the diet *without* providing the subjects with specific calorie limits. One group of women was advised to decrease the energy density of their diets by increasing their consumption of water-rich foods, such as fruits and vegetables and choosing reduced-fat foods. The other group was counseled only on reducing fat intakes. Both groups lowered the energy density of their diets, and both groups lost weight. The group counseled to eat more fruits and vegetables while also reducing fat intake experienced a greater reduction in the energy density of their diets and lost significantly more weight (7.9 kg vs. 6.4 kg) than the group told just to eat less fat. Even though they lost more weight, those participants eating the lower-energy-dense diet reported consuming more food by weight and experiencing less hunger. In summary, these research studies indicate that consuming a low-energy-dense diet—one that is rich in fruits, vegetables, whole grains, lean meats, and low-fat dairy products—helps people lose weight. At the same time, eating low-energy-dense foods helps people control their hunger and maintain feelings of satiety, or the feeling of fullness and satisfaction experienced at the end of a meal. Satiety and hunger control are important for long-term satisfaction and compliance with an eating plan (4). Findings from these research studies provide important information for developing population-based interventions. The CDC's 2007 publication, *Low Energy-Density Foods and Weight Management: Cutting Calories While Controlling Hunger* (4) includes a comprehensive discussion and summary of the literature related to the impact of eating low-energy-dense foods on calories consumed, satiety, and body weight. Another research-to-practice document included in the CDC Research to Practice Series, *Can Eating Fruits and Vegetables Help People to Manage Their Weight? (5)* provides information on substituting fruits and vegetables for higher energy dense foods. Effective population-based interventions to substitute low-energy dense foods for high-energy dense foods are not well established; therefore, public health practitioners and researchers should be encouraged to develop and evaluate these interventions. Practical strategies that may facilitate the substitution of low-energy-dense foods for high-energy dense foods at the individual, environment and policy levels include:

- Environment and policy levels strategies such as:
  - Food establishments can implement food preparation strategies that lower the energy density of foods so people can choose lower energy versions of their favorite foods, for example:
    - Prepare fruits, vegetables, and other foods without excess fat and sugar.
    - Lower the energy density of frequently consumed foods by reducing the amount of fat or increasing the amount of water-rich foods; however, the most substantial reductions in energy density are achieved when both of these modifications are used simultaneously.

    - Food establishments can offer foods low in energy density such as a broth-based soup or a green salad at the start of the meal or in combination with meals.
    - School and worksite cafeterias or vending machines can offer a variety of low-energy-dense foods such as fruits and vegetables so people can choose to substitute these foods for high-energy-dense foods.
- Individual-level behavioral counseling that helps people control their environment (4) such as:
    - Providing information on how to avoid large portions of foods that are high in energy density, but encouraging foods low in energy density to be consumed in portions that are appropriate for calorie needs.
        - Incorporate a large portion of fruits and vegetables into meals.
        - Include broth-based soups and green salads.
        - Round out meals by adding starchy fruits and vegetables, whole grains, legumes, lean meats, and low-fat dairy food.
        - Limit portion sizes of fried foods including vegetables, refined grains, full-fat dairy foods, and fatty cuts of meats.
        - Consume infrequently, with particular attention to portion size, foods with little moisture, such as crackers, cookies, and chips as well as high-fat foods like croissants, margarine, and bacon.

Effectiveness

Research studies (1-3) suggest that an eating pattern that emphasizes foods that are low in energy density is an effective strategy to reduce the energy density of the diet. A benefit of this type of eating plan is that it allows people to eat satisfying amounts of food while restricting their energy intake. Furthermore, this type of eating plan uses positive messages (i.e., eat satisfying portions of low-energy-dense foods), which has been shown to result in greater dietary changes than restrictive messages (i.e., eat small portions of all foods) (6).

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Reduce Consumption of High-Energy-Dense Foods Strategy 2: Decrease the Portion Size of High-Energy-Dense Foods

Description

Short-term studies show that controlling portion sizes helps limit calorie intake, particularly when eating high-calorie foods (1-3). The Dietary Guidelines urge Americans to pay special attention to portion sizes, which have increased significantly over the past two decades (4). Portion size is the amount of a single food item served in a single eating occasion, such as a meal or a snack. Many people confuse portion size with serving size, which is a standardized unit of measuring foods. Portion size is the amount offered to a person in a restaurant or in the packaging of prepared foods, or the amount a person chooses to put on his or her plate. For example, a bagel sold in grocery stores or restaurants usually constitutes at least two servings, but is considered only one portion. People eat more when they are confronted with larger portion sizes, and they do not compensate for eating larger portions by eating fewer calories at the following meal or during the rest of the day (5). As the portion size served increases, both the weight of food consumed and energy intake also increase.

Only one randomized control trial (6) has been conducted to determine how the effects of portion size and energy density combined influence energy intake and satiety over several days. Two daily menus were developed consisting of commonly used foods that could be manipulated in energy density. The energy density of the reduced versions of the foods was decreased by 25%, either replacing full-fat ingredients with low-fat alternatives, thereby reducing the amount of fat, or increasing the proportion of fruits or vegetables. The standard portion size of food was selected so that a 25% reduction in portion size would still provide an adequate weight of food. Results of the study indicated that reducing the portion size and energy density of commonly consumed foods led to significant and independent decreases of energy intake when served over multiple days. The effects on energy intake were additive and were sustained from meal to meal, demonstrating that reductions in both portion size and energy density can help to moderate energy intake without increased hunger.

The CDC's publication, *Do Increased Portion Sizes Affect How Much We Eat?* (7) includes a comprehensive discussion and summary of the literature related to how large portion sizes may have contributed to weight gain among Americans.

Effective population-based interventions to decrease the portion size of high-energy-dense foods are not well established; therefore, public health practitioners and researchers should be encouraged to develop and evaluate these interventions. The CDC research-to-practice document and the randomized control trial that examined the impact of decreased portion size of high-energy-dense foods on energy intake provide information to develop practical strategies that may facilitate decreasing the portion size of high-energy-dense foods at the individual, environment and policy levels. These strategies include.

- Environment and policy levels strategies such as:
  - Food establishments can provide menu options of foods that are reduced in portion size.
  - School and worksite vending machines and grocery stores can offer smaller package sizes of high-energy-dense foods so people can choose a more appropriate portion size.
- Individual-level behavioral counseling that helps people control their environment (7) such as:
  - Raising awareness of portion distortion by promoting understanding of the differences in portion size and serving size.
  - Helping people control calorie intake when faced with large portions by splitting an entrée with a friend at a restaurant or not putting serving dishes on the table at home for second helpings
  - Helping people assess the right amount to eat by promoting food logs, measured portions, and food models.
  - Helping people control their environment by purchasing smaller package sizes.

Effectiveness (2)

Only one clinical trial that used both decreased portion size of high-energy-dense foods and substitution of low-energy-dense foods for high-energy-dense foods has been published that found that these effects were additive in reducing energy intake and were sustained meal to meal (2). Additional studies are needed to confirm these positive findings.

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Reduce Consumption of High-Energy-Dense Foods Strategy 3: Limit Availability of High-Energy-Dense Foods

Description

To date, most school and worksite interventions that limit high-energy-dense foods have done so by modifying cafeteria menus to decrease the availability of foods high in fat and added sugar (1,2). Although some studies have incorporated these environmental change elements in multi-component interventions, few have focused on environmental interventions as a primary intervention approach. The recent focus on environmental approaches in interventions has highlighted the lack of available measures and criteria that can be used to assess the food environment. Researchers are now beginning to develop criteria and standards the can be used to assess the food environment and develop policy to make environmental changes. The recently published IOM report, *Nutrition Standards for Foods in Schools: Leading the Way Toward Healthier Youth* includes school nutrition standards that limit the availability of low-nutrition, high-calorie competitive foods and beverages (3). The term “competitive foods” refers to all foods and beverages sold outside of the federal school lunch and breakfast programs in venues such as vending machines, a la carte offerings in the cafeteria, snack bars, school stores and fundraisers. The food items that are allowed to be sold in these venues must meet criteria for total calories, as well as calories from fat and sugar that would in effect limit the sale of high-energy-dense foods.

National nutrition standards do not exist for worksites. In worksites, standards and criteria used for policy and environmental changes are often established collaboratively by management and employee advisory committees. One

worksite intervention study has developed criteria for low-calorie, low-sugar, and low-fat food products sold in vending machines (4). This study is one of seven worksite environmental interventions for weight control and obesity prevention funded by the National Heart, Lung, and Blood Institute (NHLBI). The strategy to limit availability of high-energy-dense foods in the NHLBI studies was changes in vending options (5).
Because there are few interventions to limit availability of high-energy-dense foods, there are not general characteristics across these interventions.

Examples

- TACOS (Trying Alternative Cafeteria Options in Schools) was a 2-year, group-randomized, school-based environmental nutrition intervention trial (6). The TACOS intervention consisted of two main components that addressed the school food environment: availability of lower-fat a la carte food in the cafeteria and peer influence via peer promotions of lower-fat foods. TACOS staff and food service staff worked closely to increase the availability of lower-fat a la carte food by 30% from baseline. Lower-fat was defined as 5 grams or less fat per serving. The peer promotion intervention addressed peer influences on adolescent food choices and included taste tests, student food choice self-assessments, and media campaigns (posters, newspaper articles, and videos). Student groups were offered financial incentives for completing each promotion. The results of this study showed that changes made in the school environment to increase availability and promotion of lower-fat food choices had a significant positive impact on sales of lower-fat foods to students.

- Route H Study is a worksite environmental intervention designed to prevent weight gain among metropolitan bus drivers in four garages within the major metropolitan Minneapolis-St. Paul area over a two-year period (4). This multi-component intervention provides opportunities for healthful food choices, physical activity, and weight management. The worksite environment measure (WEM instrument) was developed to assess the food, physical activity, and weight-management environment of the bus garages. The WEM instrument includes 18 items to assess the food environment, including the number and type of vending machines, vending machine contents, microwaves, refrigerators, and water coolers. The food intervention includes increasing the availability of healthful vending machine foods and beverages and providing snack packs for drivers to take along on their bus route. Criteria were developed to identify healthful foods that could be sold in vending machines. Items were coded as healthy if they met the following criteria for calories, fat, and sugar. Low-calorie was defined as < 400 calories for entrée, < 150 calories for snacks and sweets, and < 50 calories for beverages; low-sugar was defined as 35% by weight for entrees, snacks, sweets, and beverages; and low-fat was defined as < 30% total calories for entrees, snacks, sweets, and

beverage. This multi-component intervention is currently being implemented so evaluation results are not available.

Effectiveness (1,2,4,6)

Few studies have focused on environmental interventions that limit the availability of high-energy-dense foods. School and worksite interventions that limit high-energy-dense foods have done so by modifying cafeteria menus to decrease the availability of foods high in fat and added sugar or developed criteria to limit high-energy-dense foods sold in vending machines (1,2,4,6). The evaluation results of the NHLBI worksite intervention studies could have important implications for the design and implementation of policy and environmental interventions that limit the availability of high-energy-dense foods.

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Target Area: Decrease Television Viewing

Background and Rationale

Although the American Academy of Pediatrics (1) recommends no screen time for children under two years of age and no more than 1-2 hours per day for children two and over, watching television (TV) is a common sedentary activity among American children. A recent survey found that 61% of children under age two use screen media and 43% watch TV every day, and 41% of 2- to 3-year-olds and 43% of 4- to 6-year-olds use screen media for 2 hours or more on an average day (2). Children 8-18 years of age watch an average of 3 hours of

television every day (3). Fifty-nine percent of U.S. adults report watching more than 2 hours a day of television (4). More time is spent watching television by African American and Hispanic children than white children, and, among children 6 years old and under, by those in households with lower socio-economic status (2-3).

Studies have found a positive association between the number of hours children and adults watch television and the prevalence of overweight and obesity (3-5), and a school-based intervention has shown that children who reported a decrease in time watching television also had a decrease in body mass index (BMI) (7). Research also shows a link between TV viewing in childhood and obesity in adulthood (8-9). Proposed mechanisms for the relationship between TV viewing and obesity include a reduction of resting metabolic rate while watching TV, displacement of physical activity, excess energy intake while watching TV, and exposure to marketing of high-energy-dense foods (8-9).

The Division of Nutrition, Physical Activity and Obesity has conducted focus groups on TV viewing among children and parents and found that there are numerous barriers to reducing television watching (10). Watching TV is common in most U.S. households, and many children and adults enjoy watching television, not perceiving the amount of time they watch as a problem. There also is substantial confusion as to what television limits would entail and what "counts." Reducing TV time would require parents to find alternative activities to keep their children safely and quietly engaged, and it could also prevent parents from accomplishing other tasks, could increase conflict between parents and children or between siblings, and would require parents to change their own TV-viewing behavior.

Decreasing Television Viewing: Intervention Strategies

Description

The few published reports on interventions to reduce television viewing have focused primarily on children and youth. Those efforts that do show evidence of success include curricula for childcare settings (11), elementary schools (7, 12), middle schools (13), clinic-based interventions (14-15), and an after-school dance program and home-delivered lessons (16). The childcare intervention was part of a health-promotion curriculum and included classroom activities as well as take-home materials for parents and parent-child activities (11). School-based interventions integrated TV-reduction efforts into existing curricula including math, science, language arts, and social studies (7,12,13). Parental components that involve newsletters for or homework assignments with parents as well as program activities that include campaigns focusing on limiting TV-viewing time such as "My TV Unplugged" or "Power Down" were included in childcare, school-based, and after school interventions (7,11,12,13,16). Self evaluation/assessment of the organization or individual and goal-setting that

includes selective TV viewing and time management or budgeting of media time were included in almost all intervention settings.

Because there are few interventions, there are not general characteristics across interventions for this strategy.

Examples

- *Brocodile the Crocodile* (11) is a health-promotion childcare curriculum intervention to reduce television viewing. Each of the intervention's seven sessions consists of a 30-minute musical activity, a 10-minute snack, and a 20-minute interactive education component. Take-home materials for parents and parent-child activities are also included. Children in the intervention group, compared to children in the control group, had a relative mean reduction by parental report of 4.7 hours/week in their television/video viewing, which is statistically significant.

- A 4-week primary-care intervention for low-income African American families (15) addressed television and video watching and video game-playing. The families were randomized to receive counseling alone or counseling plus a behavioral intervention that included an electronic television time manager. The counseling alone intervention included brief counseling of the family and three brochures from the American Academy of Pediatrics. The counseling plus behavioral intervention received the same brief counseling and brochures plus information on monitoring and setting media budgets, and an electronic media manager. Both intervention groups reported decreases in the amount of time that children spent watching television and videotapes and playing video games (mean changes of -13.7 and -14.1 hours per week), but they were not statistically significant.

- *Eat Well and Keep Moving* (13) and *Planet Health* (13) are school-based interventions to improve activity and dietary behaviors among 4th and 5th grade students and 6th, 7th, and 8th grade students, respectively. The programs are similar in that they focus on four behavioral changes: reducing television viewing to less than 2 hours per day; increasing moderate and vigorous physical activity; decreasing consumption of high-fat foods; and increasing consumption of fruits and vegetables to 5 a day or more. These interventions were designed to provide students with cognitive and behavioral skills to enable change in these behaviors. They differ in their outcome measures. The primary end points for the *Eat Well and Keep Moving* intervention is changes in television viewing, physical activity and dietary intake. The lesson plans are age-appropriate so they also differ in content. Classroom materials are based on social cognitive theory and include 50-minute lessons and classroom-based campaigns that also include activities at home for family members. The intervention is

taught by classroom teachers and intervention materials provide links to school food service staff and families. The primary end point for the *Planet Health* intervention is obesity prevention although measures of television viewing, physical activity, and dietary intake were collected. Television viewing was marginally reduced by -0.55 hours/day, however it was not statistically significant (P=.06) in the *Eat Well and Keep Moving* intervention. In the *Planet Health* intervention the reduction of television viewing was statistically significant, girls reduced their television viewing by -0.58 hours per day and boys reduced their television viewing by -0.40 hours per day. The prevalence of obesity among girls participating in the Planet Health intervention was reduced compared to controls and statistically significant; however, there was no differences found among boys.

- The *SMART classroom* curriculum (7) was developed for 3rd and 4th graders and addressed the children's screen time (television and video watching, and video game use). The curriculum incorporated eighteen 30-50 minute lessons into an existing curriculum for 6 months. Lessons included self-monitoring and self-reporting of television, videotape, and video game use to motivate children to want to reduce the time they spent in these activities. These lessons were followed by a television turn off during which children were challenged to watch no television or videotapes, and plan no video games for 10 days. After the turnoff, children were encouraged to follow a 7-hour per week budget of television, videotape, and video games. In addition, each participating household was given an electronic television time manager. This device locks onto the power plug of the television set and monitors and budgets viewing time for each member of the household through use of personal identification codes. Parents received newsletters that were designed to motivate them to help their children stay within their time limits. Relative to controls, the intervention group of children had statistically significant decreases in child- and parent-reported television viewing hours per week. Also compared to controls, children in the intervention group had statistically significant relative decreases in body mass index.

- *Stanford GEMS* (16) was designed to reduce television, videotape, and video-game use among African-American girls aged 8-10 years. The intervention consists of after-school dance classes (GEM) at three community centers and a five-lesson intervention called START (Sisters Taking Action to Reduce Television) delivered in participants' homes. The GEMs dance classes were offered 5 days a week, and girls were encouraged to attend the dance classes as often as possible over the 3-month study period. Each daily class lasted up to 2.5 hours, starting with a healthful snack, an hour homework period, and 45-60 minutes of moderate-to-vigorous dance. The sessions ended with 30 minutes of GEMS talks exploring the meaning of dance. The START intervention

consisted of 5 lessons delivered during home visits. Specific behavioral goals were based on self-monitoring, a 2-week TV turn-off, and budgeting TV viewing. The intervention resulted in reductions of more than 20% in television, videotape, and video game use among the intervention group of girls, and statistically significant reductions in reported household television viewing.

Effectiveness

Intervention studies to reduce television viewing have shown reductions in the hours of TV viewing that range from 3.1 to 5.5 hours per week.

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Appendix B

Original Vision, Mission, and Goals from the *Strategic Plan for the Prevention of Obesity in Texas: 2005-2010*

Original Vision, Mission, and Goals from the *Strategic Plan for the Prevention of Obesity in Texas: 2005-2010*

Original Vision: All Texans have a healthy weight by being physically active and eating healthy.

Original Mission: To reduce the burden of weight-related disease by decreasing the prevalence of obesity and increasing healthy eating and safe physical activity of all Texans.

Original Texas Goals:
Original Goal 1: Increase awareness of obesity as a public health issue that impacts the quality of life of families.
Original Goal 2: Mobilize families, schools, and communities to create opportunities to choose lifestyles that promote healthy weight.
Original Goal 3: Promote policies and environmental changes that support healthful eating habits and physical activity.
Original Goal 4: Monitor obesity rates, related behaviors and health conditions for planning evaluation and dissemination activities.

Appendix C

Texas Partners Stakeholder Survey

Texas Partners Stakeholder Survey

Background

The Texas Partners Stakeholder Survey was conducted to generate information on current obesity prevention activities, knowledge of the *Strategic Plan for the Prevention of Obesity in Texas: 2005-2010*, involvement in past state-level coalitions, and the role of DSHS.

Method

DSHS and UT-Austin created a list of stakeholders to be contacted in the initial stages of the state plan evaluation. The survey was initially delivered through an online survey to 33 stakeholders in May of 2007. Fourteen individuals responded to the survey by June 2007. Stakeholders who did not respond by June 2007 were approached again through an email request in September of 2007. Eleven additional individuals responded to the survey in September 2007, for a total of 25 respondents (response rate: 75%).

In order to capture the opinions of more stakeholders, the DSHS Regional Nutritionists were asked to recommend their partners in obesity prevention to DSHS for receipt of the survey. A total of 111 additional survey recipients were approached in September 2007 and 58 (52.3%) responded. Significant variability in the number of partners recommended by the nutritionists led to a sampling bias in the survey data. The majority, 44 of the 58 (75.9%) of the respondents, came from Texas Public Health Regions 1 and 9/10. The 58 respondents received the survey and responded between September 12 and November 1 of 2007. The total sample contains 83 stakeholders from across the state and from a diversity of positions in health promotion.

Findings

The Texas Partners Stakeholder Survey addresses the following six areas:

1. Current areas of obesity prevention in which partners work;
2. Stakeholder familiarity with the state plan;
3. Use of the state plan by stakeholders;
4. Former statewide coalitions involved in obesity prevention;
5. The nature of future obesity prevention activities; and
6. The future role of DSHS in obesity prevention in the State of Texas.

1. Current areas of obesity prevention in which partners work

Stakeholders were queried as to the areas of obesity prevention in which they worked. Many stakeholders worked in more than one area. The most commonly reported areas of work were physical activity provision or promotion (89.2), promoting fruit and vegetable consumption (80.7%), and decreasing portion sizes (65.1%). Table 1 provides a complete summary of responses. In addition to the prompted responses, the stimulus “Other” led to the reporting of several other activities, including research, developing policy options for obesity prevention and control, built environment work, development of safe places for family exercise, increasing physician use of BMI, and promoting staff wellness.

Table 1. Areas of obesity prevention in which you and your organization are currently doing work. (n=83)

Area of Obesity Prevention	**# of respondents (%)**
Physical activity provision and/or promotion	74 (89.2%)
Promoting fruit and vegetable consumption	67 (80.7%)
Decreasing portion sizes	54 (65.1%)
Reducing sweetened beverage consumption	48 (57.8%)
Reducing screen (tv, computer) time	32 (38.6%)
Encouraging or enabling breastfeeding	16 (19.3%)

2. Stakeholder familiarity with the state plan

Sixty-one of the 83 respondents had some level of familiarity with the state plan, with 14 of those reporting that they were very familiar with the state plan. Only those reporting some level of familiarity with the state plan were asked to respond to further questions related to this topic. When asked how they learned about the state plan, 16 (26.2%) reported that they learned about it from the DSHS. Another 13 (21.3%) reported that they had learned about it from their active involvement in the development of the state plan, as did those reporting having learned about it from a colleague. Thirteen other respondents reported having found the state plan on the DSHS website. Table 2 summarizes the frequencies with which people learned about the state plan from different sources.

Table 2. Initial stakeholder familiarity with the state plan (n=61)

How respondents learned about state plan…	**# of respondents (%)**
Received notification of the state plan from DSHS	16 (26.2%)
Was active in developing the state plan	13 (21.3%)
Learned about the state plan from a colleague	13 (21.3%)
Found the state plan on the DSHS website	13 (21.3%)
Heard about the state plan at a meeting	12 (19.7%)

3. Use of the state plan by stakeholders

Survey respondents were generally positive in their responses to queries about the present and future use of the state plan. Of two sets of questions, no question got less than a 50% positive response rate regarding the usefulness of the state plan.

Survey recipients were asked about their thoughts about use of the state plan. All six items received over 50% positive responses (Somewhat Agree + Agree + Strongly Agree). The item receiving the most positive responses was "The state plan should be used by DSHS as a strategic guide to activities" (45 positive responses, 88.1%). The stimulus "I implement specific items from the state plan that are related to my work" received 44 positive responses (84.6%). The item receiving the third most positive responses was "I am able to find items that I need among the goals, strategies, and or action items of the state plan." This item received 43 positive responses (84.3%). It is important to note that the item "Shortening the length of the state plan would encourage more widespread use" received 42 positive responses (85.7%). The response patterns for all of the items are presented in Table 3.

Table 3. Use of the state plan by Stakeholders

Aspect of Use	Strongly Disagree	Disagree	Somewhat Disagree	Somewhat Agree	Agree	Strongly Agree
The state plan should be used by DSHS as a strategic guide to activities. (n=51)	0	2 (3.9%)	4 (7.8%)	8 (15.6%)	31 (60.8%)	6 (11.8%)
I implement specific items from the state plan that are related to my work. (n=52)	1 (1.9%)	5 (9.6%)	2 (3.8%)	19 (36.5%)	19 (36.5%)	6 (11.5%)
I am able to find items that I need among the goals, strategies, and/or action items of the state plan. (n=51)	1 (2.0%)	3 (5.9%)	4 (7.7%)	19 (37.3%)	19 (37.3%)	5 (9.8%)
The state plan should be used by private and public organizations in the state to support obesity prevention and provide guidance for their activities. (n=51)	0	1 (2.0%)	8 (15.7%)	8 (15.7%)	22 (43.1%)	12 (23.5%)
I am familiar enough with the state plan to incorporate it into my organization's activities. (n=53)	2 (3.8%)	7 (13.2%)	4 (7.5%)	17 (32.1%)	17 (32.1%)	6 (11.3%)
I use the goals and strategies in the state plan in my current work. (n=52)	1 (1.9%)	2 (3.8%)	13 (25.0)	13 (25.0%)	15 (28.8%)	8 (15.4%)
Shortening the length of the state plan would encourage more widespread use. (n=49)	0	3 (6.1%)	4 (8.2)	14 (28.6%)	16 (32.7%)	12 (24.5%)

Those surveyed were asked to identify other organizations using the state plan to support their work in obesity prevention. Responses included the following:

Local school districts
Local health departments
Texas Department of Agriculture
Special Supplemental Nutrition Program for Women, Infants and Children
Texas Cooperative Extension

Texas Breastfeeding Coalition
State Nutrition Action Plan
Partnership for a Healthy Texas: Conquering Obesity
Texas Action for Healthy Kids Alliance
Texas Fitness Now Grant Program
School Health Network
Governor's Advisory Council on Physical Fitness
Texas Health Institute
Texas School Health Advisory Council
American Cancer Society

A second set of questions focused solely on the future use of the state plan. All items in this section received a majority of responses that indicated the state plan would be useful in work activities. The item receiving the most positive responses (Somewhat Agree + Agree + Strongly Agree) was "My colleagues, co-workers and/or partners would view the state plan as a useful document." Eighteen (94.7%) survey recipients gave positive responses to this item. The item "I could use the state plan as a charge for action related to my work" got 17 positive responses (89.5%). The next item also, receiving 17 positive responses (89.5%), was "I could use defined goals and strategies for obesity prevention that might be included in the state plan." The response patterns for the other items are provided in Table 4.

Table 4. Future use of the state plan (n=19)

Future use	Strongly Disagree	Disagree	Somewhat Disagree	Somewhat Agree	Agree	Strongly Agree
My colleagues, co-workers and/or partners would view the state plan as a useful document.	0	1 (5.3%)	0	7 (36.8%)	11 (57.9%)	0
I could use the state plan as a charge for action related to my work.	0	0	2 (10.0%)	5 (26.3%)	11 (55.0%)	1 (5.0%)
I could use defined goals and strategies for obesity prevention that might be included in the state plan.	0	2 (10.5%)	0	5 (26.3%)	11 (57.9%)	1 (5.3%)
I don't envision that the state plan would be useful in my work.	5 (26.3%)	7 (36.8%)	1 (5.3%)	2 (10.5%)	4 (21.1%)	0
I would implement specific items within the state plan related to my work.	0	1 (5.3%)	0	1 (5.3%)	8 (42.1%)	9 (47.4%)

4. Former statewide coalitions involved in obesity prevention

Respondents were asked if they had prior involvement with former statewide coalitions that were spearheaded by DSHS, including the Texas Activity Nutrition Coalition (TexAN) and the Texas Fruit and Vegetable Network (TFVN). They were also asked to rate the effectiveness of the coalitions with which they had been involved. Twelve stakeholders reported participating with the Texas Activity Nutrition Coalition

(TexAN). Eleven out of the nine who rated its effectiveness found it to be either somewhat or moderately effective. Twelve stakeholders reported working with the Texas Fruit and Vegetable Network (TFVN). Of the 13 who rated its effectiveness, 11 found it to be either somewhat or moderately effective. These rating included one person who did not interact directly with the program, but felt sufficiently knowledgeable to offer a rating.

5. The nature of future obesity prevention activities

One set of three questions explored the perceived utility of partnerships in obesity prevention work. Sixty nine respondents (98.6%) agreed (Somewhat Agree + Agree + Strongly Agree) that collaboration among organizations working in obesity is necessary. Fewer (n=57, 87.7%) thought that formal partnerships were necessary to encourage collaboration and coordination. Almost as high a percentage (59 out of 68, 86.8%) thought that information sharing and coordination can be accomplished through informal networks.

Table 5. The perceived value of statewide partnerships

Item	Strongly Disagree	Disagree	Somewhat Disagree	Somewhat Agree	Agree	Strongly Agree
Collaboration with other organizations working in obesity prevention is necessary. (n=70)	1 (1.4%)	0	0	2 (2.9%)	25 (35.7%)	42 (60.0%)
A formal partnership is necessary to encourage collaboration and coordination. (n=65)	0	5 (7.7%)	3 (4.6%)	21 (32.3%)	23 (35.4%)	13 (20.0%)
Information sharing and coordination can be accomplished through informal networks. (n=68)	1 (1.5%)	2 (2.9%)	6 (8.8%)	14 (20.6%)	27 (39.7%)	18 (26.5%)

Four questions addressed stakeholder perceptions about the usefulness of various aspects of partnership interactions. Response patterns indicate that a majority of survey recipients find all four aspects to be personally useful. Respondents thought most highly of information sharing about current obesity prevention related activities. The item “Sharing current resources in the area of obesity prevention” elicited 48 “very useful to me” responses and also had no responses in the “not at all useful” category. The response patterns for these items are given below in Table 6.

Table 6. The utility of various aspects of partnerships

Item	Not at all useful to me	Somewhat useful to me	Moderately useful to me	Very useful to me
Information sharing about current obesity prevention-related activities. (n=69)	0	2 (2.9%)	16 (23.1%)	51 (73.9 %)
Sharing current resources in the area of obesity prevention. (n=69)	0	3 (4.3%)	18 (26.1%)	48 (69.6%)

Item	Not at all useful to me	Somewhat useful to me	Moderately useful to me	Very useful to me
Information sharing about current obesity-related data needs and collection. (n=69)	0	4 (5.8%)	20 (29.0%)	45 (65.2%)
Brainstorming areas for coordination and collaboration. (n=68)	1 (1.5%)	5 (7.4%)	23 (33.8%)	39 (57.4%)

6. The future role of DSHS in obesity prevention in the State of Texas

The final set of questions addressed the future role of DSHS in obesity prevention in Texas. A majority of respondents agreed (Somewhat Agree + Agree + Strongly Agree) that DSHS has a role to play in future obesity prevention efforts. The role with which most respondents agreed (64 out of 71, 90.1%) was the sharing of current updates and available resources. Tracking of progress in Texas obesity prevention efforts and the collection, preparation and provision of case studies describing best practices by Texas organizations each received 54 positive responses (76.1%). Two other activities elicited agreement from more than 70% of respondents. The item "Maintain a listserv among obesity prevention partners and various stakeholders across the state" received 52 positive responses (73.2%). The item "Expand statewide data sharing capabilities" received 50 (70.4%) positive responses. The number and percent of positive responses are given in Table 7.

Table 7. Support for DSHS activities in support of obesity prevention (n=71)

Supportive Activity	A# of respondents in agreement (%)
Share current updates and available resources.	64 (90.1%)
Track the progress of Texas obesity prevention efforts.	54 (76.1%)
Collect, prepare, and provide case studies describing best-practices from Texas organizations.	53 (74.6 %)
Maintain a listserv among obesity prevention partners and various stakeholders across the state.	52 (73.2%)
Expand statewide data sharing capabilities.	50 (70.4%)
Collect, prepare, and provide case studies describing best-practices from organizations outside Texas.	45 (63.4%)
Expand statewide data collection capabilities.	43 (60.6%)

Summary

The Texas Partners Stakeholder Survey elicited the perceptions of 83 respondents involved in obesity prevention efforts across the state. The sample is not geographically representative, however the findings provide some idea of the

perceptions that obesity prevention workers hold regarding the state plan and future obesity prevention activities.

Among respondents, the provision/promotion of physical activity and the promotion of fruit and vegetable consumption are the most common obesity prevention activities. Partners learned about the state plan from a variety of sources and activities. The state plan is seen as generally useful for individuals and organizations for both planning and implementation activities. Respondents supported collaboration among organizations and were especially positive about the potential usefulness of information and resource sharing in collaborative interactions. Finally, respondents believed that DSHS has a number of important roles to play in future obesity prevention efforts in Texas. Most prominent among these were information and resource sharing and the tracking of progress in obesity prevention efforts.

Appendix D

Original Proposed Texas Targets (PTT) from the *Strategic Plan for the Prevention of Obesity in Texas: 2005-2010*

Original Proposed Texas Targets (PTT) from the *Strategic Plan for the Prevention of Obesity in Texas: 2005-2010*

Original PTT1: By 2010, 95% of middle, junior high, and senior high schools in Texas will provide education to prevent unhealthy dietary practices and physical inactivity.
Original PTT2: By 2010, 25% of college and university students in Texas will receive information from their institution about inadequate physical activity and dietary patterns that cause disease.
Original PTT3: By 2010, 75% of worksites in Texas in each size category will offer a comprehensive employee health promotion program to their employees.
Original PTT4: By 2010, all Texas employers with employee health promotion programs will have a participation rate of at least 75%.
Original PTT5: By 2010, 75% of physician office visits made by patients with a diagnosis of cardiovascular disease, Diabetes, or hyperlipidemia includes counseling or education related to diet and nutrition.
Original PTT6: By 2010, 50% of local health departments in Texas will have established culturally appropriate and linguistically competent programs focused on nutrition and overweight and physical activity and fitness.
Original PTT7: By 2010, 90% of older adults will have participated in at least one organized health promotion activity in the preceding year.
Original PTT8: By 2010, 35% of school-age children and adolescents in Texas will get at least 30 minutes of moderate physical activity 5 or more days per week.
Original PTT9: By 2010, 85% of school-age children and adolescents in Texas will get at least 20 minutes of vigorous physical activity 3 or more days per week.
Original PTT10: By 2010, 25% of Texas public and private schools will require daily physical education for all students.
Original PTT11: By 2010, 50% of all school-age children and adolescents (K – 12th grade) in Texas schools will be enrolled in and attend a physical education class daily.
Original PTT12: By 2010, maintain at 85% or higher the proportion of all school-age children and adolescents who spend at least 20 minutes of physical education class time being physically active.
Original PTT13: By 2010, 25% of all trips made by adults of one mile or less will be made by walking.
Original PTT14: By 2010, 50% of all trips made by children or adolescents to school of one mile or less will be made by walking.
Original PTT15: By 2010, 2% of trips of 5 miles or less made by adults will be made by bicycling.
Original PTT16: By 2010, 5% of all trips made to school of 2 miles or less will be made by bicycling.
Original PTT17: By 2010, 70% of Texas adults will consume at least 3 servings of vegetables daily with at least one-third being dark green or orange vegetables.
Original PTT18: By 2010, 50% of school-age children in Texas who eat three or more servings of vegetables daily.
Original PTT19: By 2010, the percentage of adult Texans who eat five or more servings of fruits and vegetables daily will increase by 5%.

Original PTT20: By 2010, 75% school-age children in Texas eat two or more servings of fruit daily.
Original PTT21: By 2010, 90% of all school children will have access to school meals and snacks that contribute to good overall dietary quality.
Original PTT22: By 2010, the percentage of school-age children in Texas who watch 3 or more hours of television each day will decrease by 5% of baseline (see Current Status in Texas).
Original PTT23: By 2010, 85% of worksites will offer nutrition or weight management classes or counseling to their employees.
Original PTT24: By 2010, reduce to 20% the proportion of adults age 18 and older who engage in no leisure-time physical activity.
Original PTT25: By 2010, 50% of adults age 18 or older will meet the recommended levels of moderate-vigorous physical activity.
Original PTT26: By 2010, 30% of adults age 18 or older will engage in vigorous physical activity three or more days per week for at least 20 minutes per occasion.
Original PTT27: By 2010, 65% of students in grades 9 through 12 and 85% of adults age 18 and older will spend 3 or fewer hours viewing television per day.
Original PTT28: By 2010, no more than 25% of adults age 18 or older will, on a typical day, spend 4 or more hours sitting and watching television, videos, or using a computer outside of work.
Original PTT29: By 2010, 50% of school facilities in Texas will be made available for community recreational activities after school and on weekends.
Original PTT30: By 2010, 75% of worksites in Texas will offer employer-sponsored physical activity and/ or fitness programs at the worksite or through their health plans.
Original PTT31: By 2010, 75% of mothers in Texas will be breastfeeding their babies at hospital discharge, 50% of mothers will be breastfeeding their babies at 6 months postpartum, and 25% of mothers will be breastfeeding their babies at one year.
Original PTT32: By 2010, 25% of Texas communities will make at least one environmental change to support access to healthy foods or increase access to safe physical activity.
Original PTT33: By 2010, 25% of Texas communities will institute at least one public policy that improves access to healthy foods or increases access to opportunities for safe physical activity.
Original PTT34: By 2010, the Texas Department of State Health Services along with key partners will develop a policy resource guide identifying possible policy solutions and options for Texas related to improving access to healthy foods and opportunities for safe physical activity.
Original PTT35: By 2010, 50% of all school districts in Texas will implement stronger school physical education standards consistent with the national standards for K-12, including education and certification standards for physical education instructors.
Original PTT36: By 2010, 25% of Texas communities will develop local bicycle and pedestrian plans to facilitate improvements to zoning ordinances, street and community design, traffic laws, and public transportation infrastructure to make it safer and more convenient for pedestrians and bicyclists.
Original PTT37: By 2010, 50% of all school districts in Texas will develop and implement a “Safe Routes to School” plan.

Original PTT38: By 2010, Texas will provide an equal level of transportation funding to projects that improve or develop alternate modes of transportation (walking or bicycling) as that given to new road and highway development. Examples of initiatives include Safe Routes to School construction projects.
Original PTT39: By 2010, DSHS will develop systems for data collection, monitoring, and reporting of obesity prevention activities will be created and implemented.
The information collected will be used for evaluation and dissemination of future obesity prevention activities.
Original PTT40: By 2010, DSHS will secure consistent funding for the continuation of surveillance of obesity and overweight and related risk factors in adults and children in Texas.
Original PTT41: Between 2005 and 2010, the prevalence of at-risk-for overweight and overweight among school age children in Texas schools will not increase.
Original PTT42: By 2010, 42% of Texas adults will be at a healthy weight.
Original PTT43: Between 2005 and 2010, the prevalence of adults in Texas who are overweight or obese will not increase.

Appendix E

Partner PTT Ranking Activity Survey Results:

Partner PTT Ranking Activity Survey Results:

1. Please rank the following 9 indicators as to their importance in tracking progress in obesity prevention in Texas. Use the numbers 1-9 to rank the indicators (with 1 being MOST important and 9 being LEAST important - make sure to use each number (1-9) only once). Note - you can only use a ranking (1-9) once, so please make sure each indicator has a separate ranking.											
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**Response Count**	**Average Ranking Score**
a. Percentage of eligible school age children who participate in the National School Lunch Program	14.1% (14)	8.1% (8)	10.1% (10)	6.1% (6)	13.1% (13)	7.1% (7)	**19.2% (19)**	12.1% (12)	10.1% (10)	99	5.152
b. Total number of farmers markets in Texas	3.0% (3)	4.0% (4)	3.0% (3)	8.1% (8)	19.2% (19)	8.1% (8)	**21.2% (21)**	17.2% (17)	16.2% (16)	99	6.283
c. Total number of schools with exclusive beverage contracts	9.1% (9)	4.0% (4)	15.2% (15)	6.1% (6)	10.1% (10)	16.2% (16)	11.1% (11)	11.1% (11)	**17.2% (17)**	99	5.556
d. Number of hospitals that have officially initiated policies and practices to support breastfeeding initiation	7.1% (7)	5.1% (5)	10.1% (10)	**17.2% (17)**	15.2% (15)	16.2% (16)	16.2% (16)	12.1% (12)	1.0% (1)	99	5.081
e. Number of worksites that have initiated policies and practices to support breastfeeding and lactation	4.0% (4)	11.1% (11)	10.1% (10)	10.1% (10)	14.1% (14)	11.1% (11)	8.1% (8)	**16.2% (16)**	15.2% (15)	99	5.566
f. Number of accessible trails	8.1% (8)	6.1% (6)	11.1% (11)	**17.2% (17)**	11.1% (11)	**17.2% (17)**	6.1% (6)	11.1% (11)	12.1% (12)	99	5.212
g. Number of communities that receive funding to improve or enhance alternative modes of transportation	7.1% (7)	7.1% (7)	13.1% (13)	14.1% (14)	7.1% (7)	13.1% (13)	9.1% (9)	13.1% (13)	**16.2% (16)**	99	5.455

	1	2	3	4	5	6	7	8	9	Response Count	Average Ranking Score
h. Percentage of adults, who, on a typical day, spend 4 or more hours viewing any type of screen (tv, computer, video) outside of work	10.1% (10)	**31.3% (31)**	17.2% (17)	11.1% (11)	6.1% (6)	8.1% (8)	7.1% (7)	2.0% (2)	7.1% (7)	99	3.768
i. Percentage of school age children who view 3 or more hours of television per day	**37.4% (37)**	23.2% (23)	10.1% (10)	10.1% (10)	4.0% (4)	3.0% (3)	2.0% (2)	5.1% (5)	5.1% (5)	99	2.929

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