United States Government Accountability Office

Report to Congressional Requesters

October 2019

CHILDHOOD OBESITY RESEARCH DEMONSTRATION

Efforts to Identify Effective Strategies for Low-Income Children

GAO-20-30

October 2019

CHILDHOOD OBESITY RESEARCH DEMONSTRATION

Efforts to Identify Effective Strategies for Low-Income Children

GAO Highlights

Highlights of GAO-20-30, a report to congressional requesters

Why GAO Did This Study

Childhood obesity affects nearly 14 million children aged 2 to 19 years in the United States. Children in low-income families are disproportionately affected, with about 1 in 5 having obesity. Studies suggest that children with obesity are likely to become adults who are overweight or have obesity, which can contribute to poorer health and higher health care expenditures. CDC was designated as the agency to design and manage the project and has awarded grants in three separate phases.

GAO was asked to examine the CORD Project, including what has been learned regarding strategies to reduce childhood obesity. In this report, GAO describes 1) the extent to which CDC changed the design of the CORD Project between grant phases, 2) the results of the CORD Project and factors that have affected implementation, and 3) efforts by CDC and others to disseminate results and lessons learned.

To conduct this work, GAO reviewed planning and grant documentation for the three CORD phases, published articles about the design of CORD phase 1 and 2, and documentation describing the results of CORD phase 1. GAO also interviewed CDC officials, CORD phase 1 and 2 grantees, and officials from other HHS agencies involved in the design of the CORD Project.

HHS provided technical comments on a draft of this report, which GAO incorporated as appropriate.

View GAO-20-30. For more information, contact John Dicken at (202) 512-7114 or dickenj@gao.gov.

What GAO Found

The Centers for Disease Control and Prevention (CDC) has made four key changes to the design of the Childhood Obesity Research Demonstration (CORD) Project between each of the three grant phases. Established by law in 2009, the project provides research grants to develop and implement strategies to reduce obesity among low-income children. One of CDC's design changes, for example, was to modify the scope of the project (i.e., type of strategies implemented by grantees). After CORD phase 1, CDC officials shifted the scope from prevention—through the implementation of strategies in community settings, such as schools, and in health care settings—to the treatment of children who were overweight or had obesity. According to CDC officials, the agency made this change due to the shorter time frame for implementing CORD phase 2 and in response to existing national recommendations related to childhood obesity. CDC also changed the purpose of the project's study design prior to phase 3. Whereas CORD phases 1 and 2 were intended to build knowledge and evidence of effective strategies, CDC modified CORD phase 3 to focus on translating effective strategies into routine use by converting them into a package of materials that others could replicate.

To evaluate the effectiveness of CORD phase 1—the only phase that is complete—CDC awarded a grant to an independent entity to aggregate results across the three grantees, and each grantee conducted their own evaluation. The evaluation center and the grantees reported some improvements in children who received CORD 1 strategies. For example, the evaluation center reported small but positive changes in outcomes measured, which included body mass index and fruit and vegetable consumption. These improvements were most often observed among

- children who received primary care strategies, such as individualized counseling, and
- children who participated in public health strategies, such as an evidence-based nutritional program, in addition to the primary care strategies.

CDC and grantees identified several factors during the first two phases that affected the ability to implement strategies to reduce obesity among low-income children. For example, grantees noted that the preexistence of programs and policies that promoted healthy behaviors positively affected their implementation of CORD strategies. CDC officials identified the turnover of principals and other school or clinic staff as negatively affecting the implementation and suggested that future researchers incorporate staff retraining costs into their strategies as a way to help mitigate this challenge.

CDC has taken steps to share CORD design materials and results through published literature, websites, and conferences. It has also coordinated with other Department of Health and Human Services (HHS) offices and agencies to promote the wider adoption of CORD strategies in low-income communities. For example, CDC has collaborated with an office in HHS to fund a project to increase the use of a specific weight management program used in CORD phase 1.

Contents

Abbreviations

BMI	body mass index
CDC	Centers for Disease Control and Prevention
CHIP	Children's Health Insurance Program
CHIPRA	Children's Health Insurance Program Reauthorization Act of 2009
CMS	Centers for Medicare & Medicaid Services
CORD	Childhood Obesity Research Demonstration
HHS	Department of Health and Human Services

U.S. GOVERNMENT ACCOUNTABILITY OFFICE
441 G St. N.W.
Washington, DC 20548

October 11, 2019

The Honorable Charles E. Grassley
Chairman
Committee on Finance
United States Senate

The Honorable Greg Walden
Republican Leader
Committee on Energy and Commerce
House of Representatives

The Honorable Michael Burgess
Republican Leader
Subcommittee on Health
Committee on Energy and Commerce
House of Representatives

The prevalence of childhood obesity—defined as body weight higher than what is considered a healthy weight for a given height—in the United States was about 19 percent from 2015 through 2016, affecting approximately 14 million children and teens aged 2 to 19, according to the Centers for Disease Control and Prevention (CDC).[1] Childhood obesity disproportionally affects children from low-income families. For example, CDC data show that the obesity rate for children in families with incomes below the federal poverty threshold was 21 percent from 2013 through 2016, which was about 71 percent higher than the rate for children in families with the highest incomes.[2] There are both numerous negative health outcomes and financial consequences related to childhood obesity. For example, researchers have found that childhood obesity is associated

[1]For prevalence rates by sex, age, race, and Hispanic origin, see Centers for Disease Control and Prevention, National Center for Health Statistics, *Prevalence of Obesity Among Adults and Youth: United States, 2015–2016*, Data Brief No. 288 (Washington, D.C.: October 2017).

[2]See Centers for Disease Control and Prevention, National Center for Health Statistics, *National Health and Nutrition Examination Survey* as reported at the Department of Health and Human Services, Healthy People 2020, accessed on June 20, 2019, https://www.healthypeople.gov/2020/leading-health-indicators/2020-lhi-topics/Nutrition-Physical-Activity-and-Obesity/data#NWS-10. The federal poverty threshold—which is updated by the U.S. Census Bureau annually—for a four-person household including two related children was $24,339 for 2016.

with a number of health disorders including high blood pressure and high cholesterol, type 2 diabetes, and asthma.[3] Studies suggest that children with obesity are likely also to become adults who are overweight or have obesity, which can contribute to increased health care expenditures over their lifetimes.[4]

The Children's Health Insurance Program Reauthorization Act of 2009 (CHIPRA) authorized the Secretary of the Department of Health and Human Services (HHS) to establish the Childhood Obesity Research Demonstration (CORD) Project.[5] Specifically, CHIPRA authorized HHS to award grants to universities and other eligible entities to implement activities to reduce childhood obesity among low-income children, such as those who are eligible for Medicaid or the Children's Health Insurance Program (CHIP).[6] HHS designated CDC as the agency responsible for designing, awarding, and managing the grants. Subsequent laws—including the 2018 reauthorization of CHIP—appropriated funding for, and further extended, the CORD Project.[7] With this funding, CDC established two additional CORD Project phases—CORD 2 and CORD 3—which awarded additional grants and used different design approaches. CORD phase 1 concluded in September 2016; as of September 2019, phases 2 and 3 were ongoing.

[3]J. L. Foltz, et al., "Population-Level Intervention Strategies and Examples for Obesity Prevention in Children," *Annual Review of Nutrition*, vol. 32 (2012): p. 391.

[4]M. K. Serdula, et al., "Do Obese Children Become Obese Adults? A Review of the Literature," *Preventive Medicine*, vol. 22, no. 2 (1993): p. 167.

[5]See CHIPRA, Pub. L. No. 111-3, § 401(e), 123 Stat. 8, 77 (2009) (codified as amended at 42 U.S.C. § 1320b-9a(e)). CHIPRA authorized, but did not appropriate, funds for the CORD Project.

[6]Eligible entities also include local health departments, health care providers, community-based organizations, and others.

Medicaid is a joint federal-state program that finances health coverage for low-income and medically needy individuals. CHIP is a joint federal-state program that finances health coverage for children whose household income exceeds limits for Medicaid eligibility. The Centers for Medicare & Medicaid Services, within HHS, is the federal agency responsible for administering both programs.

[7]See the Patient Protection and Affordable Care Act, Pub. L. No.111-148, § 4306, 124 Stat. 119, 587 (2010); Medicare Access and CHIP Reauthorization Act of 2015, Pub. L. No.114-10, § 304(a), 129 Stat. 87, 158 (2015); and Helping Ensure Access for Little Ones, Toddlers, and Hopeful Youth by Keeping Insurance Delivery Stable Act, Pub. L. No. 115-120, § 3003(a), 132 Stat. 28, 36 (2018).

You asked us to review HHS's processes for designing and evaluating the CORD Project and determine what has been learned regarding different strategies to support healthy behaviors and reduce childhood obesity. In this report, we describe

1. the extent to which CDC changed the design of the CORD Project between the grant phases,
2. the results of the demonstration projects and any factors that have affected their implementation, and
3. efforts by CDC and others to disseminate results and lessons learned from the CORD Project.

To describe the extent to which CDC's design of the CORD Project changed between the three grant phases, we reviewed relevant laws and CDC documentation and interviewed officials from CDC, other HHS agencies, and CORD grantees from phases 1 and 2. We did not interview CORD phase 3 grantees, as those grants were just beginning at the time of our review. To ascertain the purpose and research objectives for each phase of the CORD Project, we reviewed relevant laws; the CORD Project Plan developed by HHS, which provided parameters for designing the CORD Project; the funding opportunity announcements for all three CORD phases; and the grant award documentation, which describes the responsibilities and requirements grantees had to fulfill.[8] We also interviewed CDC officials to obtain information about design decisions for the CORD Project, as well as their interaction with grantees and other HHS agencies. We interviewed officials from the National Institutes of Health, the Health Resources and Services Administration, the Agency for Healthcare Research and Quality, and the Centers for Medicare & Medicaid Services (CMS) to understand their involvement in the CORD Project.[9] Finally, we interviewed officials representing the entities to which CDC awarded grants to implement demonstration projects under CORD phases 1 and 2 (hereafter referred to as implementing grantees) and the University of Houston (hereafter referred to as the evaluation center), which conducted a cross-site evaluation of the three demonstration

[8]Efforts to Identify Effective Strategies for Low-Income Children CORD Project Plan to describe the purpose and principles of the CORD Project, as well as the proposed requirements of participation and submission, evaluation criteria, and awardee selection process. HHS developed this document in response to the CHIPRA requirement that the Secretary of HHS design the demonstration project within one year of enactment.

[9]CHIPRA directed HHS to consult with officials from CDC, CMS, and other HHS agencies on the design, implementation, and evaluation of the CORD Project.

projects. We asked these officials about their interactions with CDC, other HHS officials, and other grantees.

To describe the results of the demonstration projects and factors that have affected implementation, we reviewed CORD phase 1 evaluation reports and progress reports by the evaluation center and implementing grantees, which contained information on progress made as well as information about the challenges grantees experienced in implementing them. We also reviewed final reports by CORD phase 1 grantees that summarized the results of the implemented strategies. We examined the CORD phase 2 progress reports available at the time of our review, which contain information on the progress CORD phase 2 grantees reported regarding their implementation of the strategies but do not contain information on the results of the implemented strategies. Additionally, we reviewed studies the grantees published in peer-reviewed journals as of April 2019 to obtain information about the results of the implemented strategies and other lessons learned regarding approaches for reducing obesity in low-income children.[10] As of April 2019, the CORD phase 2 grantees had published studies that described the design and evaluation approaches grantees planned to use but had not published any studies describing the results of the implemented strategies. Finally, we interviewed CDC officials and CORD phase 1 and 2 grantees to obtain their perspectives on the lessons learned from the CORD Project.

[10]Some CORD phase 1 grantees analyzed and reported results for outcomes related to parents, including parent dietary behavior, physical activity, and weight and body mass index. In addition to reporting on the intended outcomes for children and parents, the evaluation center led the development of two other cross-site evaluations—process and sustainability. In the process evaluation, they reported whether the demonstration project activities were implemented as planned. In the sustainability evaluation, they assessed if the proposed project activities could be sustained by the community beyond the end of the funding period. For the purposes of this report, we did not report on outcomes related to parents or information from the process and sustainability evaluations.

To describe efforts by CDC and others to disseminate results and lessons learned from the CORD Project, we reviewed the CDC CORD Project websites, which present information about the CORD grantees and published articles about the design and the strategies implemented, and reviewed materials from conference presentations provided or facilitated by CDC officials.[11] We interviewed CDC officials to understand how they disseminated the results from the implemented strategies and to learn about the information they intended to include in the report to Congress about CORD phases 1 and 2 that they were drafting at the time of our review.[12] In addition, we interviewed officials from other HHS agencies to determine the extent to which they have coordinated with CDC on the CORD Project and interviewed CORD phase 1 grantees to understand the extent to which the CORD strategies have been sustained in the communities in which they implemented them.

We conducted this performance audit from July 2018 to October 2019 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

[11]Division of Nutrition, Physical Activity, and Obesity, National Center for Chronic Disease Prevention and Health Promotion, "*Childhood Obesity Research Demonstration (CORD) 1.0: Integrating Primary Care and Community-Based Strategies to Prevent and Treat Childhood Obesity,"* accessed on July 18, 2019, https://www.cdc.gov/obesity/strategies/healthcare/cord1.html.

Division of Nutrition, Physical Activity, and Obesity, National Center for Chronic Disease Prevention and Health Promotion, "*CDC's Childhood Obesity Research Demonstration (CORD) Project 2.0,"* accessed on July 18, 2019, https://www.cdc.gov/obesity/strategies/healthcare/cord2.html.

Division of Nutrition, Physical Activity, and Obesity, National Center for Chronic Disease Prevention and Health Promotion, "*CDC's Childhood Obesity Research Demonstration (CORD) Project 3.0,"* accessed on June 22, 2019, https://www.cdc.gov/obesity/strategies/healthcare/cord3.html.

[12]CDC submitted a report to Congress in September 2019, after we received HHS comments on a draft of our report. CDC officials told us that they plan to make the report publically available on their website by the end of October 2019.

Background

Body Mass Index (BMI)

BMI is a person's weight in kilograms divided by the square of their height in meters. For children, BMI is age- and sex-adjusted, because their body composition varies as they age and varies by gender:

- Overweight: BMI at or above the 85th percentile and below the 95th percentile for children of the same age and sex.
- Obese: BMI at or above the 95th percentile for children of the same age and sex.

Percentiles are calculated from the Centers for Disease Control and Prevention (CDC) growth charts developed from national survey data collected between 1963 and 1994.

Source: CDC. | GAO-20-30

The primary purpose of the CORD Project is to develop and implement strategies for reducing obesity among low-income children. According to CDC, strategies that have been used to prevent and manage obesity include screening patients using body mass index (BMI), so children and their parents understand their risks; supporting healthy behaviors—such as eating vegetables and promoting physical activity—in early care and education centers and schools; and educating parents on how to reinforce healthy living habits at home. BMI is used to determine overweight and obesity (see sidebar).[13]

Funding for the CORD Project was first made available through the enactment of the Patient Protection and Affordable Care Act, about one year after the CORD Project was authorized.[14] In January 2011, CDC published the funding opportunity announcement—which outlined the goals of the grant as well as the eligibility criteria and other requirements—and, in September 2011, the first demonstration projects began. Congress subsequently appropriated additional funding for the CORD Project in April 2015 and January 2018, bringing the total amount appropriated to $65 million for fiscal years 2010 through 2023.[15] CDC officials told us that during this time period the CORD Project was the primary source of CDC funding for childhood obesity research focused on low-income children.[16] CDC implemented the CORD Project in three separate grant phases, with different design approaches and grantees. (See fig. 1.)

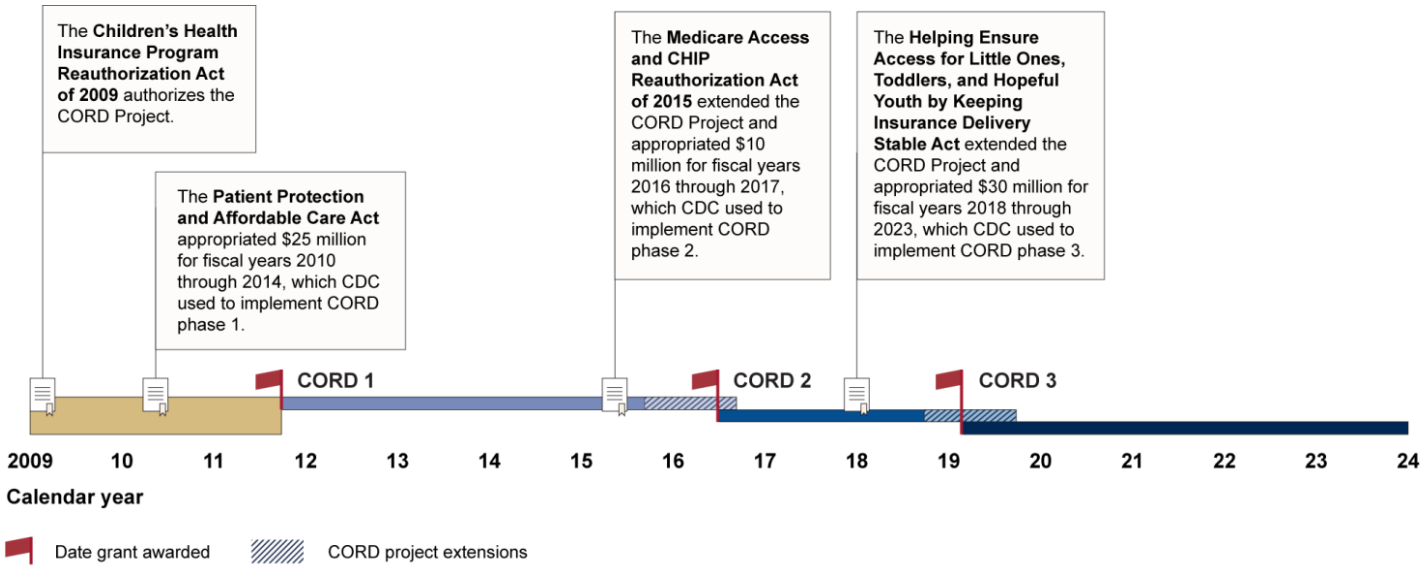
[13]Early care and education centers include childcare centers, family care homes, Head Start programs, preschool, and pre-kindergarten programs.

[14]See CHIPRA, Pub. L. No. 111-3, § 401, 123 Stat. 8, 77 (2009) (codified as amended at 42 U.S.C. § 1320b-9a(e)); Patient Protection and Affordable Care Act, Pub. L. No. 111-148, § 4306, 124 Stat. 119, 587 (2010).

[15]See Medicare Access and CHIP Reauthorization Act of 2015, Pub. L. No. 114-10, § 304(a), 129 Stat. 87, 158 (2015); and Helping Ensure Access for Little Ones, Toddlers, and Hopeful Youth by Keeping Insurance Delivery Stable Act, Pub. L. No. 115-120, § 3003(a), 132 Stat. 28, 36 (2018). According to CDC officials, some of the appropriated funding was used to pay for administrative expenses and other activities such as funding the implementation of an evidence-based childhood weight management program in federally qualified health centers.

[16]Within HHS, CDC and the National Institutes of Health fund the most childhood obesity research, according to CDC officials. The National Institutes of Health funded research totaling about $138 million from fiscal years 2014 through 2017 on childhood obesity in low-income children, according to National Institutes of Health officials.

Figure 1: Childhood Obesity Research Demonstration (CORD) Project Timeline



Source: GAO summary of dates for grant phases and relevant laws. | GAO-20-30

Note: The Centers for Disease Control and Prevention extended the demonstration projects in CORD phases 1 and 2 an additional year beyond the initial grant period to enable grantees to complete their data analysis and evaluations, according to CDC officials.

Across the three CORD Project phases—only the first of which is complete—CDC has awarded ten grants to entities to implement demonstration projects aimed at reducing obesity in low-income children.[17] (See table 1.) In the first phase of the CORD Project, CDC also awarded a grant to the evaluation center to conduct a cross-site evaluation of the implementing grantees' demonstration projects.[18]

[17]See app. I for additional information about the CORD phase 1 and 2 implementing grantees, including examples of the strategies they implemented.

Grantees were required to demonstrate in their proposals that, if awarded, they would be able to target low-income children. For example, in CORD phase 1, CDC considered whether the proposed study population included CHIP or Medicaid enrollees, children in families with incomes at or below 150 percent of the federal poverty level, or areas where at least 50 percent of children are eligible for the National School Lunch Program, which is a federal meals assistance program for certain children, including those in families with incomes at or below 185 percent of the federal poverty level.

[18]The evaluation center grant award was $4,245,862, according to CDC officials.

Table 1: Childhood Obesity Research Demonstration (CORD) Project Implementing Grantees

Phase	Funding period	Implementing grantees and location of demonstration[a]	Awarded amount (dollars)
CORD 1	September 2011 to September 2016	1. California demonstration project: **Grantee:** *San Diego State University* **Location:** Brawley, El Centro, and Calexico, California	6,567,524
		2. Massachusetts demonstration project[b]: **Grantee:** *Massachusetts State Department of Public Health* Harvard Medical School Harvard Pilgrim Health Care Institute Harvard School of Public Health National Initiative for Children's Healthcare Quality **Location:** Fitchburg and New Bedford, Massachusetts	6,403,980
		3. Texas demonstration project: **Grantee:** *The University of Texas Health Science Center at Houston* Duke University Baylor College of Medicine University of Nebraska Medical Center Texas Department of State Health Services Seton Healthcare **Location:** Austin and Houston, Texas	6,652,529
CORD 2	June 2016 to September 2019	1. Arizona demonstration project: **Grantee:** *Arizona State University* Northwestern University Chicago **Location:** Maricopa County, Arizona	3,814,602
		2. Massachusetts demonstration project: **Grantee:** *Massachusetts State Department of Public Health* *Massachusetts General Hospital* Holyoke Health Center **Location:** Holyoke and New Bedford, Massachusetts	3,277,519

Phase	Funding period	Implementing grantees and location of demonstration[a]	Awarded amount (dollars)
CORD 3	March 2019 to March 2024	1. **Grantee:** *Massachusetts General Hospital* Massachusetts General Hospital for Children **Location:** Clarksdale, Mound Bayou, and Yazoo City, Mississippi	2,499,894
		2. **Grantee:** *The Miriam Hospital in Providence Rhode Island* Bradley Hospital Brandeis University Brown University Tufts University **Location:** South Providence, Central Falls, and North Newport, Rhode Island	2,450,989
		3. **Grantee:** *Stanford University* **Location:** Santa Clara and San Mateo Counties, California	2,499,781
		4. **Grantee:** *University of Nebraska Medical Center* University of Nebraska at Kearney IRIS Media Inc. **Location:** Eight communities in Nebraska not yet determined by the grantee	2,489,040
		5. **Grantee:** *Washington University in St. Louis* Children's Mercy Hospital **Location:** Kansas City and Joplin, Missouri	2,498,910

Source: GAO analysis of information from Centers for Disease Control and Prevention (CDC) documentation and officials. | GAO-20-30

Notes: In addition to funding the above grantees, CDC officials told us that in each grant phase they used appropriated funding for administrative costs (5 percent of total funding in CORD phase 1 and 18 percent in CORD phase 2); awarded $4,245,862 to the evaluation center grantee in CORD phase 1; and awarded $705,633 to the National Association of Community Health Centers in CORD phase 2 to help implement one of the CORD phase 1 strategies in other locations. CDC officials also told us that the funding periods for CORD phases 1 and 2 include the 1-year extension that CDC approved to enable grantees to complete their data analysis and that the award amounts listed for CORD phase 3 are anticipated funding amounts.

[a]The organizations that are italicized are those where the principal investigator for the demonstration project was affiliated.

[b]The Massachusetts demonstration project received funding for all three CORD phases, although some of the participating institutions changed between grant phases.

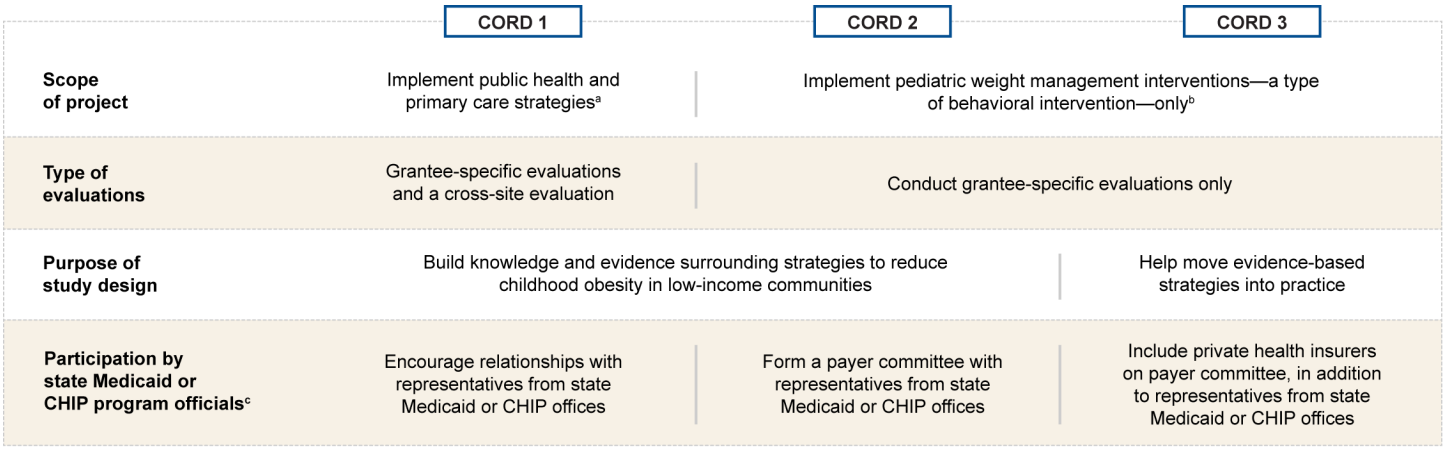
CDC Has Made Four Key Changes to the CORD Project Design in Response to Lessons Learned and National Recommendations

CDC Made Four Key Design Changes to the CORD Project between Each Grant Phase

CDC made four key design changes between the three CORD phases. CDC changed the scope of the project (i.e., type of strategies implemented), the type of evaluations (i.e., how it evaluated the strategies), the purpose of the study design, and the extent of participation by state Medicaid or CHIP programs. (See fig. 2.) CDC officials designed the CORD Project based on the language and requirements in CHIPRA and the CORD Project Plan developed by HHS, according to CDC officials. For CORD phases 2 and 3, CDC officials modified elements of the design in response to lessons learned, time frames for implementation, and recommendations related to childhood obesity made by national organizations such as the U.S. Preventive Services Task Force (hereafter referred to as the Task Force).[19]

[19]The Task Force is an independent, volunteer panel of national experts in disease prevention and evidence-based medicine, convened by the Agency for Health Research and Quality. The Task Force annually reviews existing peer-reviewed evidence and develops recommendations about clinical preventive services.

Figure 2: Key Design Elements by Childhood Obesity Research Demonstration (CORD) Project Phases



Source: GAO analysis of Centers for Disease Control and Prevention information. | GAO-20-30

[a]Public health strategies refer to activities and programs in community settings such as schools or early care and education centers intended to facilitate adoption of beneficial behaviors and improve health. Primary care strategies refer to activities implemented in health care settings, such as body mass index screenings.

[b]Pediatric weight management interventions are primary care strategies that involve intensive behavioral intervention designed to address excess weight through child and parental counseling on diet, physical activity, or behavior change management. Some CORD phase 1 grantees implemented pediatric weight management interventions, among other approaches.

[c]Medicaid is a joint federal-state program that finances health care coverage for low-income and medically needy individuals. The Children's Health Insurance Program (CHIP) is a joint federal-state program that finances health coverage for children whose household income exceeds limits for Medicaid eligibility.

Scope of CORD Project. After CORD phase 1, CDC officials shifted the scope of the CORD Project from prevention to the treatment of children who are overweight or have obesity, according to CDC officials. Specifically, CDC designed CORD phase 1 to require grantees to implement demonstration projects that integrated public health and primary care strategies by promoting children and their families' use of healthy behaviors and by modifying community environments. CORD phase 1 grantees implemented strategies in two types of settings: (1) community and (2) health care settings. Public health strategies are activities and programs delivered in community settings, such as schools and early care and education centers. Grantees also implemented primary care strategies, which in general are BMI screenings or other activities implemented in health care settings, such as during physician

visits in federally qualified health centers.[20] While CORD 1 grantees implemented strategies in both types of settings, the specific strategies that each CORD phase 1 grantee implemented varied. (See text box and app. I for additional information about the strategies CORD 1 grantees implemented.)

Examples of Strategies Childhood Obesity Research Demonstration Phase 1 Grantees Implemented

California Demonstration Project

- **Public health strategies** implemented included training staff at early care and education centers on health behavior change strategies and providing centers with large self-service water containers to promote increased water intake.
- **Primary care strategies** implemented included body mass index (BMI) screenings for children participating in early care and education centers. BMI is a measure used to determine overweight and obesity.

Massachusetts Demonstration Project

- **Public health strategies** implemented included training teachers in participating elementary schools on how to implement evidence-based health education curricula that encouraged learning about nutrition and physical activity.
- **Primary care strategies** implemented included establishing a healthy weight clinic located in the participating health centers.

Texas Demonstration Project

- **Public health strategies** implemented included providing classroom-based nutrition and gardening curricula in the early care and education centers.
- **Primary care strategies** included modifying electronic health records systems to increase provider awareness and action related to maintaining healthy weight, such as prompting clinicians to refer children who were overweight or had obesity to additional services.

Source: GAO analysis of grantee documentation. I GAO-20-30

[20]Federally qualified health centers provide a comprehensive set of primary and preventative health care services to individuals regardless of their ability to pay. Federally qualified health centers are usually nonprofit, community-based organizations and receive funding from multiple sources, including from the Health Resources and Services Administration, self-pay patients, private issuers, and Medicaid.

Pediatric Weight Management Interventions

The Centers for Disease Control and Prevention (CDC) defines pediatric weight management interventions as intensive behavioral interventions designed to address excess weight through child and parental counseling on diet, physical activity, or behavior change management. The U.S. Preventive Services Task Force refers to these as interventions for weight management interventions.

Source: GAO analysis of CDC and U.S. Preventive Services Task Force information. | GAO-20-30

For CORD phases 2 and 3, CDC shifted the scope of the CORD Project to the treatment of children who are overweight or have obesity. Specifically, CDC modified the scope to only focus on implementing pediatric weight management interventions, one type of primary care treatment strategy (see sidebar).[21] CDC officials told us they changed the scope of CORD phase 2 in response to the shorter, 2-year funding period authorized by law. CDC officials stated that unlike CORD phase 1, the shorter time frame for CORD phase 2 did not allow for a planning year to establish and solidify community relationships across multiple community settings while also enabling sufficient time to implement the strategies and analyze outcome and other data.[22]

CDC also modified the scope for CORD phase 2 and 3 to focus on pediatric weight management interventions in response to existing national recommendations related to childhood obesity, according to CDC officials. The Task Force recommended that primary care providers screen children 6 years and older for obesity and offer, or refer children with obesity to, pediatric weight management interventions.[23] In making its recommendation, the Task Force found that pediatric weight management interventions should involve at least 26 hours of contact

[21]In its funding opportunity announcements, CDC noted that CORD phase 2 and 3 grantees could implement primary care strategies in either clinical settings or in community settings. For example, in CORD phase 2, the Massachusetts demonstration project implemented its pediatric weight management intervention in a federally qualified health center and a YMCA.

[22]Community engagement was still important in CORD phases 2 and 3, according to CDC officials. Specifically, CDC required the implementing grantees to establish a community advisory board comprised of specific types of representatives from community organizations to facilitate support for the demonstration projects and improve collaboration within the community. For example, CDC required that CORD phase 3 grantees include on their board local health professionals, health care provider agencies, community health workers, local governments, and local educational agencies.

[23]After reviewing available evidence, the Task Force assigned this a B-recommendation in 2010, meaning the Task Force has confidence these practices promote moderate improvements in weight status. The Task Force re-affirmed the B-recommendation in 2017. See U.S. Preventive Services Task Force, "Screening for Obesity in Children and Adolescents: U.S. Preventive Services Task Force Recommendation Statement," *Pediatrics*, vol. 125, no. 2 (2010): p. 361; and U.S. Preventive Services Task Force, "Recommendation Statement," J*ournal of American Medical Association,* vol. 317, no. 23 (2017).

The Task Force assigns one of five letter grades to recommendations (A, B, C, D, or I) to indicate the strength of the recommendation and the amount of anticipated benefit, with A being the strongest.

between the provider and the child, family, or both over a period of 2 to 12 months. According to CDC's funding opportunity announcement for CORD phase 2, a 2007 expert committee convened by the American Medical Association similarly recommended that all health care providers address weight management and lifestyle issues with children at least once a year and provide behavior counseling on key obesity-related behaviors.[24] CDC officials stated they designed CORD phase 2 to meet the guidelines and standards outlined in these recommendations.

After Congress extended the CORD Project for a 6-year period beginning in fiscal year 2018 and appropriated additional funding, CDC designed the scope of CORD phase 3 as a 5-year grant to continue efforts to implement pediatric weight management interventions only.[25] CDC officials stated they considered returning to an integration of public health and primary care strategies for CORD phase 3, similar to CORD phase 1, but decided that the best use of resources was to focus on integrating pediatric weight management interventions into communities, which includes linking families with resources already available in the community, such as low-cost physical activity offerings.

Common Outcome Measures for Childhood Obesity Research Demonstration (CORD) Phase 1

Frequency of fruit and vegetable consumption

Frequency of sugar-sweetened beverage consumption

Physical activity

Sleep time

Screen time (e.g., watching television and playing video games)

Body mass index

Quality of life (e.g., physical, emotional, and social)

Source: GAO analysis of grantee documentation. | GAO-20-30

Type of evaluations. In CORD phase 1, CDC awarded a grant to another entity—the evaluation center—to conduct a cross-site evaluation to aggregate results of the three implementing grantees' demonstration projects. In designing CORD phases 2 and 3, CDC did not award grants to independent entities to conduct cross-site evaluations of the implementing grantees' demonstration projects. In CORD phase 1, the cross-site evaluation was intended to help inform national policy decision-making, including recommendations regarding the applicability of CORD strategies in other communities. To assess the effectiveness of CORD phase 1, CDC designed the cross-site evaluation to examine the demonstration projects using a set of common outcome measures, which the evaluation center developed in collaboration with CDC officials and implementing grantees (see sidebar).

[24]The American Medical Association, in collaboration with the Health Resources and Service Administration and the CDC, convened an expert committee that was charged with providing updated practical guidance to practitioners. See S.E. Barlow and the Expert Committee, "Expert Committee Recommendations Regarding the Prevention, Assessment, and Treatment of Child and Adolescent Overweight and Obesity: Summary Report," *Pediatrics*, vol. 120, Supplement 4 (2007): p. 164.

[25]CDC officials used the first year of the funding period to develop the funding opportunity announcement and to award the grants.

CDC officials told us they removed the cross-site evaluation component for CORD phases 2 and 3 in part due to challenges executing the cross-site evaluation in CORD phase 1. Officials explained, for example, that the difficulty in developing common outcome measures that could be analyzed across the three demonstration projects that were both valid and specific enough to the strategies was a challenge given the variation in the strategies implemented by each grantee, data collection time frames, and methodologies. In addition, CDC officials stated the implementing grantees had sufficient capacity to conduct their own evaluations. For these reasons, CDC officials said they concluded that the cross-site evaluation was not an efficient use of resources. The CORD phase 1 grantees also identified the following challenges related to the cross-site evaluation:

- Grantees told us there was insufficient time to develop the common outcome measures prior to implementing the strategies. One grantee noted this resulted in them needing to collect some data retrospectively instead of collecting it in real time.
- Grantees also collected data at different time frames from each other, which resulted in limited data for measuring outcomes via the common measures. Evaluation center officials stated that the lack of a common timeline for collecting data resulted in them only being able to analyze changes in common outcomes measures at the two common time points across all three grantees—baseline and 12 months—even though some grantees collected data at later time points (e.g., 24 months after implementation began). Thus, evaluation center officials said they were unable to determine whether changes in outcomes observed were sustained 24 months after implementation.
- Grantees reported challenges in creating valid common outcome measures applicable across the varying age ranges, locations, and strategies implemented for the three demonstration projects that affected results of the cross-site evaluation. For example, only the Massachusetts demonstration project chose to implement strategies in the Special Supplemental Nutrition Program for Women, Infants

and Children offices, making any data collected about that strategy unable to be included in the cross-site evaluation.[26]

CDC required the implementing grantees in all CORD phases to conduct their own evaluations and report on outcomes associated with the strategies implemented under their demonstration projects. Specifically, CDC expected the grantee-specific evaluations to measure health outcomes—such as changes to BMI, nutrition, and physical activity—and quality of life, and to report information on the processes, outcomes, and costs of the individual demonstration projects in the evaluations.[27]

Purpose of study design. While CDC designed CORD phases 1 and 2 to build knowledge and evidence on strategies for reducing obesity among low-income children, CDC designed CORD phase 3 to focus on translating strategies proven to reduce childhood obesity into routine use for low-income families. More specifically, for CORD phases 1 and 2, CDC required grantees to use or adapt strategies that previously had not been rigorously tested in low-income children. For example, in CORD phase 2, the Arizona demonstration project adapted a preexisting program—which was aimed at preventing child behavior issues through motivational interviewing techniques and parent education—to improve weight-related health behaviors in low-income children.[28] By comparing low-income participants receiving the strategies with those who did not, the Arizona demonstration project aims to develop evidence about whether or not these strategies work to reduce obesity in low-income

[26]The Special Supplemental Nutrition Program for Women, Infants, and Children is administered by the U.S. Department of Agriculture and provides federal grants to states for supplemental foods, health care referrals, and nutrition education for low-income women who are pregnant, breastfeeding, or non-breastfeeding postpartum; infants; and children up to age five who are at nutritional risk, as determined by a health professional based on federal guidelines. For more information on nutritional programs funded by the U.S. Department of Agriculture see GAO, *Nutrition Education: USDA Actions Needed to Assess Effectiveness, Coordinate Programs, and Leverage Expertise,* GAO-19-572 (Washington, D.C.: July 25, 2019).

[27]In CORD phase 1, the implementing grantees were expected to collect and share demonstration project process and outcome data with the evaluation center and to plan for and conduct the cost evaluations jointly with the evaluation center. According to an evaluation center official, due to challenges in conducting the cross-site cost evaluation, each implementing grantee conducted its own cost evaluation, and the evaluation center did not conduct a cross-site cost evaluation.

[28]Motivational interviewing is a client-centered counseling style that increases the client's intrinsic motivation so that behavior change arises from within rather than being imposed. See S. Rubak, et al., "Motivational Interviewing: A Systematic Review and Meta-Analysis." *British Journal of General Practice,* vol. 55, no. 513 (2005): p. 305.

children. Arizona officials told us that while the CORD phase 2 study design is appropriate for helping to expedite the translation of knowledge into practice, it has nonetheless been challenging to implement the demonstration project in a 2-year period. The officials explained 2 years is a short period of time for this type of demonstration project.

For CORD phase 3, CDC is requiring grantees to take an existing evidence-based pediatric weight management intervention and convert it into a user-friendly package of information, containing all materials clinical or community-based entities would need to easily, efficiently, and completely replicate the pediatric weight management intervention.[29] Materials may include implementation manuals, training curricula, technical assistance, and evaluation materials. CORD phase 3 grantees are required to partner with clinical or community entities that will then use the package to implement the set of pediatric weight management interventions in their community. Additionally, CORD phase 3 grantees are required to make edits to the packaged materials based on the results of the implementation and develop sustainability and dissemination plans to implement the pediatric weight management intervention at additional locations.

CDC officials and agency documentation outlined multiple reasons why they modified the study design for CORD phase 3. For example, in its funding opportunity announcement for CORD phase 3, CDC noted that there have been challenges in moving research-based, national recommendations, like Task Force recommendations, into practice. According to CDC officials, this challenge is especially great in low-income communities, where there are a limited number of available pediatric weight management interventions that are rigorous enough to meet the standards outlined by the Task Force. Additionally, officials noted that when these interventions are available, families are generally charged for the services. CDC officials told us that, according to the literature, it can take many years for evidence-based clinical interventions to make it into mainstream practice.[30] Thus, by designing CORD phase 3 to package evidence-based pediatric weight management interventions

[29]CDC designed CORD phase 3 for grantees to use strategies that have already undergone a randomized control trial and have evidence demonstrating the intended effect and benefits.

[30]E.A. Balas and S.A. Boren, *Managing Clinical Knowledge for Health Care Improvement,* Yearbook of Medical Informatics 2000: Patient-Centered Systems. Stuttgart: Schattauer Verlagsgesellschaft mbH, 2000.

that will be targeted to communities with low-income families, CDC officials told us they hope to reduce the number of years before adoption of such treatment strategies is prevalent.

Participation by state Medicaid or CHIP program officials. In the design for CORD phase 1, implementing grantees were not required to develop relationships with officials from their state Medicaid or CHIP offices or with other payers, but these relationships were encouraged, according to CDC officials. At each subsequent CORD phase, CDC modified its expectations of grantees regarding the involvement of state Medicaid and CHIP program officials in the demonstration projects. Specifically, CDC added a requirement that the implementing grantees form a payer advisory board with representatives from state Medicaid or CHIP offices and encouraged grantees to collaborate with other relevant health care stakeholders, such as private payers, to foster discussions about how to obtain reimbursement for CORD strategies.

Noting the importance of establishing these types of relationships, CDC officials told us that grant funding and in-kind donations—which CDC encouraged grantees to identify and use to supplement CORD grant funding—are not sustainable sources of funding for continued implementation of childhood obesity programs.[31] As a result, the officials told us reimbursement from insurers, such as Medicaid or CHIP, is necessary to sustain the implemented strategies at the level of intensity required by the Task Force recommendations. For example, in CORD phase 2, officials from the Arizona demonstration project told us they included representatives from United Healthcare's private and Medicaid health plans and also a representative from Mercy Care, a not-for-profit Medicaid plan, on their payer committee. Arizona demonstration project officials stated they were working with representatives of the state Medicaid program and private health plans to determine what kind of evidence payers would need to reimburse for obesity-related services.

Reimbursement is a key focus in CORD phase 3, and CDC officials told us they plan to assist grantees in determining which services provided

[31]CDC officials noted that a 2015 conference of stakeholders supported by the Agency for Healthcare Research and Quality, the American Academy of Pediatrics Institute for Healthy Childhood Weight, and The Obesity Society, noted that reimbursement is a significant barrier to the implementation of pediatric weight management interventions. See D.W. Wilfey, et al., "Improving Access and Systems of Care for Evidence-Based Childhood Obesity Treatment: Conference Key Findings and Next Steps," *Obesity* (2016).

within the pediatric weight management interventions may be reimbursable. Specifically, CDC officials stated they will coordinate opportunities for information sharing, technical assistance, and networking between CORD phase 3 grantees, states, and CMS in order to explore broader Medicaid and CHIP coverage options for the services delivered through the grants. CMS officials noted that medical services provided under the grant could be reimbursable under states' Medicaid and CHIP programs, including under the Early and Periodic Screening, Diagnostics and Treatment benefit.[32]

CDC Used a Similar Approach to Grantee Management in the First Two CORD Phases

While CDC changed some design elements of the CORD Project between the phases, according to CDC officials, the agency used a consistent approach in managing grantees. Specifically, CDC officials told us that in CORD phases 1 and 2 they promoted collaboration between themselves and the grantees, as well as among the grantees, and monitored the grantees through regular interactions with them.[33] CDC officials told us they used a team of personnel with different expertise to oversee the CORD phase 1 and 2 grants. For example, the team included a project officer who specialized in program management to oversee the day-to-day operations, as well as subject matter experts, including one experienced in evaluation design. CDC officials told us they interacted with CORD phase 1 and 2 grantees on regular conference calls and conducted annual site visits to each grantee. Grantees stated that CDC's site visits aided them in implementing their demonstration projects by keeping them and their community partners accountable. In addition, grantees told us that CDC collaborated with them to provide expertise on, or troubleshoot the design of, the implementation of their demonstration projects. For example, Arizona demonstration project officials told us that

[32]State Medicaid programs are required to cover the Early and Periodic Screening, Diagnostic, and Treatment benefit for all categorically eligible children aged 20 and under and have the option to cover the benefit for other children eligible for Medicaid or CHIP. States that operate CHIP programs separate from Medicaid may, but are not required to, cover the Early and Periodic Screening, Diagnostic, and Treatment benefit in those programs. The Early and Periodic Screening, Diagnostic, and Treatment benefit provides for coverage of screening, vision, dental, and hearing services, as well as other Medicaid coverable services that are medically necessary to correct or ameliorate any conditions discovered through screening. According to CDC officials, grantees' understanding of which services could be covered by Medicaid within their state will affect their ability to use reimbursable services to provide these interventions and services.

[33]CDC established cooperative agreements with the CORD grantees. In cooperative agreements, unlike standard grant agreements, substantial involvement by the federal funding agency is expected in carrying out the activities funded by the grant.

CDC officials helped them to figure out how to best achieve their desired sample size for a strategy they were implementing. CDC officials told us they plan to continue a similarly collaborative management approach for CORD phase 3.

CDC officials stated they also monitored CORD phase 1 and 2 grantees by requiring grantees to regularly report on their efforts and generally plan to monitor CORD phase 3 grantees the same way.[34] For example, CDC required CORD phase 1 grantees to submit annual progress reports at least 90 days before the end of the budget period that included descriptions of progress made towards the research goals, information on expenditures, and a detailed budget justification for the new budget period. CDC also required CORD phase 1 grantees to submit both annual progress reports and a final progress report. CORD phase 1 grantees told us that CDC officials were helpful in providing administrative support that ensured grant paperwork was completed consistent with requirements.

[34]The time frames for regular reporting differed between CORD phases 1 and 2. For example, CDC required CORD 1 grantees to submit annual reports as well as a final report. CORD phase 2 grantees were required to submit an interim progress and a final report because of the shortened grant period, according to CDC officials.

Evaluations Show Some Improvements for the Completed Demonstration Projects and CDC and Grantees Identified Factors Affecting Implementation

Evaluation Center and Grantees Reported Some Improvements for Children Receiving the Strategies in the First Phase of the CORD Demonstration Projects

The evaluation center's cross-site evaluation and the implementing grantees' evaluation findings reported some improvements in BMI and other outcomes measured among children who received CORD phase 1 strategies. Specifically, the evaluation center reported that positive changes on these outcomes were observed most often among the following groups of children, providing some evidence of the effectiveness of the strategies delivered:

- Children who received primary care strategies, such as individualized counseling.
- Children who received public health strategies, such as an evidence-based nutritional program, in addition to the primary care strategies.

In evaluating the CORD 1 demonstration projects, the evaluation center did not examine which specific strategies were the most effective. The primary objective of the cross-site evaluation was to determine if there was evidence that an integrated approach had any advantage over implementing either public health only or primary care only strategies. The evaluation center examined the extent to which the three CORD 1 demonstration projects collectively were associated with positive changes over time in behavior or reductions in BMI. Because of the considerable variation in each of the three demonstration projects, the evaluation center grouped the various strategies implemented by the three grantees

into two categories for the analysis: public health and primary care plus.[35] Next, the evaluation center categorized children by the types of strategies they received (public health only, primary care plus only, or both public health and primary care plus) and by age (2 to 5 years, 6 to 8 years, and 9 to 12 years).[36] The evaluation center tested whether each of the possible combinations of strategy and age showed improvement over a 12-month period for each common measure.

Using this approach, the evaluation center found some improvements for all of the common outcomes measured; however, improvements were not observed for each strategy or age group. Specifically, of the 81 possible combinations of strategy and age, 52 demonstrated some improvement over the 12-month period; however, only 16 of them showed a statistically significant improvement.[37] (See fig. 3.) For example, BMI improved for children over the 12-month period in three of the strategy and age combinations, but the improvement was statistically significant for just one of those combinations. Among the 52 groups that showed improvements at 12 months, most of the differences observed were very small. For example, from the start of the intervention to 12 months after the intervention, there was about a 1 percent increase in the percentage of children who reported they were physically active for 60 minutes at least one day a week.[38]

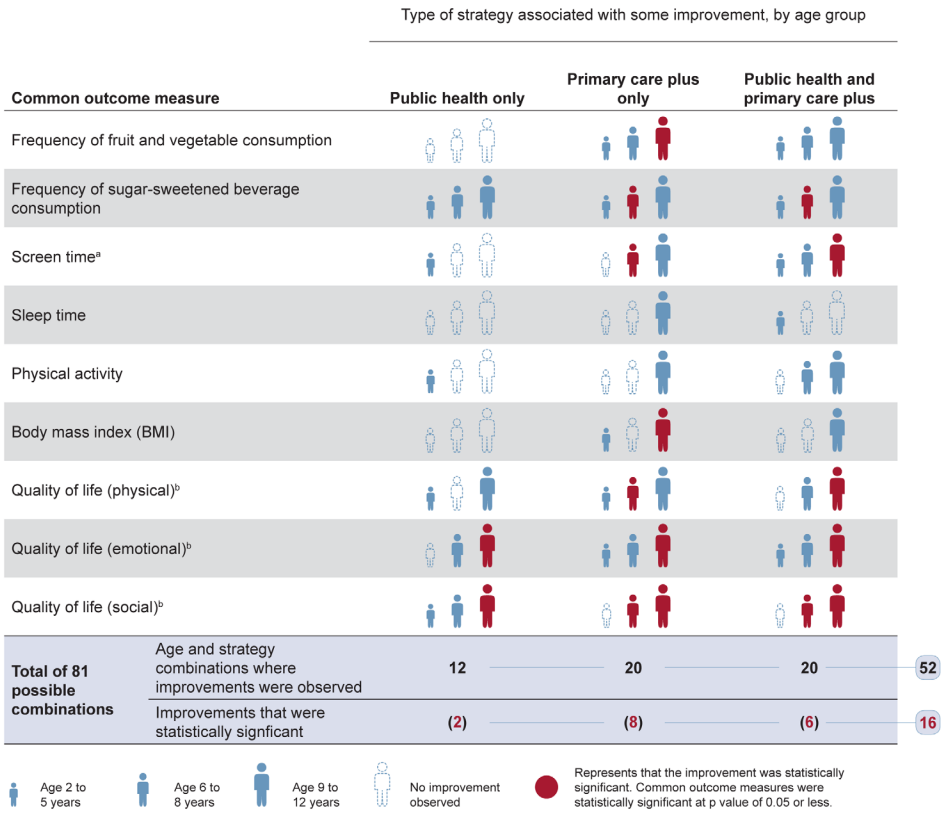
[35]Public health included implementing programs, such as evidence-based health promotion programs, in schools and early care and education centers, and implementing systems changes, such as developing new alerts in electronic health records systems to increase provider awareness and action related to maintaining healthy weight. Primary care plus provided prevention care activities for families with children who were overweight or had obesity. In addition to what is typically delivered by primary care providers, primary care plus included intensive community health worker programs or healthy weight clinics, which provided individualized counseling to the children and families.

[36]The evaluation center limited its analysis to children who were overweight or had obesity (BMI of 85 percent or greater), even though some of the implementing grantees provided some strategies to children with a BMI of less than 85 percent.

[37]We examined the direction of the change reported over the 12-month period and considered any positive change—regardless of the magnitude—to indicate improvement. Common outcome measures were statistically significant at $p \leq 0.05$.

[38]The children who demonstrated an increase in physical activity were 9 to 12 years old and received both public health and primary care strategies.

Figure 3: CORD Phase 1 Cross-Site Evaluation Findings, by Common Outcome Measure



Source: GAO analysis of grantee information. | GAO-20-30

Notes: Information summarizes results presented by the University of Houston in its final progress report to the Centers for Disease Control and Prevention on the Childhood Obesity Research Demonstration (CORD). For each common outcome measure, the evaluation center categorized children by one of three possible types of strategies received (public health only, primary care plus only, or both public health and primary care plus) and by one of three age groups (2 to 5 years, 6 to 8 years, and 9 to 12 years), for a total of nine potential combinations per outcome measure. For each common outcome measure, the evaluation center compared results for children prior to the start of the demonstration project to the results for children 12 months after the start of the demonstration project. For this analysis, we examined the direction of the change reported over the 12-month period and considered any positive change—regardless of the magnitude—to indicate improvement; most of the differences observed were very small.

[a]Screen time measures the decrease in the time spent each day using electronic devices for gaming, entertainment, or communications, such as television, computer, electronic gaming systems, cell phone, and hand-held or portable electronic devices.

[b]The evaluation center used the Pediatric Quality of Life Inventory to measure quality of life. The inventory is a 23-item questionnaire that covers core dimensions of health (physical, social, and emotional functioning). The questions are phrased in terms of frequency of problems experienced over the past month.

The implementing grantees—each of which conducted their own evaluations—also reported some improvements in the children who received CORD phase 1 strategies. Similar to the evaluation center's findings, the implementing grantees did not report improvements for all participating age groups or all outcomes they examined. Among their findings, the grantees reported the following:

- Children at participating early care and education centers in Texas, who were exposed to strategies such as classroom-based nutrition and gardening curricula, demonstrated modest improvements in BMI over a 2-year period when compared with children who did not receive these Texas demonstration project strategies.[39] The Texas demonstration project also reported improvements in BMI for some children who participated in a weight management program administered in YMCAs compared with a different weight management program administered in primary care clinics. Specifically, researchers found that the YMCA program was more effective in reducing BMI for low-income children at 3 months but not at 12 months after implementation of the program.[40]
- Children who received both public health and primary care strategies under the California demonstration project experienced some improvement on some outcome measures when compared to children who only received one type of strategy. For example, children who are overweight or have obesity who received both public health and primary care strategies reported playing less hours of video games during the week than those who only received the primary care strategies.
- During CORD phase 1, the Massachusetts demonstration project observed some improvements over time in the children who received CORD strategies. For example, the percentage of seventh grade students with obesity decreased from the start of implementation compared with 24 months after implementation in the two

[39]Specifically, when compared with children who were not exposed to the strategies, BMI was lower among children in the intervention centers at the 2-year follow-up period compared with baseline. The Texas demonstration project used two measures of BMI and found modest improvements using both measures. See S. V. Sharma, et al., "Impact of the Coordinated Approach to Child Health Early Childhood Program for Obesity Prevention among Preschool Children: The Texas Childhood Obesity Research Demonstration Study," *Childhood Obesity*, vol. 15, no. 1 (2019): p. 1.

[40]N. F. Butte, et al., "Efficacy of a Community-Versus Primary Care-Centered Program for Childhood Obesity: TX CORD RCT," *Obesity*, vol. 25, no.9 (2017): p.1584.

communities where the strategies were implemented.[41] However, these results were modest; the decrease in the percentage of students with obesity was less than 3 percent in both communities.

CDC officials, implementing grantees, and the evaluation center noted that modest or no effects were likely in part due to small sample sizes because of recruitment issues. Regarding recruitment, CDC officials told us that two of the three CORD phase 1 demonstration projects had issues with recruitment that caused sample size issues and ultimately statistical power issues. Specifically, when there is a smaller sample size, a study may be underpowered, which means that statistically significant effects are less likely to be detected even when differences exist. CDC officials explained that having limited statistical power affects the ability for more specific modeling or analysis to determine for whom the strategies works best (e.g., those with obesity or severe obesity). Grantees and CDC officials told us that when faced with recruitment issues, grantees made changes to their recruitment strategies. For example, grantees reduced the minimum BMI required for children participating in the demonstration projects in an attempt to increase participation. However, grantees told us they were still not able to reach their anticipated number of participants. Additionally, an official from the evaluation center told us some common outcome measures used in the cross-site evaluation were limited. The official explained that, had the grantees had more time to reach consensus on how to collect the data for the common outcome measures, or had the common outcome measures been identified in advance of the implementing grantees developing their own evaluations using measures specific to their demonstration projects, the evaluation center might have had more precise data to demonstrate improvements among participants.

In planning for CORD phase 1, CDC officials acknowledged that the demonstration projects might not result in significant changes for some outcomes. CDC's funding opportunity announcement noted that changes in health indicators, such as BMI, are long-term objectives, and that the period of funding for the projects might be too short to demonstrate

[41]The seventh grade students who demonstrated a decrease in obesity were those who were exposed the longest to the public health strategies in the school setting. While the percentage of seventh grade students with obesity decreased in both communities, a significant reduction was observed in only one of the communities.

significant improvement in these outcomes.[42] A CDC official stated that although strong results were not found across each of the demonstration projects, the results of the implemented strategies provided evidence that these strategies could be implemented in a real-world setting. Thus, they noted the lack of stronger and larger effects does not mean that the demonstration projects were not successful.

CORD phase 1 grantees told us they continue to analyze the data and expect to publish additional findings, even though the grant period has concluded. For example, the evaluation center told us they had enough data from the CORD Project to continue publishing for many years and planned to publish studies examining how existing community policies—such as physical activity policies—affected the outcomes of the implemented strategies. One of the implementing grantees also told us that having more time to fully analyze, use, and publish results from the data was needed.

CDC and Grantees Identified Several Factors Affecting the Implementation of Strategies to Reduce Obesity among Low-Income Children

CDC officials and CORD grantees identified several factors that affected grantees' ability to implement strategies to reduce childhood obesity among low-income children. According to CDC officials, policymakers and researchers should consider these factors when implementing similar strategies in the future. CDC officials or implementing grantees identified the following factors they observed across the CORD grantees:

- **Staff turnover.** CDC officials told us that the turnover of principals and other administrative personnel trained to provide the strategies is one factor that negatively affected the implementation of the strategies in schools or clinics. For example, CDC officials noted that in the Massachusetts demonstration project, researchers had to establish a relationship with a new principal of one of the participating schools when the other principal left, which delayed progress in implementation at that location. Similarly, the Arizona demonstration project also experienced staff turnover at the clinics, which led to a need for retraining and challenges in staff flows. CDC officials suggested that future research should consider incorporating staff

[42]The evaluation center reported some short-term outcomes observed during the first phase of the CORD Project, including families and children having knowledge of health behaviors and community resources as well as families and children being referred to appropriate services. Some mid-term outcomes observed included increased physical activity time and increased fruit and vegetable consumption.

retraining costs in the design of public health strategies to help mitigate this challenge.

- **Family support.** CDC officials told us that grantees had to provide more support than initially anticipated to families to better ensure their participation. CDC officials told us that grantees addressed this challenge by allowing siblings to also attend or participate in the activities or by holding activities on weekends or after school to accommodate parents' work obligations. Strategies should be designed to be flexible for families, as there are competing demands on the families participating in the demonstration projects, CDC officials explained.
- **Pertinent programs and policies.** Implementing grantees noted that the preexistence of programs or policies that promoted healthy behaviors in the public health and primary care sectors positively affected their implementation of CORD strategies. For example, Massachusetts demonstration project officials told us that the strategies they implemented complemented an existing statewide program that promoted opportunities for healthy eating and active living in the communities, schools, childcare centers, and businesses. Grantee officials attributed the organizational commitment and motivation they observed in participating schools to these preexisting activities.
- **Commitment from partner organizations.** Implementing grantees found that the commitment of partner organizations, such as schools, was an important factor affecting implementation. According to implementing grantees, determining the willingness and ability of an organization to implement the strategies is important—by identifying, for example, leaders who support the strategies and can help ensure staff commitment to execute them. The Massachusetts demonstration project reported that 90 percent of the stakeholders they worked with noted the presence of leadership and administrative support for the project reduced feelings of conflict between program implementation and other priorities. Alternatively, the California demonstration project identified the lack of a strong supporter in a leadership position as a barrier to implementation.
- **Parental stresses.** Implementing grantees found that parental stresses related to social economic status (e.g., food insecurity or accessibility challenges, including transportation to intervention sites) was a major factor negatively affecting family participation and the

implementation of the strategies.[43] Grantees explained that understanding the effect of these stresses on a family's ability to focus on the strategies to reduce childhood obesity is important and grantees should plan for ways to mitigate those stresses.

CDC told us that the CORD phase 3 demonstration projects may be able to help mitigate some of the challenges identified from prior CORD experiences, as noted above. For example, CDC officials told us they plan to work with CORD phase 3 grantees to find ways to mitigate challenges associated with staff turnover, which could include taping trainings or allowing for virtual opportunities for retraining. Additionally, the CORD phase 3 grants are implementing pediatric weight management interventions in different settings—some in clinical settings and some in community settings—which CDC officials said may provide parents with additional flexibility to participate in the strategies.

[43]Food security is generally defined as a family's ability to provide for its children's nutritional needs—that is, to be able to access at all times adequate amounts of food for an active, healthy life for all household members. See U.S. Department of Agriculture, Economic Research Service, *Household Food Security in the United States in 2016,* Economic Research Report No. 237 (Washington, D.C.: September 2017).

CDC and Others Have Taken Steps to Disseminate CORD Results and Continue to Promote the Use of CORD Strategies in Low-Income Communities

CDC has taken steps to share CORD phases 1 and 2 design materials and available results with researchers and others. For example, CDC shared on its website information for CORD phases 1 and 2, including project summaries, background information about the grantees, and published literature describing the project designs and results.[44] In addition, CDC shared lessons learned about the CORD Project and evidence-based childhood weight management programs during a series of webinars.[45] According to CDC officials, the intended audience for the webinars included public health practitioners and researchers; local, state, and federal government agency officials; health care professionals; policy analysts; and community health workers. CDC officials also told us they have presented CORD results and lessons learned at conferences and at meetings organized by other HHS agencies. Specifically, a CDC official and grantees summarized results from the first phase of the CORD Project at the American Academy of Pediatrics' Annual Conference in 2016. CORD phase 1 results were also presented at the 2018 Annual Meeting for the Association of State Public Health Nutritionists. Additionally, in November 2017, CORD phase 1 grantees met with researchers from the National Institutes of Health's Childhood Obesity Prevention and Treatment Research program to share lessons learned from their respective research.

To further disseminate CORD results, CDC officials highlighted their planned report to Congress, as required by CHIPRA, which was subsequently issued in September 2019.[46] The report describes the

[44]As of September 2019, some information about the third phase of the CORD Project (e.g., background information, the purpose of the phase, and organizations awarded grants) was available on CDC's website. See Division of Nutrition, Physical Activity, and Obesity, National Center for Chronic Disease Prevention and Health Promotion, *CDC's Childhood Obesity Research Demonstration (CORD) Project 3.0,* accessed on September 13, 2019, https://www.cdc.gov/obesity/strategies/healthcare/cord3.html.

[45]See D. Hoelscher, H. Blanck, and G. Ayala, *CORD Project: Implementing Strategies across the Community to Help Families with Childhood Obesity* webinar, accessed July 18, 2019, https://sph.uth.edu/research/centers/dell/webinars/cord-webinar_3-17-2015.pdf, and National Association of Chronic Disease Directors, *Evidence-Based Pediatric Weight Management Programs—Webinars*, accessed July 18, 2019, https://www.chronicdisease.org/page/EBPWMWebinars?&hhsearchterms=%22evidence+and+based+and+pediatric+and+weight+and+management.

[46]CHIPRA required the Secretary of HHS to submit this report no later than 3 years after the date CORD phase 1 was implemented. CDC submitted the report to Congress in September 2019, after we received HHS comments on a draft of our report. CDC officials told us they plan to submit separate reports to Congress on CORD phases 2 and 3 after the completion of each phase.

findings for CORD phase 1 and provides brief descriptions of the CORD phase 2 grantees and their demonstration projects, since the results of those projects are not yet available. The report identifies CORD phase 1 findings, including information about the costs of implementing the strategies. CDC officials noted that the implemented public health strategies, such as providing classroom-based nutrition and gardening curriculum or programs that promote physical activity, cost less than primary care strategies. Specifically, CDC reported that the costs of public health strategies in early care and education centers ranged from $26 to $96 per child, the costs of some primary care strategies ranged from $164 to $181 per child, and the cost of more intensive family-based weight management programs ranged from $2,107 to $2,220 per child.

CDC, in collaboration with other HHS agencies, has also taken some steps to promote the wider adoption of CORD strategies in low-income communities. For example, CDC and CMS have had preliminary discussions about how CMS could help CORD grantees understand how Medicaid and CHIP programs could reimburse for the obesity-related strategies they are implementing as part of the CORD Project, which CDC officials told us could help to sustain and expand these strategies to other low-income communities. CMS officials told us they are considering whether to issue guidance to state Medicaid and CHIP programs that explains how some states have been able to reimburse entities for the provision of overweight- and obesity-related services.[47] CDC officials told us that after discussions with CMS officials, they provided information to CMS in October 2018 that could be used for a possible CMS information bulletin to state Medicaid and CHIP officials on childhood obesity.

In addition, CDC and the Office of the Assistant Secretary for Planning and Evaluation within HHS have awarded a cooperative agreement to the National Association of Community Health Centers to increase the implementation of an evidence-based childhood weight management program—Mind, Exercise, Nutrition, Do It!—by federally qualified health

[47]According to CDC documentation CMS had planned to issue such guidance at the inception of the CORD Project. Specifically, the funding opportunity announcement for the first phase of the CORD Project, published on January 19, 2011, noted that CMS expected to issue future guidance to program directors on State Medicaid and CHIP coverage and reimbursement for childhood obesity related services.

centers.[48] According to HHS officials, the National Association of Community Health Centers is assisting 14 federally qualified health centers in five states (Arizona, Florida, Illinois, Mississippi, and North Carolina) to implement this intervention and, based on lessons learned, plans to develop an implementation guide to support the expansion of this strategy to other health centers. CDC officials also told us they are coordinating with the National Cancer Institute within the National Institutes of Health to share knowledge with CORD phase 3 grantees about how to develop business models to support the expansion of successful strategies, which aligns with one of CDC's goals for CORD phase 3 to determine how to increase the adoption of successful strategies beyond the CORD intervention sites.[49]

CDC officials and implementing grantees provided us some examples of CORD strategies and materials that continue to be used in the states where they were implemented or have been implemented in other low-income communities.

- Officials from the Massachusetts demonstration project told us that some of the primary care strategies they developed during CORD phase 1 are still provided in the healthy weight clinics that participated in the project.[50]

[48]CDC used CORD Project funding for this activity. The Mind, Exercise, Nutrition, Do It! program implemented in CORD phase 1, is a family-based program designed to manage overweight and obesity in 7 to 13 year olds and their families by improving health, fitness and self-esteem. The program combines physical activity, healthy eating, and behavior change to facilitate safe, effective weight management and lasting changes in lifestyle. Children and at least one parent or caregiver attend the program, which is 20 sessions for 2 hours twice a week.

[49]CDC officials told us they are working with the National Cancer Institute's Speeding Research-Tested Interventions program, which the Institute developed to provide training to researchers on how to transform cancer control innovations into market-ready products. See National Cancer Institute, *Speeding Research-Tested Interventions (SPRINT),* accessed on August 8, 2019, https://www.nci-sprint.com.

[50]In the Massachusetts demonstration project, the healthy weight clinics were located in the participating federally qualified health centers. The healthy weight clinics were staffed by a physician, a nutritionist, and a community health worker, who met with each patient and family during a well visit. Primary care providers referred children who were overweight or had obesity to this team in the healthy weight clinic. The children participating in the healthy weight clinics engaged in dietary and physical activity assessment and goal setting and were connected to community resources to support healthy lifestyles. The Massachusetts demonstration project aimed for the participating children to be followed in the healthy weight clinics for a total of 12 months.

- Officials from the Arizona demonstration project told us they have received funding from the U.S. Department of Agriculture to develop a new training module for health care providers interested in implementing the project's pediatric weight management intervention. They explained that the new training module will include information on parenting strategies specific to child health behaviors (e.g., monitoring of physical activity) and examples of stories from the families who participated in the Arizona demonstration project.
- CDC officials also told us that materials that CORD grantees used as part of their strategies are publically available for use by researchers and other communities. These materials include a primary care resource guide developed in collaboration with the American Academy of Pediatrics, the Coordinated Approach to Child Health early childhood kit, and a healthy weight clinic implementation guide.[51]

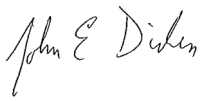
[51]The Coordinated Approach to Child Health Program is designed to encourage physical activity, provide an introduction to classroom-based gardening and nutrition, and encourage healthy eating in children aged 3 to 5 years.

Agency Comments

We provided a draft of this report to HHS for comment. HHS provided technical comments, which we incorporated as appropriate.

As agreed with your offices, unless you publicly announce the contents of this report earlier, we plan no further distribution until 30 days from the report date. At that time, we will send copies of this report to the Secretary of Health and Human Services, the appropriate congressional committees, and other interested parties. In addition, this report will be available at no charge on the GAO website at http://www.gao.gov.

If you or your staff members have any questions about this report, please contact me at (202) 512-7114 or dickenj@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. Major contributors to this report are listed in appendix II.



John E. Dicken
Director, Health Care

Appendix I: Childhood Obesity Research Demonstration Grantees

The Children's Health Insurance Program Reauthorization Act of 2009 (CHIPRA) authorized the Department of Health and Human Services (HHS) to establish the Childhood Obesity Research Demonstration (CORD) Project.[1] CHIPRA specified that HHS provide project grants to universities or other eligible entities to implement activities to reduce childhood obesity among low-income children. HHS designated the Centers for Disease Control and Prevention (CDC) as the agency responsible for designing, awarding, and managing the grants. Subsequent laws provided additional funding and extended the CORD Project for two more phases.[2]

The first phase of the CORD Project began in September 2011 and was completed in September 2016. The purpose of CORD phase 1 was to determine whether implementing strategies in public health sectors, including early care and education centers, schools and community organizations, and primary care sectors, such as health care clinics, could improve low-income children's risk factors for obesity. CDC funded three implementing grantees: San Diego State University, the Massachusetts State Department of Public Health, and the University of Texas Health Science.

CORD phase 2 started in June 2016. The purpose of this phase was to further test if strategies implemented in the primary care sector would reduce the body mass index (BMI) in children with obesity, or who were overweight with risks including medical and behavioral risks and family history.[3] CDC funded the following grantees: the Massachusetts State Department of Public Health and Arizona State University. As of July 2019, CORD phase 2 was ongoing.

[1]See CHIPRA, Pub. L. No. 111-3, § 401, 123 Stat. 8, 77 (2009) (codified as amended at 42 U.S.C. § 1320b-9a(e)).

[2]See Medicare Access and CHIP Reauthorization Act of 2015, Pub. L. No. 114-10, § 304(a), 129 Stat. 87, 158 (2015); Helping Ensure Access for Little Ones, Toddlers, and Hopeful Youth by Keeping Insurance Delivery Stable Act, Pub. L. No. 115-120, § 3003(a), 132 Stat. 28, 36 (2018).

[3]Body mass index (BMI) is a person's weight in kilograms divided by the square of height in meters. For children, BMI is age- and sex-adjusted, because their body composition varies as they age and varies by gender. A child is classified as overweight when their BMI is at or above the 85th percentile and below the 95th percentile for children of the same age and sex. A child is classified as obese when their BMI is at or above the 95th percentile for children of the same age and sex.

GAO

Overview

The California demonstration project was led by San Diego State University. The demonstration project was implemented in three rural communities—Brawley, El Centro, and Calexico—in Imperial County, California. Imperial County, California, is located on the U.S.-Mexico border, and had an estimated 174,528 residents, 77 percent of whom were of Mexican origin—including 32 percent who were foreign born—in 2010. Three-quarters of all residents reported speaking a language other than English at home. The median household income was $39,402, compared to $61,632 in the state, and income disparities are reflected further in the differential poverty rates (23 percent in Imperial County versus 14 percent in California as a whole).

Demonstration Project

The grantee conducted a non-randomized study which sought to determine whether strategies implemented in both public health sectors and primary care sectors would be more effective at preventing and controlling childhood obesity when compared with strategies implemented in public health sectors only, primary care sectors only, or when strategies were not implemented.

CORD PHASE 1

CALIFORNIA DEMONSTRATION PROJECT

Examples of Strategies Implemented

Early care and education centers (23 centers)

Collected height and weight for children aged 2-5 years.

Trained center staff on health behavior change strategies to use at their centers.

Provided centers with large self-serve water containers and cooking kits with child-friendly cooking and serving items.

Elementary schools (13 schools)

Worked with school nurses and trainees to collect BMI measurements from kindergarteners, third graders, and fifth graders in the El Centro Elementary School District; and kindergarteners, second graders and fifth graders in the Brawley Elementary School District.

Provided schools physical activity equipment.

Installed water jets and other water containers to provide self-serving access by students.

Developed lesson plans promoting sleep for grades kindergarten through sixth grade.

Community (three community organizations and three independent restaurants)

Provided a water dispenser at two community recreations centers in Brawley and El Centro and at one Boys and Girls Club in Brawley.

Developed community gardens at the Boys and Girls Club in Brawley and a recreation center in El Centro.

Introduced healthy children's menu items in three restaurants.

Community health clinics (three clinic sites)

Modified the clinics' electronic health record systems to improve health care provider screening and treatment of childhood obesity including through the use of alerts and prompts. To facilitate the adoption of the system changes, a patient care coordinator was hired to work across the participating clinics.

Hired community health workers and a community health worker coordinator to administer the Family Wellness Program, a 12-month program that delivered wellness and physical activity workshops, motivational interviewing, and newsletters.[4]

[4]Motivational interviewing is a client-centered counseling style that increases the client's intrinsic motivation so that behavior change arises from within rather than being imposed. See S. Rubak, et al., "Motivational Interviewing: A Systematic Review and Meta-Analysis." *British Journal of General Practice,* vol. 55, no. 513 (2005): p. 305.

GAO

CORD PHASE 1

MASSACHUSSETTS DEMONSTRATION PROJECT

Overview

The Massachusetts demonstration project was a led by the Massachusetts Department of Public Health. The demonstration project was implemented in the cities of Fitchburg, located in north-central Massachusetts, and New Bedford, in southeast Massachusetts. In 2010, the population of these two cities was about 40,000 and 95,000, respectively, and was predominantly non-Hispanic white (about 68 percent). Both communities had higher percentages of low-income residents than the state of Massachusetts, according to 5-year estimates from the 2008-2012 American Community Survey. Specifically, the percentage of families with children whose incomes were less than the federal poverty level was about 24 percent in Fitchburg and 27 percent in New Bedford versus 12 percent in the state.

Demonstration Project

The grantee used a combination of pre- post time series and quasi-experimental designs to examine the extent to which the interventions resulted in changes in BMI, individual-level lifestyle behaviors, satisfaction with health care services, and quality of life among children, as well as to health policies, programs, and environments in the two intervention cities compared to another city.

Examples of Strategies Implemented

Early care and education centers (nine centers)

Trained mentors to provide support to staff to implement evidence-based programs on nutrition and physical activity.

Schools and after school programs (six schools and 17 after school programs)

Provided evidence-based health education curricula and training to teachers to encourage student learning about nutrition and physical activity.

Implemented a nutrition curriculum for after-school program staff to use with children aged 5 to12 years.

Community

Implemented a communications campaign, including text messaging, small billboards, transit ads, and handouts, to spread the demonstration project's brand and to change community norms and practices in physical activity and healthy eating.

Special Supplemental Nutrition Program for Women, Infants and Children (one program in each community)[5]

Collaborated with the Special Supplemental Nutrition Program for Women, Infants and Children to implement intervention activities including training nutritionists and nutrition assistants in best practices on assessment and counseling for childhood obesity prevention and developing an obesity counseling toolkit for providers.

Health centers (two centers)

Modified existing electronic health records to deploy a computerized, point-of-care decision support alert at the time of a well-child care visit for a child who is overweight or has obesity. The alert prompted clinicians to document weight status, nutrition and physical activity counseling, and place referral to the on-site healthy weight clinic for weight management support.

Implemented a healthy weight clinic in each participating health centers. Each healthy weight clinic was staffed with a physician, a nutritionist, and a community health worker who met with each patient and family. Patients participating in the healthy weight clinics engaged in dietary and physical activity assessment, goal setting, and were connected to community resources to support healthy lifestyles.

[5]The Special Supplemental Nutrition Program for Women, Infants, and Children is administered by the U.S. Department of Agriculture and provides federal grants to states for supplemental foods, health care referrals, and nutrition education for low-income women who are pregnant, breastfeeding, or non-breastfeeding postpartum; infants; and children up to age 5 who are at nutritional risk, as determined by a health professional based on federal guidelines.

GAO

CORD PHASE 1

TEXAS DEMONSTRATION PROJECT

Overview

The Texas demonstration project was led by the University of Texas Health Science Center in Houston. The demonstration was implemented in two catchment areas in Houston and Austin, Texas. The data collected at the beginning of the project from participating early care and education centers, schools, and clinics indicated that families were low-income, with most parents reporting an annual household income of $25,000 or less. The population was predominantly Hispanic (73 to 83 percent), with approximately 44 to 55 percent predominately Spanish-speaking.

Demonstration Project

The Texas demonstration project implemented and evaluated a primary and secondary obesity prevention program. In the primary prevention intervention, the grantee collected data on risk factors and the utilization of health care services and community programs. This intervention was focused on the entire community, with the goal of preventing the development of obesity. The secondary prevention program consisted of a randomized control trial, targeted to children who were already overweight or had obesity. Children and their families were randomly assigned to either a community centered or a primary care centered weight management program.

Examples of Strategies Implemented

Early care and education centers (28 centers)

Provided classroom materials on nutrition and gardening and bilingual parent tips sheets on nutrition, activity, and screen time.

Provided physical activity equipment to participating centers.

Schools (40 schools)

Trained school staff on a nutrition and physical education classroom curricula.

Sent text messages in English or Spanish to participants once a week that emphasized program concepts and linked families to resources.

Community

Provided training sessions to teach community health workers, teachers, parents, physicians, and others stakeholders about advocacy and the implementation of environmental changes for healthy eating and active living.

Health care clinics (11 clinics)

Provided BMI screening for children who are overweight or have obesity, which included decision supports to integrate guidelines for the appropriate clinical screening, evaluation and treatment into day-to-day practice.

Modified electronic health records to identify children who were overweight and had obesity, provide prompts for treatment, and provide clinicians with access to referral information for weight management.

GAO

Overview

The Arizona demonstration project is led by Arizona State University. The purpose of the project is to implement an adapted program in three pediatric primary care clinics located in Maricopa County, Arizona. These clinics serve a minority patient demographic of about 60 to 65 percent, of which the largest groups are Mexican American and American Indian.

Demonstration Project

The Arizona demonstration project implemented an adapted program that was designed to target health behavior change in children ages 5 and one half to 12 years by improving family management practices and parenting skills, with the goal of preventing obesity and excess weight gain. The program is designed to tailor services based on a family assessment and to increase parent motivation. The project included a randomized control trial to evaluate the effectiveness of the adapted program within three primary care clinics in two federally qualified health centers and a children's hospital.

CORD PHASE 2

ARIZONA DEMONSTRATION PROJECT

Examples of Project Activities

Program adaptation: Adaptation began by assessing the needs and capacity of a primary care organization and the families they serve. The program was then pilot-tested in a general pediatrics clinic and a clinic for children with advanced obesity to determine feasible delivery modifications as well as enhanced content for obesity management and prevention. During and at the end of the pilot trial, feedback was solicited from stakeholders and families. A draft of the adapted version of the program was then developed, additional feedback was sought from experts and stakeholders and a second pilot-testing phase was completed. Feedback was again collected from families who received the intervention and from stakeholders who participated in the pilot. The intervention protocol and content were further refined to implement in the three pediatric primary care clinics.

Effectiveness study: Participants were identified during clinic well- and sick-child visits and through queries of electronic health records. After completing a family health assessment, families were randomly assigned to the adapted program or services as usual. Participating families completed routine assessments about family health behaviors, child health behaviors, family well-being and support, and other topics. Following the assessments, feedback sessions were initiated. The first feedback session focused on understanding (a) the caregivers' perception of their needs; (b) their child's health, adjustment, and behavior; and (c) the caregivers' motivation to change parenting and family management practices in support of health behavior change. Additionally, over a 6-month period, families participated in eight to 16 parenting sessions tailored to the specific needs identified in the family health routine assessment and focused on a specific behavior change goal, such as setting limits on snacking between family meals or monitoring children's sedentary and physical activity time. In the second and third feedback sessions, the coordinator began by checking in with the family about their progress, discussing barriers they experienced, and exploring the ways that the previous feedback and parenting sessions were helpful for them in catalyzing and supporting healthy lifestyle behavior change. Additionally, coordinators provided families with referrals to existing resources in the community. In weeks where a face-to-face session was not scheduled or did not occur, the coordinator conducted a 15- to 30-minute phone-based coaching session. The purpose was to maintain contact with the family and help problem-solve challenges, reinforce positive achievements, and continually address motivation to change and barriers to engagement.

GAO

Overview

The Massachusetts demonstration project for CORD phase 2 is led by the Massachusetts State Department of Public Health and Massachusetts General Hospital. The demonstration project was implemented in the cities of Holyoke and New Bedford, Massachusetts.

Demonstration Project

The demonstration project implemented a randomized trial that compares the effects of a pediatric weight management program delivered in the healthy weight clinics of two federally qualified health centers with a weight management program delivered at two YMCAs. Eligible children were overweight or had obesity, ages 6 to 12 years, and received primary care at the two federally qualified health centers.

CORD PHASE 2

MASSACHUSSETTS DEMONSTRATION PROJECT

Examples of Project Activities

Primary care screening and assessment of child BMI: Children were referred to the demonstration project by their primary care provider during a health care visit where a height and weight was obtained and it was determined that the child was overweight or had obesity. After the referral was made, parents were mailed an introductory letter and fact sheet by the study team. A bilingual study coordinator contacted parents by phone and explained that the research study was to examine strategies to improve the care that is provided for children who require weight management. The coordinator obtained verbal informed consent from the parent and administered a 20-minute baseline survey.

Child assigned to intervention: After the parent completed the survey, the child was randomly assigned to a healthy weight clinic in one of the two federally qualified health centers or to the weight management program delivered at one of the two YMCAs. Each of the two intervention groups received an intensive 6-month intervention, followed by a 6-month maintenance period that delivered 30 or more hours of contact time over one year. In addition, children in both intervention groups were exposed to quality of care improvements in their federally qualified health centers, which included primary care provider weight management training and text messages to participating families for self-guided behavior change support.

- **Healthy weight clinic:** This intervention was clinic-based and used a multidisciplinary team, including, a pediatrician, community health worker, dietician, and access to behavioral/mental health providers, as needed. The team was trained to deliver motivational interviewing and behavioral modification techniques to engage families in setting and following through on healthy eating and activity goals. Visits alternated between group visits with other children and families in the program and individual visits for the first 6 months and individual visits in the second 6 months. During the first 6 months of the intervention, the community health worker or dietitian made bi-weekly phone calls to the family on weeks they did not have an in person visit. During the second 6 months, they provided once-monthly calls.
- **YMCA weight management program:** This intervention was a community-based intervention where staff at two local YMCAs were trained to implement the program. Two YMCA group leaders provided support, education and activities during sessions, which included goal setting and action planning, a parent discussion, and 60 minutes of physical activity for the children. The program was delivered over 12 months, which included 16 weekly sessions, followed by four sessions delivered every other week and concluded with five monthly sessions.

Appendix II: GAO Contact and Staff Acknowledgments

GAO Contact

John E. Dicken at (202) 512-7114 or dickenj@gao.gov

Staff Acknowledgments

In addition to the contact named above, Shannon Slawter Legeer (Assistant Director), Deitra H. Lee (Analyst-in-Charge), and Kristen M. Pinnock made key contributions to this report. Also contributing were Krister Friday, Richard Lipinski, Laurie Pachter, Ethiene Salgado-Rodriguez, and Emily Wilson Schwark.