

**Replication Report
Project SIEN
(Seniors Involved in Exercise and Nutrition)**

A Diabetes Prevention Program



Funded through the Texas Department of Aging and Disability Services
Alamo Area Council of Governments



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Alamo Area Council of Governments

The Bexar Area Agency on Aging (Bexar AAA) plans, coordinates, and administers comprehensive services that support over 220,000 older residents in Bexar County and allows them to age in place with dignity, security, and enhanced quality of life.



The City of San Antonio Senior Services Division of the Department of Community Initiatives operates the Comprehensive Nutrition Program with 74 nutrition sites across Bexar County and serves as the primary contractor for the Older Americans Act Title III congregate nutrition program.



TEXAS DIABETES INSTITUTE

The Foundation of Education.
The Heart of Care.
The Vision of Research.

A member of the University Health System

The University Health System's Texas Diabetes Institute (TDI) and University Center for Community Health is a county-sponsored hospital district and academic medical system. The mission of TDI is to prevent diabetes and its complications through health education, treatment, and research.



OASIS is a national nonprofit educational organization that seeks to enrich the lives of mature adults over the age of 50 by providing educational opportunities and meaningful volunteer opportunities.

I. INTRODUCTION/BACKGROUND

The Diabetes Epidemic

One million Texans have a diagnosis of diabetes, and another 440,500 remain undiagnosed. According to the American Diabetes Association, Hispanic/Latino Americans are twice as likely to have diabetes as non-Hispanic Whites. In fact, two of the most common risk factors associated with the disease are Hispanic ethnicity and obesity, and it is most common in individuals over age 60.

Because diabetes can damage almost every major organ and shorten the lifespan by an average of ten to fifteen years, the economic implications are staggering. The direct cost of medical care, and the indirect cost of low productivity and premature mortality is estimated at \$11.3 billion in Texas alone.

San Antonio, which is located in Bexar County, is 56 percent Hispanic, with as much as 30 percent of the population identified as obese. Diabetes is the fourth leading cause of death overall in Bexar County and the fourth leading cause of death specifically for elderly Hispanics (Bexar County Community Health Collaborative, San Antonio Metropolitan Health District, 2002). Diabetes costs Bexar County \$481 million a year, or \$348 per resident per year.

Cultural beliefs that prevent many individuals from seeking medical attention compound the problem of diabetes in the elderly Hispanic community. The belief that fright, anger, and other strong emotions might cause diabetes appears to be more widely held than in the general population (Weller et al., 1999). Many Hispanics are afraid that insulin therapy is actually harmful, and they often won't follow a prescribed diet, particularly when the plan conflicts with the use of traditional folk remedies. (Lipton et al, 1998). Unless they feel ill, many Hispanics feel no need to see a doctor or follow any medical recommendations. Low socioeconomic status, lack of insurance, and hesitation to visit a physician are also barriers (Lipton et al., 1998).

Research has found that Hispanics do not need to stop eating the staples typically found in their diet. Culturally competent nutritional models have adapted the diabetic diet to fit Hispanic food preferences. Such a strategy contributes to better diabetes management (Cortes, 2001).

Project SIEN (Seniors Involved in Nutrition and Exercise)

The Diabetes Prevention Program

The Bexar Area Agency on Aging (Bexar AAA) chose to implement Project SIEN to replicate the Diabetes Prevention Program, which had already proven successful in clinical trials. The program utilizes exercise, nutrition, and lifestyle modification rather than medication to prevent the onset of type 2 diabetes.

Project SIEN includes:

- 150 minutes of physical activity per week;
- Low-carbohydrate lunches seven days per week;

- *Salsa Caliente*: a series of health and nutrition education classes that last one hour per week for 12 weeks; and
- Peer Leaders

The Original Study: The Diabetes Prevention Program Research Group

On February 7, 2002, the *New England Journal of Medicine* featured an article titled “*Reduction in the Incidence of Type 2 Diabetes with Lifestyle Intervention or Metformin.*” The Diabetes Prevention Program (DPP) Research Group conducted this trial utilizing teams of researchers in 27 health centers nationwide, including the University of Texas Health Sciences Center at San Antonio. The research effort was the first large American study to show that diet and exercise could effectively delay the onset of diabetes in a group of overweight adults already showing glucose intolerance (Jacobson et al., 2001).

The group determined that some risk factors, such as elevated plasma glucose, concentrations in the fasting state, being overweight, and a sedentary lifestyle, are potentially reversible. They hypothesized that either modifying these factors with a lifestyle-intervention program or administering metformin would prevent or delay the development of diabetes (Knowler et al., 2002). These lifestyle changes included a low-fat diet, 30 minutes of moderate physical activity on most days of the week, and a weight loss target of seven percent.

The study found that the lifestyle intervention was significantly more effective than metformin, reducing incidence by 58 percent versus 31 percent. DPP stopped the trial a year early because the results were so clear.

Project SIEN Program Adaptation

The original research required participants to go to a healthcare center and offered medication as an alternative. Project SIEN made the following adaptations:

- It targeted persons aged 60 and over rather than serving the general population.
- It did not offer medication.
- It took place at senior nutrition sites – community-based settings, rather than clinical settings.
- It tailored services to a scope and budget appropriate for a senior center as opposed to a healthcare facility, utilizing Title III nutrition funds.
- It identified peer leaders at each site, natural leaders who encouraged participation and fidelity.

Offering the program within a nutrition site built upon existing services and supports at the center, and provides a pool of eligible program participants. It also alleviated barriers such as the lack of accessible transportation, cultural issues related to traditional healthcare, and the high cost of one-on-one intervention.

Partnering Organizations

Project SIEN had multiple components and involved multiple partners: the nutrition service provider, an organization specializing in senior physical activity, a health education and screening partner, and an evaluator.

- **The Bexar Area Agency on Aging (Bexar AAA)** plans, coordinates, and administers comprehensive services that support the over 220,000 older residents in Bexar County and allows them to age in place with dignity, security, and enhanced quality of life. The agency was responsible for overall coordination of Project SIEN, daily program management, and the receipt and distribution of funds.
- **The City of San Antonio Senior Services Division of the Department of Community Initiatives** operates the Comprehensive Nutrition Program with 80 nutrition sites across Bexar County and serves as the primary contractor for the Older Americans Act Title III congregate nutrition program. The department identified nutrition sites in the target areas and provided culturally appropriate, low-carbohydrate lunches to participants seven days per week.
- **The University Health System's Texas Diabetes Institute (TDI) and University Center for Community Health** is a county-sponsored hospital district and academic medical system. The mission of TDI is to prevent diabetes and its complications through health education, treatment, and research. TDI conducted the pre- and post-health screenings and provided the *Salsa Caliente* diabetes self-management classes. TDI also provided oversight for the evaluation and research component of the project.
- **OASIS** is a national nonprofit educational organization that seeks to enrich the lives of mature adults over age 50 by providing educational opportunities and meaningful volunteer opportunities. They led the physical activity classes utilizing *Exerstart*, their evidence-based program.
- **The University of Texas Health Science Center at San Antonio** provided the project evaluation.

Partner Benefits

Successful collaborative partnerships provide benefits to everyone involved. They fit within the mission of the partners, expand reach, or provide new tools and understanding that complement existing programs. Overall, using the aging network to deliver a clinically tested program provided BAAA and other participating agencies with heightened credibility in the healthcare community. Project SIEN strengthened the image of the aging network with its constituents and stakeholders as well as potential funders by providing a valuable service with measurable outcomes. It also brought specific benefits to each of the participating agencies:

- The City of San Antonio Department of Community Initiatives gained knowledge about modifying recipes and menus to a low-carbohydrate alternative appropriate for a diabetic population while remaining culturally acceptable.
- OASIS advanced its mission and translated its copyrighted *Exerstart* curriculum so that Latino audiences could use it. The translated materials went to the 24 OASIS centers nationwide.

- The Texas Diabetes Institute had the opportunity to conduct its first research project specifically aimed at older adults. It is also publishing its *Salsa Caliente* course for national distribution to other communities with predominantly Hispanic populations.
- The University of Texas Health Science System at San Antonio furthered its ability to translate scientifically proven programs to a community setting in a successful manner. It was also able to collaborate with new types of community organizations. The project has led to opportunities to provide evaluation for additional grants that target health promotion among older adults.
- The Bexar AAA has gained recognition at the local, state, and national level as a trusted advocate for diabetes prevention among older adults. It has secured additional grant funds to expand its disease prevention and health promotion activities, and it is helping lead the aging network in Texas in disseminating evidence-based programs.

Project SIEN Transforms Lives

The evaluation of participant outcomes validated multiple healthful lifestyle changes. Results from approximately 150 participants in the program show significant improvement in both diet and exercise for all respondents. Even more significant is the fact that only three individuals of those in a pre-diabetic state developed type 2 diabetes during the four-year program. Data shows a positive reduction in cholesterol, another risk factor for diabetes. On the qualitative side, participants tell stories about going from a wheelchair to standing, sharing important lessons on how to read food labels with their grandchildren, losing weight, and finding joy in walking to the local senior center with fellow Project SIEN members.

The scope of impact for Project SIEN greatly exceeds the project's original expectations. The City of San Antonio was asked to change nutrition site meals to low carbohydrate menus at the original five grant sites. Because there was no cost involved in adapting the meals, the city changed the meals at all 80 nutrition sites countywide, benefiting almost 5,000 seniors.

II. PLANNING AND PARTNERS

Identifying Local Needs

The magnitude of the problem with type 2 diabetes and its impact is becoming common knowledge in many areas across the nation. The incidence of diabetes in a community is readily verifiable by researching data from the local Municipal Health District. Local and state health departments can also provide access to pertinent data, much of which is available online.

One critical aspect of this research is to identify specific pockets in the community where the incidence of diabetes is highest. These can include certain neighborhoods, areas of town, or particular zip codes. Diabetes rates are most prevalent – and therefore the need for programs is the greatest – in the Hispanic and African-American communities and low-income/low education level areas. This may also be true for Native American communities. Programs are often started on a small scale in one or a few limited locations and expand as they succeed.

Once you identify the areas with the most at-risk populations, it is important to do an environmental scan to find out which agencies are already operating programs nearby. These may be your most logical partners. In some cases, the scan may identify an organization that is missing from an area but has a mission that is congruent with the goals of your program. You may be able to provide the organization with the rationale it needs to become active in the locale.

You should also conduct research on possible evidence-based diabetes prevention programs that could be of use. Different programs may target different age groups, different cultural groups, or require different resources. Identifying existing evidence-based programs is important because they have successful, share-able results that can help recruit new partners and program participants, as well as leverage funding.

Recruiting Partners and Maximizing Resources

Likely partners for diabetes prevention include organizations that could offer key diabetes intervention components by expanding their existing programs. In the case of Bexar County, the City of San Antonio (CoSA) already served congregate meals at senior nutrition sites within the selected study area. Their clientele were within the at-risk population. It was also within the city's control to alter recipes and menus. They had a registered dietician on staff. The project fit well with their mission: to assist elderly citizens to remain in their own homes, maintain their independence, and improve their quality of life.

Similarly, enlisting a credible and experienced fitness-training partner saved both time and development dollars and jump-started the fitness component. OASIS already had a successful evidence-based fitness program for seniors, *Exerstart*, with trained staff. Project SIEN enables OASIS to reach new and diverse audiences in keeping with their mission and vision: to inspire diverse, mature adults to pursue vibrant, healthy, productive, and meaningful lives.

The Texas Diabetes Institute was involved in the original study as a member of the Diabetes Prevention Project Research Group. It is the largest and most comprehensive center dedicated entirely to diabetes in the country. Early discussions revealed that the Institute

was eager to participate in a project specifically targeting older participants. Staff helped write the grant application based on the Institute's original research. Again, the Institute's goals were parallel with the project's, and it brought critical expertise to the program. It had an existing diabetes self-management program, *Salsa Caliente*, and a registered dietician who could supervise the City of San Antonio's staff in changing the carbohydrate count of the meals without increasing cost.

When working with an older population, the local area agency on aging is an essential resource. AAAs already have a large service network in the community who have knowledge about or provide a broad array of services for seniors. The AAA in any service area in the country can be identified at www.eldercare.gov.

The key to successfully bringing organizations together to maximize resources and cooperation is the careful selection and recruitment of partners who are natural allies with parallel goals that relate to the planned intervention. By doing so, Project SIEN had established clientele, site locations, appropriate staffing, and buy-in by all partners from the beginning. In a good partnership, the whole can be greater than the sum of its parts.

Tools for Planning and Partners

Please see Section VIII: Tools for the *Project SIEN Logic Model* used to establish the overall framework of the program.

III. ADOPTION – SITE SELECTION – STAFFING

Basic Site Selection Criteria

Project SIEN is suitable for a variety of organizations that have a keen interest in the health of older adults. Any organization that already provides a nutrition, physical activity, or health education program can host it, as can any organization with the interest and space to bring in the three core elements. However, it is probably easier to offer the program where one of the core elements is already available, such as a congregate meal site or a senior/community center. It is also suitable for churches, senior housing, or a local YMCA.

Because this intervention has a health-screening component, it may be necessary to conduct the screenings in a healthcare facility rather than the community-based setting where the nutrition, physical activity, and diabetes self-management classes are offered. For example, Project SIEN found that many older Hispanics felt uncomfortable being weighed and measured in front of their peers. They viewed the senior center as a social setting. As a result, some participants skipped the screenings. When the project moved the screenings to a healthcare facility, the seniors looked forward to the trip as an outing, and adherence to the program guidelines improved.

Following are the critical elements for the success of any organization in implementing Project SIEN:

- Support from the top down;
- Key staff/volunteers at each site who understand the program and their specific role in its success;
- Access to the target population;
- Support and understanding of evidence-based programs;
- Strong communication skills with partners and program participants; and
- Ability to acknowledge when elements of the implementation are not working as planned and to find a solution.

Multiple Partners

Programs with multiple agencies working on different components can be confusing to potential participants. All partners should make a presentation together at each program site and explain their role and responsibilities, reinforcing the idea that they are working under the same umbrella for the same goal.

Other helpful suggestions for a mutually beneficial collaboration include the following:

- Early in the process, coin a tagline, logo, or program name that holds meaning for the participants. Each partner should refer to that name, helping brand the program and producing familiarity and a connection between partners and participants.
- Do not immediately try to replace popular programming already in progress (e.g., Bingo). When picking a site, make certain that its calendar of activities has room for all of your program's components.

- Bring in program champions from other, similar programs to give testimonials. One site manager describing the positive impact that the program made at his or her center can be a powerful tool when recruiting new sites. Likewise, program participants addressing potential participants can better generate interest than hearing from agency staff.
- Take the time to learn about, appreciate, and understand each other organizationally as you work together around common goals and tasks.
- As you select your partners, choose agencies that support evidence-based programming. Make sure this support includes administration as well as supporting staff.
- Evaluate partnership collaboration efforts regularly to assess the effectiveness of the group, perceptions regarding participation and achievement of goals, and satisfaction with levels of support.

Tools for Adoption

Please see Section VIII: Tools for the *From Their Study to Your Demonstration: Tracking Similarities and Differences in Evidence-Based Program Implementation*.

IV. REACH/OUTREACH – RECRUITING PARTICIPANTS

Recruiting Participants

Existing senior program providers or agencies with established nutrition or physical activity programs may not have difficulty recruiting clients. They already have a pool of potential participants from which to draw. Offering the program to older persons in the surrounding neighborhood can help generate new participants. Pooling activities at one large center while making transportation available from smaller centers can also increase the number of participants. All of these strategies worked well for Project SIEN, so that little marketing had to be done. In the long run, word of mouth had the biggest impact on attracting new sites and participants to the program.

Barriers do exist when recruiting participants. For example, Project SIEN targets seniors in a pre-diabetic state – those who are at highest risk for developing diabetes but do not yet have the disease. One unexpected setback was the high incidence of the full-blown disease among nutrition site attendees. The occurrence of diabetes nationwide is seven percent. In San Antonio’s general population, it is 14 percent. Project SIEN anticipated prevalence as high as 30 percent among older adults, but the actual number was closer to 60 percent. The program needed to expand to additional sites to reach a significant number of pre-diabetic seniors.

Other barriers to participation had to be addressed:

- Seniors perceived that they were “too old;”
- The men were embarrassed to do physical activity in a class with women;
- Lack of trust;
- Peer pressure; and
- Cultural issues such as older women refusing to wear pants or shoes appropriate for exercise.

All of these issues can be overcome with a staff sensitive to the cultural issues and values of the group they are serving. The role of communication at every stage of the project cannot be overstated, particularly in the early stages of site selection and participant recruitment.

Tools for Reach

Please see Section VIII: Tools for the *Project SIEN Logic Model*.

V. IMPLEMENTATION

Primary Components of Project SIEN

Project SIEN is a multi-faceted program designed to delay or prevent the onset of type 2 diabetes. The three primary components address diet, physical activity, and diabetes self-management. A low carbohydrate diet combined with the impact of increased physical activity maximizes positive outcomes. The diabetes self-management component, which includes behavior modification, provides participants with skills to increase the likelihood that they will sustain the gains they've made through improved diet and exercise. It empowers participants with the knowledge necessary to change their lifestyle within their cultural preferences and values.

All seniors at the centers had an invitation to participate in the health screening, the low-carbohydrate meals five days per week, the physical activity program, and the diabetes self-management classes. However, only those identified as pre-diabetic received additional low-carbohydrate meals on weekends.

The health screenings are an important element in selecting participants because many seniors do not know if they are pre-diabetic or diabetic. They are also an important element in the outcomes measurement and the evaluation process. To help ensure confidentiality of health information, the results of the health screenings were communicated individually. A similar policy should be adopted when replicating the program. Older persons who were either in a pre-diabetic state or who already had type 2 diabetes or other health conditions were referred to appropriate healthcare providers.

How Project SIEN Works

A minimum of six months is necessary to complete all of the program components.

- **Health Screenings:** Health screenings take place at the beginning to establish a baseline, and then again at the end of six months.
- **Diabetes Self-management Classes:** The *Salsa Caliente* class is one hour per week for 12 weeks. Nutrition: staff provides participants with low-carbohydrate meals once a day for six months.
- **Physical:** The physical activity program is 150 minutes a week for six months.

The project may include incentives along the way to encourage continued participation. In San Antonio, participants received water bottles, step counters, towels, t-shirts etc. The final reward was a cooking class at the Texas Diabetes Institute, where they received delicious, healthy, low-carbohydrate recipes and helpful tips on how to interpret nutrition information provided on food labels.

Health Screenings

Participants in SIEN undergo health screenings with pretesting and testing at six-month intervals. Screenings include blood pressure, body mass index, cholesterol, and fasting blood sugar screening. (Hemoglobin A1C screening is the preferred test for blood sugar screening but is more expensive than a simple glucose level check.)

Health screenings may need to occur in a clinical setting to improve data collection and participation. Providing transportation to the clinical setting is recommended as well as

treating the activity as a special outing. Because fasting is involved, providing a low-carbohydrate breakfast after the screenings is an excellent reward and increases compliance.

Nutrition

Participants receive culturally appropriate, low-carbohydrate lunches at the nutrition sites Monday through Friday. Because the congregate meal is often the only meal of the day for many older persons, additional frozen lunches may be provided for Saturdays and Sundays. Note that participants enjoy a weekend meal that differs from the “normal” meal they receive during the week. Otherwise, they may refuse the additional weekend meals, because they prefer a change of pace.

Project SIEN utilized the existing Title III Congregate Meals program as the nutrition component of the intervention due to its importance in the lives of participants. A 2002 survey showed that the Title III meal is the only regular meal of the day for 46 percent of participants in the program. It leverages the existing nutrition program into an evidence-based health promotion program. In any community, an Older Americans Act nutrition provider would be a logical partner for the nutrition component of the intervention.

Steps in the nutrition implementation strategy can include but are not limited to the following:

- Recruiting a nutrition provider as a program partner;
- Linking the nutrition provider’s dietician with a registered dietician who has expertise in diabetes (see Tools);
- Identifying nutrition sites where participants are at highest risk for diabetes;
- Holding an interactive meeting with site managers and staff to explain important benefits of the program, the importance of fidelity to the intervention, and the critical role management and staff must play for the program to succeed;
- Determining if nutrition sites can host other component activities;
- Making interactive presentations to potential participants with all partner organizations encouraged to be present (testimonials from participants in similar programs or staffs from other sites are excellent marketing tools, and sign-up is encouraged at that time);
- Developing and coordinating a plan for providing weekend meals to participants;
- Coordinating transportation to the pretest site if different from nutrition site; and
- Inaugurating nutrition activity with a special event and media coverage.

Physical Activity

The physical activity component helps participants lose weight, lower cholesterol, improve balance, and increase strength. It is a structured physical activity program conducted by a certified fitness instructor. The overall goal is 150 minutes of activity per week. This can be scheduled in a variety of ways that fit the schedule of the centers. Project SIEN chose to provide 120 minutes of exercise a week in two or three sessions at the centers, and participants completed an additional 30 minutes of self-reported physical activity a week.

Each participant was given a calendar to track his or her additional physical activity minutes. In this instance, participants had both the supported environment and the opportunity to put

into practice what they had learned independently. For example, participants at several sites began walking in groups to their centers.

For the physical activity component, Project SIEN used an existing evidence-based physical activity program, the OASIS *Exerstart* program. (See Tools for suggestions on evidence-based physical activity programs.) Steps for replicating the exercise component include:

- Recruiting individual certified fitness instructors/trainers who have experience in working with seniors or partnering with an agency that can provide instructors. These may involve volunteers who are certified.
- Developing or selecting a prepackaged curriculum of exercises appropriate for seniors (e.g., *Exerstart*).
- Arranging for facilities that will accommodate a physical activity program. Urban areas in particular need to be able to accommodate a large number of participants. Selected locations need to be convenient for participants, for example, nutrition sites close to public transit lines, neighborhood community centers, churches, etc.
- Holding an interactive meeting with site managers and staff to explain important benefits of the program, the importance of fidelity to the intervention, and the critical role management and staff will play for the program to succeed.
- Making interactive presentations to potential participants with all partners present, including testimonials from participants in similar programs or staffs from other successful programs.
- Establishing a training schedule for staffing regular exercise sessions for all participating facilities (a training matrix). Include a listing of substitute instructors with contact information.
- Arranging for and publicizing a special “kick-off” activity.
- Maintaining enthusiasm and telling participants how the various exercises are benefiting them so that they can later report that they have had exercises to enhance balance, strength, etc. You can also collect, display, or share success stories to publicize the program and recruit new participants, or encourage existing participants.

Diabetes Self-Management

Salsa Caliente is a diabetes self-management program that empowers participants to make better lifestyle choices. It is conducted one hour per week for 12 weeks. Similar to the *Stanford Chronic Disease Self-management Program* in concept, it is written specifically for diabetes self-management in minority populations and works particularly well for those who have low literacy.

Salsa Caliente is currently written for use with health educators as instructors; however, a lay leader model may be developed in the future.

Cultural Competence

Project SIEN and other programs have greater success when they take the cultural needs of their participants into consideration. This can mean many things. It may mean utilizing bi-lingual staff and purchasing bi-lingual materials. It may mean using pictures to assist those with low literacy. It may involve establishing a men’s physical activity program with a male instructor or ensuring that a project has both male and female role models.

For Project SIEN, sheets were provided for older woman who were not comfortable wearing pants and preferred to exercise in their skirts. The program also had to first work around the scheduled activities that were very popular such as *Loteria* or Bingo. Project SIEN staff knew they had changed the culture of the center when Bingo was cancelled due to lack of participation. The site participants preferred the physical activity class. Of course, this change took patience and time.

The low-carbohydrate menus continued to include typical Hispanic favorite foods. Adapting the diabetic diet to fit Hispanic food preferences contributes to better diabetes management (Cortes, 2001). Nutrition sites are encouraged to have participants “taste test” or give feedback on the new meals and select those they prefer. The program may want to adapt favorite recipes collected from program participants. The goal is always to make the program comfortable and accessible to participants so that they will succeed.

Fidelity to the DPP Research Group Model

Evidence-based programs are founded on research. The selected research model dictates which core components are essential for replicating the program and achieving successful outcomes. The following elements help to ensure program fidelity:

- A registered dietician to certify the low-carbohydrate meals;
- Physical activity instructors who had to be certified fitness instructors, even if they were volunteers;
- Health educators to teach *Salsa Caliente*;
- Health screenings that look at body mass index, blood sugar level, and cholesterol levels; and
- An evaluation team to provide training for all project staff: the health educators, the physical activity instructors, and the health technicians who conducted the screenings. They train the staff on which data they are to collect, the forms on which the data is to be collected, and the importance of accurate and complete data.

Sometimes changes must be made when taking a clinical model into a community setting. For example, it was necessary to add additional nutrition sites to Project SIEN to have an adequate number of participants for statistically significant results. The health screenings were originally conducted at the community centers but were moved back to a clinical setting to ensure greater participation and increase adherence to fasting.

Implementation and Fidelity – Lessons Learned

Project SIEN has provided some valuable insights and suggestions that may be useful to organizations wishing to replicate the program. Recommendations from partners include:

- When any component of the program is not working well, convene staff, partners, and participants to find out why.
- Give recognition and praise to nutrition site managers at regular staff meetings to foster enthusiasm. (Such recognition works for all components!)
- Provide breakfast for health screening participants to help ensure that seniors arrive fasting.
- Provide exercise participants with pocket calendars to encourage logging self-reported activities.

The Budget

Nutrition Component

- Food cost for low-carbohydrate meals (See cost comparison in the Appendix of Tools): \$1.48 per meal
- Technical Assistance of registered dietician specializing in diabetes: \$21 per hour

Physical Activity Component

- Certified Fitness Instructor Training: \$70 per person
- Paid Fitness Instructor: \$15 to \$25 per hour
- Volunteers/lay leaders: no cost

Diabetes Self-Management Component

- **Salsa Caliente:** See www.bexaraging.org for pricing information on the *Salsa Caliente* program
- **Health Educators:** \$15 to \$16 per hour
- **Additional time for setup and coordination of classes:** 30 minutes to set up and 30 minutes following the session, and one to two hours a week for coordination of multiple sites at \$15 to \$16 per hour

Health Screening Component

- Screening including BMI, blood pressure, blood sugar, and cholesterol \$6/per person for cost of supplies
- Health Educators: \$15 to \$16 per hour

Tools for Implementation

Please see Section VIII Tools for:

- *Project SIEN Participant Agreements* in English and Spanish
- *Project SIEN Diabetes Risk Forms A and B* from the Texas Diabetes Institute in both English and Spanish
- *U.S. Food Security Instrument* in English and Spanish
- *Salsa Caliente Pre- and Post- Tests*
- *General Self-Efficacy Scale* in English and Spanish

VI. MAINTENANCE

The Fundamentals of Upkeep

To maintain the program, an organization/partnership should plan to:

- Continue to recruit new sites and reach new partners;
- Maintain the partnerships that have already formed; and
- Identify new potential sources of funding.

Nutrition

The promotion of Project SIEN among the city-sponsored nutrition centers has been so successful that more centers are requesting the program. Although not all of the 80 city-sponsored centers are offering Project SIEN, all of the centers are providing low-carbohydrate meals. The city has a single kitchen to prepare all meals, and there was no increase in the cost of the meal to make the change. Providing low-carbohydrate meal at all sites provides the first core element of Project SIEN to which other components can be added such as physical activity and a self-management program (such as Salsa Caliente) as resources allow.

A dietician with expertise in diabetic nutrition should review the menus to ensure a low-carbohydrate count. If an organization does not have access to a dietician in a health facility with expertise in diabetes, it may want to contact the nearest chapter of the American Diabetes Association (see Tools).

Physical Activity

The physical activity component, which has had the greatest impact on the participants, has also grown much larger than the original grant. The City of San Antonio has identified two in each of the ten city council districts as “wellness centers.” Evidence-based programs will be delivered at each of these 20 new “wellness centers.”

To maintain the physical activity programs at the sites, the Arthritis Foundation was invited to come to San Antonio to conduct training for certified senior fitness instructors. This training was open to the general public, whose fees covered the costs of the class. Staff and volunteers from the original sites were trained as certified fitness instructors and can now teach the Arthritis Foundation Exercise Program, a program that is also evidence-based. One unexpected outcome was that an OASIS staff person subsequently became trained as a master trainer for the Arthritis Foundation Exercise Program. It was not originally intended as a master trainer program, but the Texas Arthritis Foundation is now willing to implement it, in part because of its successful implementation in San Antonio. The OASIS master trainer is now training staff and/or volunteers from the 20 new sites or “wellness centers.” The Texas Arthritis Foundation is willing to work with AAAs and community based organizations in other states that wish to replicate this model.

The Bexar AAA is paying for some physical activity classes through OASIS with Older Americans Act Title IIIID health promotion funds. Funds are also being secured through the municipal budget, local foundations, and grants. Programs in states outside of Texas may have local or state funds available as well.

Diabetes Self-Management

To maintain the self-management program, the 20 new wellness sites are offering either *Salsa Caliente* or Stanford's *Chronic Disease Self Management Program (CDSMP)*. The Bexar AAA paid for the CDSMP master training in San Antonio (versus sending potential trainers to Stanford). With access to local master trainers, staff and volunteers from the senior centers and other places in the community are being trained as lay leaders to offer these programs. Again, the CDSMP master training was open to the general public whose fees helped offset the cost of the class for the Project SIEN trainers. This cost was less than the cost to travel to Stanford for both the general public and the grant representatives.

Maintaining program components may require to adopting alternate approaches to funding, which can include:

- Adoption into a larger program (i.e., the City of San Antonio's use of Project SIEN menus throughout their entire nutrition program);
- Recruitment of additional partners (such as public health systems, universities, or other volunteer programs);
- Development of a program of corporate sponsorships/scholarships to underwrite classes/participants; and
- Exploration of alternatives through development of a business plan and the creation of a marketing plan.

Tools for Maintenance

Please see Section VIII: Tools for the *Project SIEN Comparison of Meal Costs and Nutritional Values* and the *Tips Sheet for Changing the Meals*.

VII. EFFECTIVENESS/PERFORMANCE MEASURES/OTHER OUTCOMES

The Value of Numbers

Outcomes and performance measures are very important to the program. Not only do they provide feedback to participants, they also serve as a mechanism for demonstrating success to current or potential partners and funding sources. Performance measures provide essential information to the project team, allow for ongoing project improvement, and assist in tailoring the intervention as well as the management activities for optimum success.

Key Outcome & Performance Measures

Project SIEN utilized physiological and behavioral outcomes as key measures, together with important measures of program fidelity.

Outcomes

Participants in Project SIEN demonstrated positive changes in the following:

- Minutes of physical activity per week;
- Participant knowledge of the relationship between nutrition, exercise and diabetes management;
- Adherence to lifestyle modifications that reduce risk factors of diabetes;
- Fasting blood sugar levels; and
- Cholesterol levels.

Project SIEN evaluation activities included the administration of a pretest health screening to establish a baseline and follow-up screenings conducted at six-month intervals. These health screenings included:

- Blood pressure;
- Body mass index;
- Fasting blood sugar ;
- Cholesterol; and
- Self-reported dietary and physical activity habits.

Training on the importance of complete and consistent documentation is essential, particularly for those individuals who will conduct the actual health screenings. While hemoglobin A1C screening is the preferred test for blood sugar monitoring, it is more expensive than a simple glucose level check, and may not be practical in all settings.

Evaluators maintained a record of the number of low-carbohydrate meals provided to each participant, attendance records for the physical activity classes and diabetes self-management (*Salsa Caliente*) classes. Additionally, participants provided their own exercise logs and weekly activity reports to the instructor to demonstrate that they had met the goal of 30 minutes of self-reported physical activity per week.

Quantitative and Qualitative Surveys

Participation in exercise classes and number of meals consumed is relatively easy to document and report; however, the physiological measures (health screening) present the greatest likelihood of demonstrating the successes and challenges of the program.

Quantitative

Project SIEN gathers quantitative data in six-month intervals. From September, 2006 to March, 2007, Project SIEN noted a statistically significant decline in the proportion of individuals with abnormal blood glucose from pretest to posttest. The proportion of individuals with *normal* blood sugar readings increased from 82 percent to 96percent. There was also a statistically significant decline in fasting blood sugar levels (about six points) among participants from pretest to posttest.

Project SIEN's effectiveness can be seen over a six month period; however, if the program is ongoing, a community may wish to track results over a longer period of time. This would be completely optional. In Project SIEN, this long-term analysis demonstrated that the program had a positive effect on participants' cholesterol levels as well.

Project SIEN data also revealed positive changes in selected dietary and physical activity habits, such as a reduction in the consumption of beverages sweetened with sugar (e.g., sodas, lemonade, tea, and other soft drinks), an increase in the consumption of skim milk as opposed to whole milk, and an increase in the proportion of individuals engaging in 30 minutes of aerobic exercise three or more times per week.

Qualitative (Focus Groups)

In addition to quantitative analyses, periodic qualitative interviews, or focus groups, with a smaller sample of participants are recommended to improve understanding of successes and failures of program implementation. Important lessons can be learned. In Project SIEN, focus groups revealed that gender differences influence lack of participation or early dropout from physical activity components.

How to Conduct Focus Groups

Focus groups should be held in the language in which the participants are most comfortable. Project SIEN used bi-lingual staff exclusively and notes were taken in the language in which the participant responded. Immediately after each session, the facilitators can compare notes and document additional recollections that were not previously recorded.

The focus group questions consist of the following:

- Opening questions, which enable the facilitator to commence the conversation and help participants talk and feel comfortable.
- Introductory questions, through which the facilitator introduces herself, her function, and the reason behind her visit and the focus groups.
- Transition questions, which are demographic questions pertaining to age, income level, and time spent in program.
- Key questions (examples):
 - What did you think of the program?
 - How did you feel about the various program components such as exercise instruction, nutrition and health related classes, and cooking instruction?
 - What have you learned since being involved with this program?
 - What do you like best about the program?
- Ending questions, through which the facilitator asks participants if there was anything else they would like to add to the discussion or that they felt was important to our understanding of their views.

Additional Findings from Focus Groups

- **Learning and lifestyle change are never too late:** The majority of participants in the focus groups (94 percent) agreed that the program was extremely beneficial and had actually assisted them with adapting a healthier lifestyle. Even though participants had been exposed to information on activity and diet previously, they enjoyed the educational reinforcement. They especially liked the format of the three components: exercise, nutrition, and diabetes self-management education.
- **Nutrition site participants enjoy educational activities in addition to social activities:** One hundred percent of the participants expressed satisfaction with the introduction of an educational program to their nutrition site. While they do enjoy the card games, bingo, dancing, and other social aspects of their sites, they also need programs that help them as they grow older. Some participants can't access any other services; they depend on the nutrition site to provide everything from food and social interaction to health screenings and education.
- **Staff involvement and supportive environment:** Participants stated that the programs needed the site managers to be more supportive and enthusiastic about the projects, and that nutrition sites should be "project friendly" (i.e. limit bingo and cards on project days, talk positively about project, staff act as "cheerleader for project", staff actively participate in project). A passive lack of support is equally detrimental to the program as open opposition.
- **Marketing:** Participants recommended that the program produce flyers and information packets – using pictures and quotes of actual participants.
- **Scheduling:** Some participants dropped out to attend other functions sponsored by the site such as dancing, bingo, in- and out-of-town special functions, or childcare requirements (many seniors have responsibility for raising a grandchild, particularly in the summer). They felt participation was severely hampered by the limited number of hours available to the nutrition programs.
- **Additional hours:** Participants expressed a desire to see the program followed with additional cooking classes, medication management instruction, exercises with dance and aerobics, and expanded education on nutrition and healthful eating. They stated that they would be willing to attend these programs beyond the time limits at the nutrition sites.

Focus groups helped to identify and address misconceptions about the program. They helped to give insight into why participants did not participate or why they dropped out. They reinforced the quantitative data that seniors experience positive health outcomes from participation. And they led to additional programming. Following Project SIEN, medication management classes are being offered. Staff and volunteers are being trained in the Arthritis Foundation Exercise Program so that the physical activity can continue. The components of Project SIEN are being rolled out in other sites where site staffs have demonstrated a commitment and enthusiasm for the program.

Tools for Effectiveness

Please see Section VIII: Tools for the following:

- *Focus Group Interview Guide*
- *Project SIEN Diabetes Risk Surveys*

APPENDIX OF TOOLS

Quick List of Tools Employed in Project SIEN

- **Project SIEN Logic Model** (*Project SIEN: Preventing Diabetes in the Elderly in Nutrition Sites*) – a schemata of the organizational structure of the program that is useful in orientation and planning sessions.
- **Tracking Changes Tool** (*From Their Study to Your Demonstration: Tracking Changes in Evidence-Based Program Implementation*), a useful tracking tool on the www.healthyagingprograms.org website that helps identify changes from the original research and ensure fidelity when implementing the program.
- **Participant Agreements**, which give the outcomes of the program, the required surveys for data collection, and a commitment from the participants to comply with all aspects of the program (English and Spanish Versions).
- **Project SIEN Diabetes Risk Surveys – Texas Diabetes Institute Forms A and B**, which elicit participant’s personal, nutritional and activity information and track health screening information (English and Spanish Versions).
- **U.S. Household Food Security Instrument**, which collects information on the status of participant household food supplies and food preparation capacity (English and Spanish Versions).
- **Pre- & Post- Salsa Caliente Test**, which is administered at the beginning and end of the program to provide an objective measure of the participant’s understanding of health information that is particularly importance to those at risk for type 2 Diabetes.
- **General Self-Efficacy Scale & Auto-Eficacia Generalizada**, which elicits self-efficacy information from participants (English and Spanish Versions).
- **Project SIEN Comparison of Meal Costs & Nutritional Values—Nutrition Management Tool**.
- **Focus Group Interview Guide**, which is a question set to stimulate focus group discussion.
- **Changing the Meals**, useful tips for lowering the carbohydrates in the meals.

Section I: Introduction/Background

Articles from the original study:

Bexar County Health Collaborative. 2002 *San Antonio Health Assessment*.
<http://www.fitcitysa.org/> (accessed October 4, 2007).

Cortes LM, Gittelsohn J, and Alfred J, Palafox NA. 2001. Formative research to inform intervention development for diabetes prevention in the Republic of the Marshall Islands. *Health Education Behavior* 28:696–715.

Donnelly, JE et al. 1996. Nutrition and physical activity program to attenuate obesity and promote physical and metabolic fitness in elementary school children. *Obesity Research* 4: 229–243.

Knowler, William C. et al. 2002, Feb 7. Reduction in the incidence of type 2 diabetes with lifestyle intervention or metformin. *New England Journal of Medicine* 346: 393–403, Number 6.

Lipton RB, Losey LM, and Giachello A. 1998. Attitudes and issues in treating Latino patients with type 2 diabetes: views of healthcare providers. *Diabetes Educator* 24(1):67–71.

Weller SC, Baer R, Pachter LM, et al. (1999). Latino beliefs about diabetes. *Diabetes Care*, 22:722–8.

Section II: Planning and Partners

Tool: Project SIEN Logic Model

The Center for Healthy Aging

www.healthyagingprograms.org

The Center encourages and assists community-based organizations serving older adults to develop and implement evidence-based programs designed for health promotion, disease prevention, and chronic disease self-management. The Center serves as a resource for aging service providers to implement healthy aging programs. Resources provided include manuals, toolkits, research, examples of model health programs, and links to Web sites on related health topics. The Center is also a resource center for the Administration on Aging (AoA) Evidence-Based Disease Prevention Grants Program.

National Resource Center on Nutrition, Physical Activity and Aging

<http://nutritionandaging.fiu.edu>

The mission of the Center is to increase food and nutrition services in home and community-based social, health, and long-term care systems serving older adults. The Center promotes active, healthy aging by working to reduce the risk of malnourishment among older adults, especially minorities with health disparities. The goals are to support quality of life, improve functionality, promote independence, and decrease early nursing home admissions and hospitalizations through better nutrition. The Center, with funding primarily from the US Administration on Aging, assists Older Americans Act Nutrition Programs which includes 4000+ Title III local providers, 655 area agencies on aging, 57 state units on aging, 233 tribes and tribal organizations of American Indians and Alaskan Natives, two organizations of Native Hawaiians under Title VI, and other organizations. Older Americans Nutrition Programs serve about 250 million congregate and in-home meals to about 2.6 million older adults annually. The Center encourages risk-based nutrition screening to identify and serve the neediest, provides technical training, disseminates timely information, and conducts policy analysis and outcomes research. The Center's applied, community-based research has fostered vital links among faculty researchers, local nutrition service providers, older adults, and caregivers.

The American Diabetes Association

www.diabetes.org

The American Diabetes Association is the nation's leading 501(C)3 nonprofit health organization providing diabetes research, information, and advocacy. Founded in 1940,

the American Diabetes Association conducts programs in all 50 states and the District of Columbia, reaching hundreds of communities. Find out what is happening [in your area](#).

RE-AIM

www.RE-AIM.org

RE-AIM is a systematic way for researchers, practitioners, and policy makers to evaluate health behavior interventions. It can be used to estimate the potential impact of interventions on public health.

Section III: Adoption – Recruiting Implementation Sites and Staff/Volunteers

Tools:

- Tracking Tool: “From Their Study to Your Demonstration: Tracking Similarities and Differences in Evidence-based Program Implementation”

Section IV: Reach – Outreach and Recruiting Participants

Tool: Project SIEN Logic Model

Section V: Implementation

Tools:

- Project SIEN participant agreements in English and Spanish
- Project SIEN Diabetes Risk Forms A and B from the Texas Diabetes Institute in both English and Spanish.
- U.S. Food Security Instrument in English and Spanish
- Salsa Caliente Pre- and Posts Tests as well as the General Self-Efficacy Scale in English and Spanish.

RE-AIM

www.RE-AIM.org

RE-AIM is a systematic way for researchers, practitioners, and policymakers to evaluate health behavior interventions. It can be used to estimate the potential impact of interventions on public health.

Section VI: Maintenance

Tools:

- Project SIEN Comparison of Meal Costs and Nutritional Values
- Tips Sheet for Changing the Meals.

Nutrition Information:

<http://www.health.gov/dietaryguidelines> (*Dietary Guidelines for Americans 2005*)

The new food pyramid, featuring information on the new **food pyramid**, its 12 models geared to different people. It also features online tools, and dietary guidelines.

<http://www.mypyramid.gov>

Physical Activity Information:

OASIS EXERSTART

www.oasisnet.org

The OASIS *EXERSTART* program was used in Project SIEN. *EXERSTART* has been combined with the OASIS Active Living I and together they now form the new OASIS Active Start program, winner of a 2006 U.S. Department of Health and Human Services Innovation In Prevention Award. See *Active Start: Replication Report (June 2007)*, available from the Center for Healthy Aging at <http://www.healthyagingprograms.org>.

Arthritis Foundation

www.arthritis.org/af-exercise-program.php

The Arthritis Foundation Exercise Program is an evidence-based exercise program designed specifically for people with arthritis, but it is appropriate for older persons in general, using gentle activities to help increase joint flexibility and range of motion and help maintain muscle strength. Exercises are done while sitting, standing, or lying on the floor. Class instructors undergo special Arthritis Foundation instructor training. Participants previously enrolled in the program have experienced such benefits as increased functional ability, increased self-care behaviors, decreased pain, and decreased depression. The Web site also lists the research citations for their program.

Diabetes Information:

American Society on Aging

www.asaging.org

The ASA Live Well Live Long project offers new free Web resource, *Diabetes Prevention and Management: Small Steps with Big Rewards*. (www.asaging.org/cdc/module7/home.cfm.) Created in collaboration with the Centers for Disease Control and Prevention and the National Diabetes Education program (NDEP) for professionals serving older adults, the resource includes tips on how to tailor your programs to special populations.

National Diabetes Education Program (NDEP) and Centers for Medicare and Medicare Services

www.ndep.nih.gov/campaigns/Power/Power_index.htm

The National Diabetes Education Program is a federally funded program sponsored by the National Institutes of Health and the Centers for Disease Control and Prevention, which include over 200 partners at the federal, state, and local levels, working together to reduce the morbidity and mortality associated with diabetes. NDEP and CMS have a new campaign to educate elders about Medicare's diabetes coverage called *The Power to Control Diabetes Is in Your Hands*. Medical statistics show that few elders with diabetes use Medicare Part B's diabetes self-management training or medical nutritional therapy. Ideas for campaign promotion activities, media promotion products, and posters are online at the Web site cited above or are available by calling NDEP at 301-496-3583.

Section VII: Effectiveness

Tools:

- Focus Group Questionnaires
- Initial and sixth-month Screening Tool (Attachments A and B)

RE-AIM

www.RE-AIM.org

RE-AIM is a systematic way for researchers, practitioners, and policymakers to evaluate health behavior interventions. It can be used to estimate the potential impact of interventions on public health.