

# ***Modeling the Principles of Community-Based Participatory Research in a Community Health Assessment Conducted by a Health Foundation***

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*The authors discuss strategies used and lessons learned by a health foundation during development of a community health assessment model incorporating community-based participatory research (CBPR) approaches. The assessment model comprises three models incorporating increasing amounts of CPBR principles. Model A combines local-area analysis of quantitative data, qualitative information (key informants, focus groups), and asset mapping. Model B, a community-based participatory model, emphasizes participatory rural appraisal approaches and quantitative assessment using rapid epidemiological assessment. Model C, a modified version of Model B, is financially more sustainable for our needs than Model B. The authors (a) describe origins of these models and illustrate practical applications and (b) explore the lessons learned in their transition from a traditional, nonparticipatory, quantitative approach to participatory approaches to community-health assessment. It is hoped that this article will contribute to the growing body of knowledge of practical aspects of incorporating CBPR approaches into community health assessments.*

**Keywords:** *community health assessment; community-based participatory research; community mobilization*

**C**ommunity-based participatory research (CBPR) has been defined as

a collaborative approach to research that equitably involves all partners in the research process and recognizes the unique strengths that each brings. CBPR begins with a research topic of importance to the community and has the aim of combining knowledge with action and achieving social change to improve health outcomes and eliminate health disparities. (W. K. Kellogg Foundation, 2004)

The CBPR approach includes recognizing the community as a unit of identity, building trust with community stake holders, using colearning and empowering processes to research questions relevant to the community, employing culturally appropriate research, and disseminating findings and knowledge to all partners through a community-driven process (Israel, Schulz, Parker, & Becker, 1998; Israel et al., 2005; Rhodes, Hergenrather, Wilkin, Alegria-Ortega, & Montano, 2006; Sullivan & Kelly, 2001; Vasquez & Minkler, 2006).

St. Luke's Episcopal Health System in Houston, Texas, is a tertiary-care health system founded in 1954 by the Episcopal Diocese of Texas. St. Luke's Episcopal Health Charities (SLEHC), a component of the St. Luke's Episcopal Health System, is a grant-making public charity established in 1997. The following is the SLEHC mission: "Advancing Community Health: Body, Mind & Spirit" through its values of informed action, collaboration, empowerment, whole person, whole community, and wellness.

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SLEHC focuses its funding within the Episcopal Diocese of Texas, which includes 57 counties in southeast Texas representing approximately 45% of the state's population. SLEHC has awarded more than \$60 million to fund programs that seek to improve health in local neighborhoods "upstream" of the hospital setting. Priority funding areas include (a) children and families, (b) congregational health ministries, and (c) wellness promotion and disease prevention.

In 1997, SLEHC funded an ongoing community-health assessment project as a complement to its grant-making program. The purpose of this project was (a) to learn the area's most pressing health needs by studying the health of local communities using quantitative and qualitative methods and (b) to encourage organizations to apply for grants in those areas, such as child and family health, that matched the agency's funding priorities as well as community priorities. The project, now called Healthy Neighborhood Initiatives, is a replicable, neighborhood-based, participatory assessment model using a well-defined participatory process to advance community health in measurable ways. This article describes three developmental stages we experienced in achieving the current CBPR model and describes how we applied this model with three

Houston communities. We believe that our experience is informative for others who plan community health assessments with a similar purpose.

### **▶ BACKGROUND**

Government and private funders increasingly use CBPR approaches to model health-improvement interventions, especially in traditionally underserved populations, or to study complex health problems not easily addressed by traditional research and intervention approaches (Centers for Disease Control [CDC], 2005; Committee on Assuring the Health of the Public in the 21st Century, 2003; Green & Mercer, 2001; Israel, Eng, Schulz, & Parker, 2005; Minkler, Blackwell, Thompson, & Tamir, 2003; National Association of County & City Health Officials & CDC, 2004; Robert Wood Johnson Foundation, 2004; Rhodes et al., 2006; Sullivan & Kelly, 2001; Vasquez & Minkler, 2006; W. K. Kellogg Foundation, 2004). A growing body of literature describes the application of CBPR approaches in a wide range of settings, including large CDC-funded urban research centers, community environmental-health coalitions, research institutions examining social determinants of health, and immigrant communities seeking insight to their unique health issues (Eisinger & Senturia, 2001; Giachello et al., 2003; Israel et al., 2005; Jackson, 2002; Krieger et al., 2002; Rhodes et al., 2006; Schulz, Krieger, & Galea, 2002; Vasquez & Minkler, 2006).

Participatory rural appraisal (PRA) and CBPR are similar approaches. PRA is a reflection of the experiences of international development researchers working with low-literacy populations in agricultural areas of developing countries, whereas CBPR has emerged from the core values of public health and community organization (Chambers, 1997; Rothman, 1979; Vasquez & Minkler, 2006). Since the mid-1980s, PRA has been modified by some researchers for application to urban settings in the United States. One of the principles of PRA is role reversal between researchers and community participants: Researchers become the learners and community members become teachers providing the "learners" with expert knowledge of the complexities of local health conditions. Other PRA principles include learning rapidly and progressively in field settings; offsetting methodological biases against those less able to participate in research studies because of financial, transportation, or language barriers; extensive triangulation; embracing error for the sake of learning; empowering by "handing over the stick" when recording and analyzing data; and community responsibility for change (Chambers, 1997). The PRA approach adds an array of participatory methods to community-based assessment.

## ► METHOD

The Healthy Neighborhoods Initiatives community assessment model, which combines CBPR and PRA approaches, has evolved incrementally (and sometimes unexpectedly) since 1997. These approaches were relatively new to our area of the country. We describe three distinct stages to emphasize milestones along the model's developmental process.

### **Model A**

Model A was implemented in 1997 and was designed as a tool to obtain information that SLEHC could use in its grant-making decisions. We based the model on (a) the population-health framework developed by the Canadian Advanced Institute for Research (Evans & Stoddard, 1994), (b) a community-asset-building approach (Kretzman & McKnight, 1993), and (c) an emphasis on the importance of local knowledge in understanding community-health concerns (Freire, 1970; Friedmann, 1987; Lindblom & Cohen, 1979; Rothman, 1974).

The methodology of Model A included (a) a quantitative data template (developing a numerical "picture" of the local community by reviewing vital statistics, census data, and information on crime, schools, and environmental hazards), (b) a qualitative assessment (summarizing data from key informant interviews and focus groups), and (c) community asset mapping (developing a list of local community and social-service organizations with the assistance of community members). From 1997 to 2000, 15 community-health assessments were accomplished using Model A. The *Matagorda County Community Phase I Research Report*, our assessment report on a rural underserved county, is representative of the application of this model (St. Luke's Episcopal Health Charities [SLEHC], 2000a). The assessment report emphasizes county-level vital statistics and census data and was initiated because of SLEHC's interest in grant making in that area. Outcomes and report dissemination were more limited.

### **Model B**

As the Healthy Neighborhood Initiatives project matured, community partners and SLEHC researchers voiced a need for deeper assessments, including (a) a better understanding of community residents' perceptions of child health and (b) health information from non-English-speaking populations. To meet this need, SLEHC partnered with several community-based organizations and residents, a local school of public health, and a consultant with expertise in PRA methodologies.

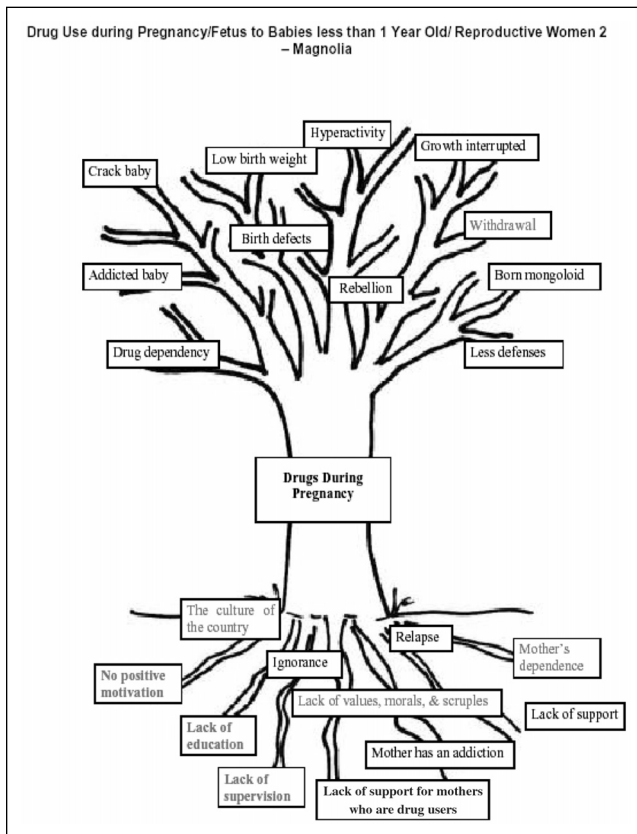
The partnership was called Project REACH (Rapid Examination and Assessment of Child Health) and is referred to as Model B in this article.

We initiated Model B to study issues of child health and well-being in Houston's East End community, an inner-city, medically underserved, low-income area populated primarily by immigrants from Mexico and Central America. Model B included two phases. Phase 1 was a qualitative, descriptive study that used PRA tools and techniques (Chambers, 1997; SLEHC, 2000b). Phase 2 was a rapid epidemiological assessment that aimed at quantifying findings from Phase 1 in a representative sample of the population (SLEHC, 2000c).

During Phase 1, we trained 10 community residents in PRA methods. The residents then participated in data collection, discussions, data analysis, and data-reporting activities. Using seven participatory sequential exercises, community facilitators guided nine participatory groups (each with 8 to 10 people) in identifying and analyzing key child health issues. In the "Problem Tree Exercise," facilitators used a drawing of a tree as a metaphor for the causes and consequences of specific child-health problems. For example, the group identified mother's use of illicit drugs during pregnancy as a community problem that served as the tree trunk (see Figure 1). Participants were asked to identify the roots (causes) and fruits (consequences) of this problem. At the end of the 2-week project, results were presented to the community at a *fiesta* using large murals, with community participants and researchers presenting their findings (see Figure 1; SLEHC, 2000b).

Phase 2 used a modified rapid epidemiological survey based on the World Health Organization rapid cluster sampling technique (Bennett, Woods, Liyanage, & Smith, 1991). The purpose of the survey was to determine the local prevalence of child health issues from the time of fetal development through 18 years of age. The objectives were to (a) verify the health issues identified in Phase 1, (b) quantify the prevalence of each health issue (e.g., domestic violence, substance abuse), (c) allow local agencies to learn rapid epidemiologic methods for collecting and analyzing quantitative data; and (d) train local community members in interviewing techniques and gainfully employ them as study interviewers.

Interview questions were drawn from the Phase 1 research and from questions that had been posed by health and social service agencies in the East End community (SLEHC, 2000c). Thirty-four geographic clusters were selected from the study area using a probability proportionate to size sample. Nearly 2,000 individual housing units were listed in these clusters, 316 of which were the homes of families with children 18 years of age or younger. Trained community



**FIGURE 1 Sample Problem Tree Exercise From Model B: Causes and Consequences of Drug Use During Pregnancy**  
NOTE: Time frame is from fetus to babies younger than 1 year old.

members interviewed 218 mothers of a total of 459 age-appropriate children. Outcomes and report dissemination were more extensive because of greater community involvement in the study. As a result of richer and more focused findings, a leveraged funding collaborative was established that facilitated the development of a federally qualified health center in the neighborhood, and an ongoing collaborative, the East End Healthy Children's Collaborative, was created.

### Model C

Appreciating the rich data produced by the PRA methods, we found it difficult to return to Model A. However, because of expanded study costs, we understood that SLEHC could not fund Model B assessments on an ongoing basis. Personnel, training, study materials, transportation, and other related study costs made ongoing funding prohibitive. Thus, we developed Model C, which incorporated several aspects of Model B: (a) training community residents as researchers, (b) having

community resident researchers discuss health issues with their neighbors using PRA techniques, (c) obtaining assistance from the school of public health, (d) sponsoring a community celebration event where community members present assessment results, and (e) developing a community health collaborative. To control costs in Model C, we trained fewer community resident researchers (2 instead of 10). Because we were trying to learn about adolescent health needs, including those of a growing Hispanic population with English- and Spanish-speaking subpopulations, we used the materials developed from the qualitative study used in Model B. In addition, several new approaches were used: (a) relying on an existing community coalition to guide us in the study and (b) expanding the resulting health collaborative to include community residents in addition to staff from community-based organizations. The quantitative data template and community-asset mapping techniques from Model A remained unmodified.

In 2001, the Madison Feeder Pattern Partnership of South Houston asked SLEHC to perform a community health assessment. The Partnership, which includes members from community-based social service organizations and local schools, is dedicated to improving the academic success and quality of life of local students. The Partnership agreed to serve as a community advisory group for the assessment. The final assessment, the *2002 Community Health Report: Houston's Central Southwest Neighborhood* (Williams, Bray, McIntyre, Peranteau, & Reisz, 2002), included quantitative data profiling, qualitative data from key-informant interviews listing community strengths and needs, and information from a PRA appraisal in a local secondary school involving high-school-age teens and their parents. A community resident researcher presented the project results at a community celebration luncheon and a SLEHC board meeting. Outcomes were priority driven and focused (e.g., an after-school program was funded for at-risk youth). The program is built around questions posed by students and parents. In addition, funding was disbursed for mobile health services, dental services, and parenting support.

### Summary of the Model Applications

Table 1 summarizes the project objectives, project initiators, and data types analyzed. In general, the table illustrates that as the models developed over time, we incorporated CBPR approaches, including PRA techniques, in a manner that was financially sustainable for our foundation and beneficial to the communities assessed.

**TABLE 1**  
**Comparison of Assessment Models**

<i>Characteristic</i>	<i>Assessment Model</i>		
	<i>Model A</i>	<i>Model B Phases 1 and 2</i>	<i>Model C</i>
A. Project objectives	<ul style="list-style-type: none"> <li>• Collecting information to inform SLEHC's grant-making decisions</li> <li>• Social marketing of SLEHC community-based initiatives</li> </ul>	<ul style="list-style-type: none"> <li>• Collecting information to inform SLEHC's grant-making decisions</li> <li>• Social marketing of SLEHC community-based initiatives</li> <li>• Obtaining deeper understandings of local perspectives of health, particularly from non-English-speaking populations</li> <li>• Increasing community's ability to name and analyze its own health problems</li> </ul>	<ul style="list-style-type: none"> <li>• Collecting information to inform SLEHC's grant-making decisions</li> <li>• Social marketing of SLEHC community-based initiatives</li> <li>• Obtaining deeper understandings of local perspectives of health, particularly from non-English-speaking populations</li> <li>• Increasing community's ability to name and analyze its own health problems</li> </ul>
B. Initiator	SLEHC	SLEHC	Community collaborative
C. Data type analyzed	<ul style="list-style-type: none"> <li>• Primary qualitative data</li> <li>• Secondary quantitative data</li> </ul>	<ul style="list-style-type: none"> <li>• Phase 1: Primary qualitative data</li> <li>• Phase 2: Primary qualitative and quantitative data</li> </ul>	<ul style="list-style-type: none"> <li>• Primary qualitative data</li> <li>• Secondary quantitative data</li> </ul>

NOTE: SLEHC = St. Luke's Episcopal Health Charities.

## ► DISCUSSION

### *Challenges of Increasing CBPR Approaches*

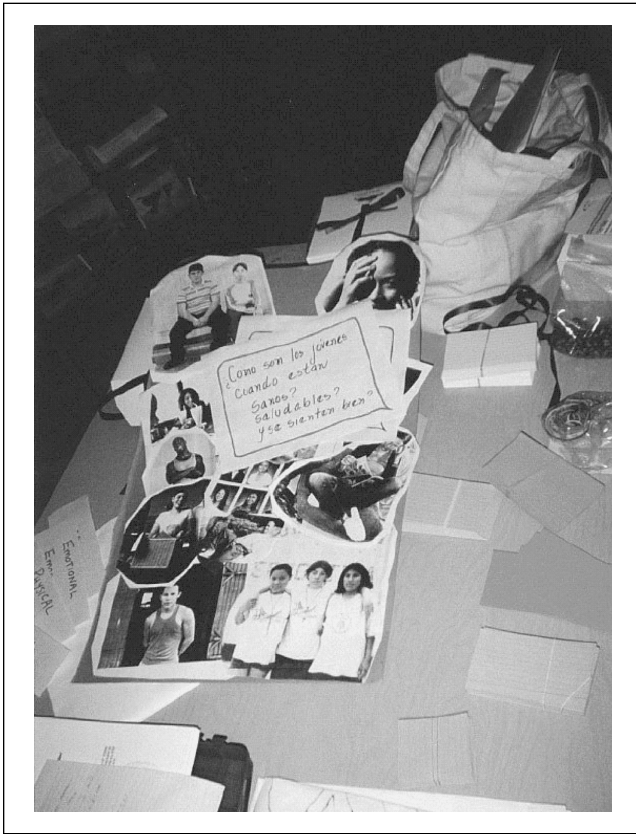
*Unexpected costs.* Our principal challenge in incorporating CBPR and PRA approaches into our assessment model was the increase in time commitment and the resultant increase in costs. Israel et al. (1998) noted that the effort to establish and maintain trust between researchers and community members exceeds that required in other types of research, requiring substantive commitments in time from both parties.

For the Madison Feeder Pattern study, we projected many of the cost increases associated with increased community participation, including researcher stipends (university and community), translation of data between English and Spanish, participant incentives, food, increased mileage, and supplies for researcher field packs. However, unexpected costs, such as staff time and costs to expand the study on the basis of community feedback about the study design, had to be absorbed by SLEHC. There were also unexpected community costs, including the costs associated with the training and communicating with community-resident researchers, group participants, and school personnel. Although we were able to provide small stipends to most community

participants, our future studies should include larger budgets for community-researcher stipends.

*Differences in communication patterns.* A second challenge identified by Israel et al. (1998) is “conflicts associated with differences in perspective, priorities, assumptions, values, beliefs, and language” (p. 184). In the Madison Feeder Pattern study, communication challenges were related to Spanish-language translation, timeliness of participant responses, and rapport as well as learning to work within the organizational culture of a large, urban public school district.

For example, the school's administrative leadership was committed, interested, and understood the study's benefits, but they were burdened by overloaded schedules. Because they had such demanding schedules, it was difficult to communicate regularly with the school's administrative leadership so we relied on other school personnel to recruit students. Unfortunately, the lack of direct communication with the school's leadership created a problem for our first scheduled participant groups. On the morning the student participatory groups were to meet, we did not have the majority of informed consent forms signed by the parents. Because of this mishap, we had to reschedule the groups for the following spring



**FIGURE 2 Collage Suggested by Community to Generate Discussion on Adolescent Health**

semester because in this immigrant community, many residents travel to Mexico during the summer when the next feasible time would have been. To prevent this communication problem from occurring a second time, we made a special effort to communicate directly with the school's administrative leadership, which meant going in person to speak with the principal at odd times throughout the day when she was available.

### ***Benefits of Increasing CBPR Approaches***

*Improved study design.* One benefit to incorporating a combination of CBPR and PRA approaches into our assessment model is improved study design. Specifically, we benefited from increased participation by achieving better representation of our target population. For example, in the Madison Feeder Pattern assessment, the original study design included only two participatory groups: Spanish-speaking high school students and their parents. These groups were chosen because (a) the study budget was limited and (b) the Spanish-speaking community, a rapidly growing population,

was underrepresented in the key informant interviews, and we felt that their opinions likely differed from those of Whites and African Americans. The partnership members pointed out that the community demographics were different than those reflected in the proposed study design and strongly suggested adding more groups to the study. We valued this suggestion and, in response, sought additional research funds to add these groups. The community's advice helped us discover that health issues and solutions identified by the African American teens and parents differed greatly from each other and from those of Hispanic American teens and parents.

*Enhanced study instruments.* Increasing the use of CBPR and PRA approaches also improved tools used in later studies. In the Madison Feeder Pattern study, one participatory exercise used a picture collage to represent local adolescents. Participants would be asked to look at the collage, reflect, and respond to the questions "What are the qualities of a healthy adolescent?" and "What are the qualities of an unhealthy adolescent?" The purpose of the collage was to create a representation of the participants' social reality or a culturally appropriate code to evoke the critical reflection on local reality, a technique originally developed by Freire and since used in various settings to encourage participatory analysis action for societal change (Barndt, 1998; Freire, 1970). When community members viewed the collage during pilot testing, we learned that the collage was not representative of local teens and would be ineffective in initiating discussion. We valued this suggestion and responded by creating a new collage, which was then accepted as more representative by community participants (see Figure 2). Based on continuous participant feedback, we now have study participants make their own collage.

*Improved interpretation of quantitative data.* Incorporating CBPR and PRA approaches into assessments is expensive because they require a great deal of time from foundation staff as well as community leadership and residents. Notwithstanding, participatory methods enhance the triangulation of data and invite richer interpretations of traditional quantitative data.

For example, data that monitors trends of racial and ethnic composition of neighborhoods is a standard component of most community assessments. This trend monitoring is especially important in Houston as neighborhoods rapidly transition from primarily African American communities to Hispanic first-generation immigrant communities (as was evident in the Madison Feeder Pattern). Discussions with teens' parents helped

heighten our understanding of the health impact of this trend. A major concern of Hispanic parents was high school drop-out rates, but this concern was not equally shared by African American parents. Developing a qualitative, local, community-voiced context for a rapid demographic trend improved the school's ability to recognize that school drop-out rates would likely rise in the near future and to plan interventions accordingly.

*Improved connections between community, community health, and SLEHC.* So how did our improved connections with the community lead to improved community health? By using both Models B and C, we built higher levels of trust and rapport between SLEHC staff and community residents compared to using Model A alone. Having community residents report the results of the studies to the SLEHC board provided a compelling argument for action regarding community concerns and moved members of the board in a way that SLEHC staff would not be able to do. In addition, participation in the SLEHC board meeting enabled the community resident to better understand the SLEHC mission and helped her to communicate effectively with her own community about the study's goals and findings. As a result of the findings and recommendations from these assessments, SLEHC has funded several new initiatives including after-school adolescent health programs, parenting classes, family-engaged science education, mobile medical/dental clinic services, and school-based community gardening programs (see Table 2). All of these initiatives were directly linked to concerns voiced by residents during the assessment phase of the study.

We used community celebration events, a way of enhancing CBPR and PRA methods, to disseminate the project to community members. During the community event for the Madison Feeder Pattern Study, members of community groups, such as the local civic association and the high school girls' health program, shared the results of their own work within the community. These interchanges broadened the scope of information available to the community and supported efforts for ongoing collaboration among organizations operating in the community.

### **Lessons Learned**

Through these studies, we learned the importance of flexibility in our organizational processes. Under Model A, our research and grant-making phases were distinct. Operationally, this meant that a period of intense involvement by SLEHC researchers with the community would be followed by a "hand off" of responsibility to

grant-making SLEHC staff. We collected less data and had fewer ongoing community partnerships. Model C opens up the boundaries between the "information gathering" and the "action" phases, thereby improving communication among SLEHC staff and between our staff and community members.

We have also learned to broaden our participatory research techniques. In our Healthy Neighborhood Initiatives projects, we have added Photovoice, a technique in which residents create photo essays that portray their views of community life that cannot be captured during interviews or through quantitative methods (Reisz et al., 2003; Wang & Burris, 1997). Our latest study of Houston's Vietnamese villages uses life history as an investigative strategy (Peranteau et al., 2004). We continue to broaden our menu of participatory approaches in helping each community to tell its own story.

Finally, we have learned that there are advantages and disadvantages to serving dual roles as both funding the community research and managing subsequent health and social services programming. Community stakeholders have a strong incentive to work with our staff. Motivated, organized community stakeholders, who are able to obtain SLEHC funding, assist in the long-term sustainability of community projects (see Table 2). However, serving dual roles may introduce an imbalance of power between the community and the funder, may lead to the collection of distorted information from those interested in benefiting from SLEHC funding, and could place undue pressure on community members to work with us. These concerns deserve further inquiry and reflection.

### **► CONCLUSION**

Compared to traditional, nonparticipatory methods, community-health assessment models employing participatory approaches yield richer information (both in context and detail) about community health, more insight into a community's health definitions and historical efforts to improve community health, and greater knowledge of high-priority intervention areas. Although more beneficial, the use of participatory approaches is costly, often for both the funding agency and the community itself. This is largely because establishing trust within a community and maintaining community participation in all aspects of research is a very time-intensive process for researchers and residents. Research that compares the benefits of community-based participation to its added expenses is an important topic for additional study as more funding is sought for this research approach.

**TABLE 2**  
**St. Luke's Episcopal Health Charities (SLEHC ) Grants Benefiting the Madison Feeder Pattern Area/Central Southwest Super Neighborhood Grants as of May 2006**

<i>Organization/Project Description</i>	<i>Total Grant Award</i>
Baylor College of Medicine—Dr. Fisher To develop and expand (in collaboration with Baylor College of Medicine medical students) the CHOICES after-school health education program for adolescents at Madison High School in the Houston Central Southwest Super Neighborhood.	\$25,000.00
Children's Museum of Houston For a one-time grant to provide parenting classes at Hobby Montgomery Elementary school during the 2003-2004 school year.	\$10,000.00
Children's Museum of Houston To continue the Parent Stars (family engagement) program for 2004 at Hobby Elementary School located in SLEHC's Central Southwest HNI.	\$6,000.00
Children's Museum of Houston To continue support for the Parent Stars program throughout the 2005-2006 school year on behalf of families whose children attend Hobby Elementary and expand to Montgomery Elementary both in the Madison School Feeder Pattern in SLEHC's Central SW HNI.	\$12,000.00
Texas Children's Hospital To continue to provide operating funds for the SuperKids Mobile Pediatric Clinic, which provides free health care and preventive education to medically underserved children of Houston and their families.	\$36,400.00
Texas Woman's University Foundation TWU Young Women's Health Project: An after-school education program designed to reduce health risks and promote healthful attitudes and behaviors among at-risk, underserved girls attending Madison High School in Houston's Central Southwest.	\$25,000.00
Texas Woman's University Foundation To provide an advanced payout of SLEHC's 2004 operating grant for the Young Women's Health Project serving at-risk, underserved girls at Madison High School in Houston's Central Southeast.	\$25,000.00
Texas Woman's University Foundation To start up, develop, and test an after-school health education program for boys attending Madison High School and Dowling Middle School in Central Southwest (HNI).	\$25,000.00
The University of Texas Health Science Center To provide 2003 through 2006 operating support for the mobile dental program to serve the East End, Central Southwest and 5th Ward.	\$225,000.00
Urban Harvest To support the building/creation of five outdoor classrooms benefiting the nutritional and educational needs of at-risk/disadvantaged youth in Houston's East End, Central Southwest, and Port Houston.	\$25,000.00
<b>Grand total</b>	<b>\$414,400.00</b>

NOTE: HNI = Healthy Neighborhood Initiatives.

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