IMPROVING AMBULATORY DIABETES CARE AMONG TWO HIGH-RISK RACIAL MINORITIES (African-Americans and Hispanics) USING CULTURE-SPECIFIC EDUCATION AND CLOSE FOLLOW UP

FINAL REPORT AUGUST 1, 2008

Submitted by:

PINNACLE HEALTH SYSTEM

PinnacleHealth Project Coordinators:
Nirmal Joshi, MD, FACP
Vice President, Medical Education and Research

Renu Joshi, MD Chief, Endocrinology

<u>PinnacleHealth Contact Person:</u> Larry Warkoczeski,

Vice President and Chief Development Officer 409 South Second Street, P.O. Box 8700 Harrisburg, PA 17105-8700 (717) 231-8080

Purpose

The purpose of this project was to improve outpatient diabetic care among two high-risk racial minorities (African-Americans and Hispanics) using culture-specific education. It was anticipated that such improvements would improve Diabetes control and decrease Emergency Department visits and hospital admission rates in these specific populations.

Materials and Methods

The study was started in July 2006 with the hiring of two nurse educators, one Hispanic and other African American, To direct educational efforts toward the two corresponding study populations. The nurses completed a standardized chronic disease program training offered by Stanford University in September 2006 as indicated in our Grant. In addition, 2 patient trainers belonging to the same ethnic groups were also educated using the same program. The goal was to enroll 100 Diabetic patients with HgA1c>7.5 in each population. Patients were enrolled in the program using direct information sharing at the Pinnacle health system clinics (the two target populations are particularly well represented in these clinics), advertisement in the local newspaper, church visits and specific contacts with other centers providing care to these specific populations. The details of recruitments are provided in Table 1.

The participants were called "active" if they were a part of all sessions and group classes and communicated regularly with the nurse educator. A Total of 105 people were enrolled in African American population with 87 active participants at the end of the study. In Hispanic population 127 patients were enrolled with 102 active participants remaining at the end of the 2 yrs period.

All participants went through an extensive education program of either group classes or one on one sessions. These sessions included education on diabetes and its related complications as they relate to the specific sub-population, specific cultural beliefs among these populations hindering diabetes care, exercise and specific diets pertaining to the ethnic. Education materials were designed in both English and Spanish to eliminate communication barriers. In addition regular phone calls were made every 2 weeks for follow up on their diet, glucose control and assessment of barriers to care. Patients were also evaluated in the clinics periodically to ensure compliance. Special support group sessions were continued after the classes were over. In addition, the patient trainers were utilized as needed as facilitators in education. Appropriate phone calls were made by the educators to the providers to change therapy and to provide feedback on results of various laboratory tests. Both Educators met with the grant supervisor physicians regularly to discuss various challenges and progress during the two year period.

Baseline data was collected on patient demographics, weight, blood pressure smoking, HBA1C, lipid Profile, urine micro albumin, eye exams, foot exams and patients' compliance with appointments. ER visits and hospitalizations were recorded

for the 1 year period prior to enrollment to establish a baseline .If Baseline lab data was not available the last lab testing done unto 3 months prior to enrollment was considered as baseline. Similar data was collected at 1 year after initiation of the study and at the end of the study.

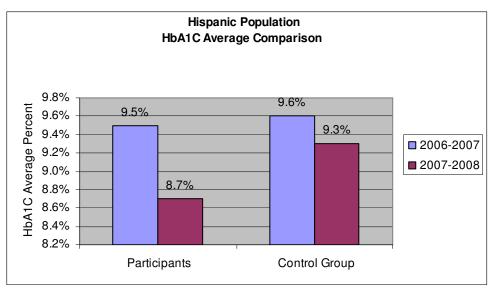
No changes were made to the original objectives of the project.

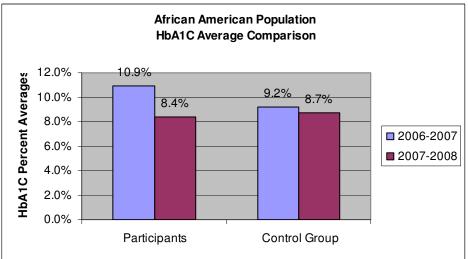
OUTCOMES

Participant Demographics

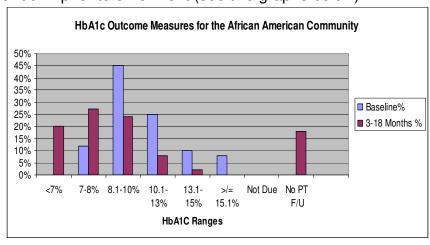
DEMOGRAPHICS								
RACE	African American	Hispanic						
Total Participants	110	124						
Active Participants	83 (75%)	103 (83%)						
Male (%)	45	34						
Female (%)	55	66						
Age in Yrs. (%)								
< 20	2	0						
21-40	12	6						
41-60	46	53						
61-80	23	38						
> 80	0	3						
Insured (%)	87	94						
Uninsured (%)	13	6						
Smokers (%)	24	2						
Type of DM								
Type 1 (%)	6	2						
Type 2 (%)	94	98						
Complications (%)	35	22						

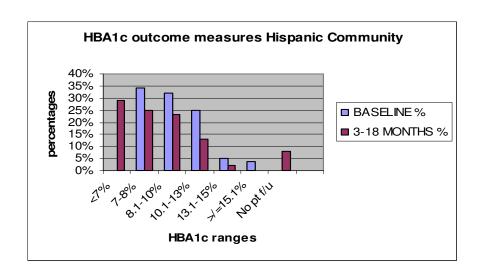
<u>HBA1C</u> The overall HBA1c improved significantly by 2.5 % in AA and 1% in Hispanic populations as demonstrated in the graph below.. A control group sample of 50 patients taken later for similar populations for comparison showed a decrease of HBA1c of only 0.3-0.5 % during the similar time period.





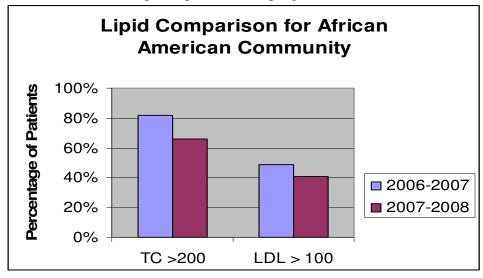
In addition 20 %patients in AA population and 30 % patients in Hispanic population achieved the A1c of <7% as per ADA goals while none of the participants had a value under 7 prior to enrollment (see two graphs below)

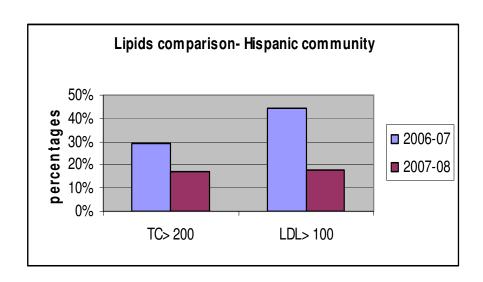




LIPIDS-

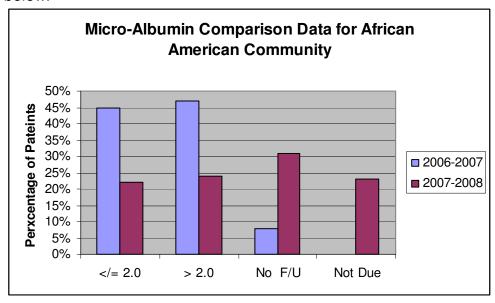
Significant improvements were seen in both total Cholesterol and LDL in both populations as indicated in graphs below. The graph indicates the percentage of patients which showed improvements in both LDL and TC. In addition almost 100 % of patients had their lipid panels checked as a result of participation in the program.

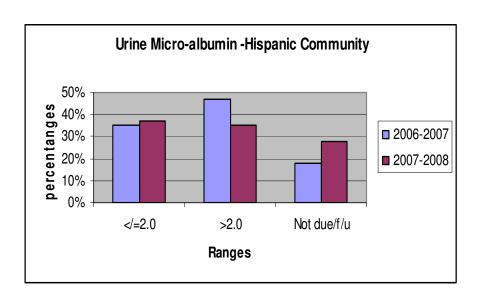




Urine Microalbumin,

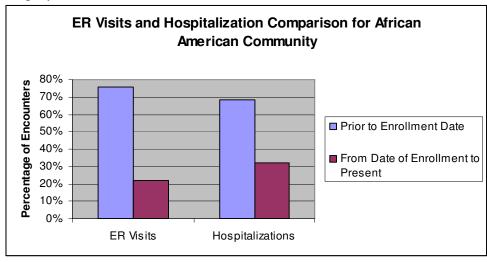
This was a difficult parameter to complete as a lot of patients were late enrollees and they were not due for the follow up test again but even with 60 % of patients completing their 2ndtests there was a trend of improvement in urinary proteins depicted in the graph below.

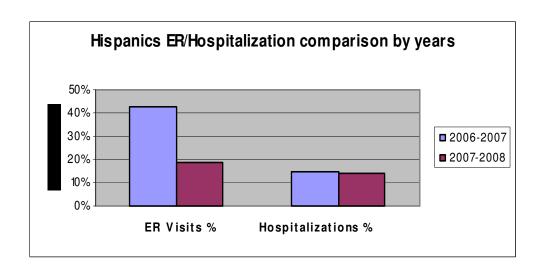




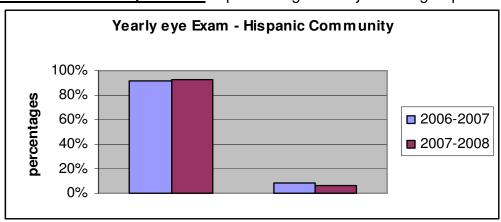
ER VISITS and hospitalizations.

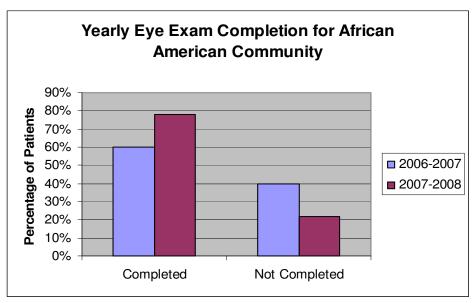
The most significant impact of the study was seen with reduction in ER visits in both populations .In AA population the ER visits decreased by almost 60%.In Hispanic population the average ER visits were 40% at baseline it decreased to 18% as shown in the graph below.



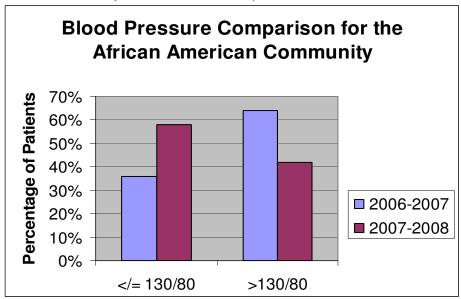


OTHER ISSUES Eye exams improved significantly in both groups.





<u>Blood pressure</u> A significant trend of improvement was seen in the AA population in BP but not a major difference in Hispanics



<u>Vaccinations</u> The frequency of Pneumo-vax and Flu shots also improved as most of these people kept their appointments with their physicians. Over all the study showed significant improvements in all aspects.

Challenges

<u>1.Recruitment</u> The recruitment was particularly a problem in the African American community. As is evident from table 1, recruitment rate was extremely slow in the beginning and the full enrollment actually did not occur till later part of 2007. This may have impacted the data in the negative direction as many of the participants were in the

study for only 6-8 months this also raises a concern about the priority of health care in this population.

2.Cummunication with Patients

A big challenge of the project was to connect with patients. Patients did not always return phone calls and frequently had their phones disconnected. It took a lot of time and many attempts to reach the participants. Many times the educators visited participants in common areas outside of Pinnacle Health System convenient to the participants. They also worked with the participants' primary care physicians to visit with them before or after scheduled office visits.

3,Transportation

Patient transportation to classes was identified as a significant issue for many patients. In many instances, transportation to classes was provided or facilitated. Individual patient needs were considered and accommodated whenever possible. The nurse educators made weekend and evening appointments available at various sites to facilitate participation.

4. Completion of Lab Work

Another challenge was for patients to have their laboratory testing completed, despite having been provided with lab sheets. This was overcome by training provided to both educators to draw blood themselves during the patient appointment with them. Receiving the results from primary care physicians was also difficult and the educators made visits to the doctors' offices to obtain results.

5.Finances

Despite having the prescriptions, many patients were unable to obtain medications due to an inability to afford the mediations or lack of ability to get to the pharmacy. Both educators commonly worked with pharmaceutical companies and the State Government to assure patients got the medications they needed.

Learnings

The educators and the investigators had a great deal of learning from this project. learning that Health care is really not a priority was the biggest concern. The various cultural barriers to educating patients and determining methods to overcome those barriers was phenomenal. The nurses also learned the training as phlebotomist and the computer data entry. At the end of the study the nurse educators have developed a very special bond with each of their patients The trust formed will hopefully promote positive attitudes and continued improvement in patient care.

Project Success/ Discussion

We believe that the project was very successful. In a very short period of 15-18 months significant improvement in outcome measures were achieved. HBA1c decreased by an average of 1.0-2.5 % (in a control group a drop of only 0.3-0.5% was noted), > 90 % of patients kept appt with physicians and had all necessary labs done, ER visits decreased by 60 % in AA and 40 % in Hispanics, Hospitalizations significantly decreased in AA population, BP improved in AA population, Lipid panel and Microalbumin improved in both populations, More patients completed eye exams, pneumonia Vaccines and flu shots.

Other than the objective improvements we also noticed a great deal of improvement in their emotional well being. Almost all of the active participants noticed a significant improvement in their education about diabetes, self monitoring of blood sugars, and power to gain control of their disease This is evident by their improvement in keeping physicians appointments and getting lab work done

Although some of the objective outcomes end points may appear modest, it is important to note the increased compliance rates for various preventive tests. Furthermore, a significant portion of the enrolled patients had only gone for eye exams and labs due to their enrollment in the program. Some of the baseline data is actually a reflection of participation in the study as several patients had not had lab work done prior to entry.

In addition to improved care and its attendant benefits, there are significant positive financial benefits to our interventions. The remarkable decrease in emergency department utilization has immensely positive financial consequences to both hospital systems and society at large.

Pinnacle Health system has decided to hire both of the educators in the system so we can continue to provide excellent care to our minority populations. We have not received any grant after this project but extending the study to a larger population with the help of a larger grant will have immense benefits to this community.

Further plans/ Communication of results

The findings of the study have been presented at the Latino Forum recently. Wide communication of these results, particularly among these two minority communities, will likely increase further utilization of chronic disease care among these populations. We plan to do so by the following mechanisms:

- 1. Plan dedicated community forums to publicize results
- 2. Plan defined communication strategies directed towards local newspaper and television
- 3. Consider submission to a peer-reviewed journal for possible publication of results
- 4. In collaboration with Pinnacle Health marketing, consider other mechanisms such to disseminate results

All of the above plans will be discussed with Highmark and after appropriate approvals will be executed.

TABLE 1: Efforts to Recruitment							
Method of Recruitment Mail/Phone/ Off-site	Description of targeted population Source Pinnacle/Non-Pinnacle	Number of contact attempts per source	Hours Invested	Number of people encountered/ responses	Number of people enrolled To date	Misc./ Follow-up	Ethnic population Target African-American and /or Hispanic
MAIL	Interdenominational Ministries Non-Pinnacle	83 20	12 8	2 3	0	completed	African-American Hispanic
Off-site	Heinze Senior Center Non-Pinnacle	6	8	36	0	Pending	African-American
Off-site	Governors' Square Apartment Non-Pinnacle	5 4	5 4	6 0	0	completed	African-American Hispanic
Off-site	Black Legislative Caucus Non-Pinnacle	1 1	6 6	15 0	0	N/A	African-American Hispanic
Off-site	Dauphin County Medical Society Health Fair Non-Pinnacle	1 1	4 4	10 0	0	N/A	African-American Hispanic
Phone	Various Local Churches Non-Pinnacle	29 3	6 9	21 20	0	completed	African-American Hispanic
Off-site	William Howard Day Hillside Village Smith Homes Comm. Non-Pinnacle	3 3	5 3	30 10	0	completed	African-American Hispanic
Off-site	Hamilton Health Center Non-Pinnacle	4 4	3 3	2 department Heads No patients same	0 21	completed	African-American Hispanic
Onsite	Adult Clinic Promotion Pinnacle	N/A 4	186 19	60 4	8 68	completed	African-American Hispanic
Phone	Adult Clinic/Kline Family Practice Referrals Pinnacle	N/A 2	12 15	36 2	22 3	completed	African-American Hispanic
Mail/Phone	Announcement in City Monthly Local Paper Non-Pinnacle	N/A N/A	N/A N/A	6 0	3 0	completed	African-American Hispanic

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Phone	Diabetes Clinic list call- out Pinnacle	N/A 150	40 300	79 57	11 46	N/A	African-American Hispanic
Off-site	Flyer Distribution On Foot Non-Pinnacle	N/A 4	30 16	100 61	0 1	completed	African-American Hispanic
Off-site	Flyer Posting Laundromats Non-Pinnacle	5	1	Unknown	0	pending	African-American
Off-site/ Phone	Reclaim the Streets Ministries Non-Pinnacle	4	2	Pending	0	Pending	African-American
Mail	All Primary Care Private Physician Practices Pinnacle-based	N/A 1	N/A 1	Unknown 1	0 4	completed	African-American Hispanic
Phone	Private Practice Self- Referrals Non-Pinnacle	8 1	4 6	8 1	8 3	Attended and completed classes	African-American Hispanic
Off-site	Harrisburg High Health Fair—4/21/07 (x2) &'08 Non-Pinnacle	N/A 1	5 5.5	40 0	Pending 0	completed	African-American Hispanic
Off-site	Multi- Cultural Health Festival Non-Pinnacle	N/A 3	2 2.5	10 1	Pending 0	completed	African-American Hispanic
On-site	Flyer Distribution @ Class Sessions Pinnacle/Non-Pinnacle	13	N/A	35	2	completed	African-American
Harrisburg Outpatient/Latino program Off-site	Clinical Supervisor Latino services	2	2	25	0	completed	Hispanic
Off-site Phone	Hamilton Health center	2	10	30	21	Classes completed	Hispanic
Off-site	First Spanish church of Harrisburg	3	5	>100	17	Classes completed	Hispanic
Radio-720am Off-site	Pastor	2	4	2	0	completed	Hispanic
DM educators	Hospital referrals	3	35	4	4	Some referrals	Hispanic
Off-site	Emanuel Baptist Church	2	10	120	3	Classes completed	Hispanic
Off-site	Annual South Allison Hill Multicultural Festival	1	3	>200	0	completed	African American Hispanic
Off-site	Estamos Unidos festival	1	4	>200	0	completed	African American Hispanic