

Barriers to the Quality of Control of Diabetes in Rural Community Health Centers: East Arkansas Family Health Center

Whitney Chigozie Nwagbara
Morehouse School of Medicine
Doctor of Medicine Candidate, Year – 2



GE-NMF Primary Care Leadership Program
East Arkansas Family Health Center
West Memphis, Arkansas
12 July 2013

Introduction

In 1974, East Arkansas Family Health Center (EAFHC) was constructed in West Memphis, Arkansas, out of an existing retail mall. It was pieced together as a non-profit organization in order to provide “accessible, comprehensive, and quality healthcare to the communities [in which they] serve with an emphasis towards the traditionally underserved” (4). Now, almost forty years later, EAFHC has continued to fulfill its initial mission by providing a complete range of primary medical and dental services to the residents of eastern Arkansas, as well as expand upon its missions by referring patients to outside practices/hospitals for any services it cannot directly provide.

Through the expansion of its territory to encompass four additional medical facilities – located in Blytheville, Helena, Lepanto, and Trumann – EAFHC has become a fundamental health care provider to Crittenden, Poinsett, Mississippi, and Phillips counties. With the help of fourteen medical providers, two on-site pharmacies, and a fully staffed dental team, EAFHC remains to be a leading force in primary medical care delivery. They currently serve roughly 13,400 patients, providing services in Primary Care, Women’s Health Care, Pediatric Care, Chronic Disease Management, HIV Management, Dental Care, and Community Services at a discounted price (1). Despite its strong presence and aid to the community, however, there is a strong need for improvement in the delivery of healthcare.

Crittenden County is one of the poorest counties in Arkansas, with over twenty-eight percent of its residents living below one hundred-percent of federal poverty line and another forty-nine-percent living below two hundred-percent of federal poverty line (4). In addition, seventeen-percent of its residents are uninsured, while another forty-one percent receive Medicaid. Evaluation of the population shows that sixty-percent of the population is classified as vulnerable and that roughly sixty-percent of these people do not have access to a comprehensive primary medical care facility. Crittenden County surpasses Arkansas in all categories pertaining to the major illnesses afflicting Americans – heart disease mortality rates, mortality rates for all cancers, stroke mortality rates, chronic obstructive pulmonary disease (COPD) mortality rates, and diabetes mortality rates (2). For EAFHC specifically, fifty-four-

percent (3,912 patients out of a total 7,269 reported patients) of its patients are uninsured, while another sixteen-percent (1,147 patients out of a total 7,269 reported patients) receive Medicaid/CHIP coverage (obtained from eClinical Works Electronic Medical Records system). In addition to this, a vast majority of its patients are the working poor, with coverage that does not provide a complete range of healthcare services at a standard medical facility (4).

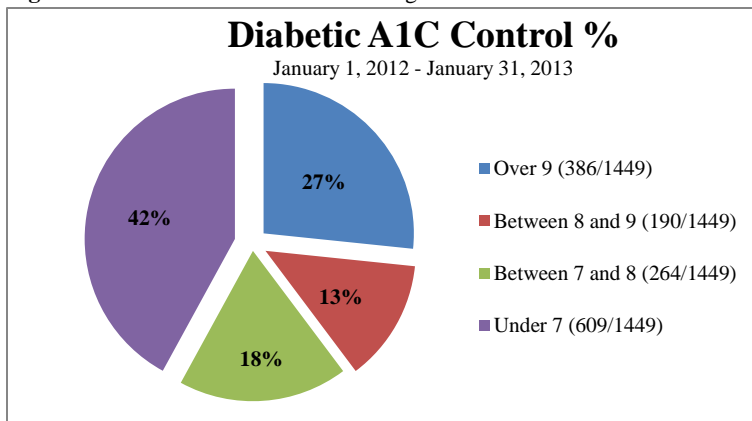
Like many other rural health centers, patients at EAFHC disproportionately suffer from many of the leading illnesses afflicting Americans. EAFHC diagnoses and manages a higher percentage of patients suffering from COPD, hypertension, hyperlipidemia, congestive heart failure (CHF), and diabetes when compared to the state and national averages. Specifically for diabetes, EAFHC has a reported number of 2,290 patients out of a total number of 7,340 who are clinically diagnosed with Diabetes mellitus. As Paul, C. L. and her team of researchers state, diabetes is one of the fastest growing chronic illnesses affecting mankind. Many of the long-term complications associated with diabetes, including macrovascular disease, coronary heart disease, stroke, retinopathy, and kidney diseases, can be reduced, delayed, or prevented if early diagnosis and control of diabetes was achieved (5). More than fifty-seven-percent (839 patients out of a reported 1,449 patients) of its patients between the ages of nineteen and seven-five years of age have hemoglobin A1C (HbA1c) values of above 7% (Table 1 and Figure 1). Based on the information presented by the American Diabetes Association, a HbA1c value of 6.5% or higher is a benchmark value for diagnosing diabetes (3). Because patients with elevated levels of blood-glucose values (HbA1c values of 6.5 and above) have an increased risk for diabetic complication, it is clear that EAFHC is faltering in their control and management of diabetes (5). Thus, it is my purpose to conduct a pilot study of the effectiveness of care delivery in which diabetic patients at EAFHC receive, as well as offer suggestions on how to better meet the needs of these diabetic patients.

Table 1. Diabetes by Age and Sex – EAFHC

Ages	Sex	Over 9	Between 8 and 9	Between 7 and 8	Under 7	Grand Total
19 - 29	Female	16	1	3	7	27
	Male	4	1	4	2	11
Total		20	2	7	9	38
30 - 40	Female	32	15	9	25	81
	Male	25	8	8	9	50
Total		57	23	17	34	131
41 - 51	Female	65	36	40	76	217
	Male	45	15	21	40	121
Total		110	51	61	116	338
52 - 62	Female	83	41	66	155	345
	Male	46	30	34	87	197
Total		129	71	100	242	542
63 - 73	Female	39	28	50	138	255
	Male	27	14	23	52	116
Total		66	42	73	190	370
74 and 75*	Female	4	1	5	9	19
	Male			1	9	10
Total		4	1	6	18	29
Grand Total		386	190	264	609	1449

*BridgeIT Solutions used in order to obtain data. LOINC codes were set up according to the EAFHC’s A1c standards. Includes patients age 18 to 75 with at least two medical visits. A1c values as determined by EAFHC: decreased risk of diabetes (<5.7), increased risk of diabetes (5.7-6.0), higher risk of diabetes (6.1-6.4), and consistent with diabetes (> or = 6.5).

Figure 1. Diabetic A1C Control Percentage



Methods

In order to construct the needs assessment of EAFHC, I utilized several types of assessment methods: windshield survey of the physical environment of EAFHC, key informant interviews of the

personnel of EAFHC and of individuals associated with EAFHC, as well as informal interviews of the personnel of EAFHC.

After conducting the needs assessment of EAFHC, I identified the need which was most critical to the health of the patient population: the control of diabetes. I coordinated with the Continuous Quality Improvement (CQI) Specialist in order to obtain data pertaining to diabetes and its effect on the patients of EAFHC. After using electronic databases, Uniform Data Systems and Bridge IT, in order to obtain information on the center's control of diabetic patients, I conducted interviews of a subset of the patient population in order to see how the center could better meet the needs of the patient population.

Windshield Survey

The windshield survey took place between June 3, 2013 and June 5, 2013. This process was completed by driving within a two mile radius of the main streets surrounding EAFHC (North Missouri Street and West Broadway) and taking note of the physical environment. The windshield survey consisted of an observation of both the physical environment within EAFHC, as well as the area surrounding EAFHC.

Key Informant Interviews

The key informant interviews were held on June 8, 2013 and July 5, 2013. I conducted one-on-one interviews, where I asked individuals a predetermined set of seven questions (Appendix – 1) regarding the state of the community and the effectiveness of care delivery at EAFHC. I also conducted informal interviews with providers and nurses pertaining to the management of diabetic patients. Selection of individuals for interviewing was determined based upon their level of involvement with EAFHC, as well as with rural medicine (Table 2). They were interviewed at various locations or via telephone.

Table 2. Key Informant Interviewee Biographies

	Race	Location	Years of Experience in the Community
Project Manager	African American	Arkansas Delta AIDS Care – West Memphis, AR	25 years
Physician Assistant	Caucasian	East Arkansas Family Health Center – West Memphis, AR	6 months
Physician	African American	Healthy Partners – Blytheville, AR	3.5 years
Chief Executive Officer/Physician	African American	East Arkansas Family Health Center – West Memphis, AR	16 years
Chief Operating Officer	African American	East Arkansas Family Health Center – West Memphis, AR	8.5 years
Continuous Quality Improvement Specialist	African American	East Arkansas Family Health Center – West Memphis, AR	4.5 years

Patient Interviews

Patient interviews were held during the week of July 1, 2013. I conducted one-on-one interviews, with the exception of one interview, which was conducted with the daughter of the patient due to difficulty in hearing my voice. The target population for interviewees was individuals who were diabetic – controlled by diet, lifestyle, and medication or uncontrolled – and above the age of 29 (Table 3). Each individual was asked a set of eleven predetermined questions (Appendix – 2) regarding their diabetes and the effectiveness of EAFHC in managing their diabetes. Based on their response to specific questions, each patient was given a numerical value in order to rate the control of their diabetes. If their response was in adherence to the guidelines of the American Diabetes Association, then the patient received a numerical value of zero. If not, then the patient received a one. In addition, patients who responded neither received a value of zero, while those who responded both received a value of one. Based upon their response, patients were ranked on how well they controlled their diabetes via diet: well controlled (0 – 2), moderately controlled (3 – 5), and poorly controlled (6 and above).

In addition to this ranking system, patients were asked to rate the level of control of their diabetes, with a one being never controlled, a five being somewhat controlled, and a ten being always controlled. This number was charted as their predicted level of control. In order to obtain their actual level of control, I averaged their last five hemoglobin A1c values (obtained from the eClinical Works Electronic Medical Records system) and then converted this number into a numerical value between one

and ten. Conversion was determined based on a Blood-Glucose Conversion Chart provided by Sue Rafati’s website (Appendix – 4). Each patient’s predicted level of control was then compared to their actual level of control.

Table 3. Patient Interviewee Biographies

	Race	Sex	Age	Type of Diabetic*
BA	African American	Female	58 years	Medication Controlled
JL	African American	Male	51 years	Medication Controlled
RM	Caucasian	Male	64 years	Uncontrolled
DE	African American	Female	49 years	Medication Controlled
ES	African American	Male	60 years	Uncontrolled
RC	Caucasian	Female	58 years	Low Risk, Medication Controlled
PB	African American	Female	34 years	Medication Controlled
RM	Caucasian	Male	58 years	Diet and Lifestyle Controlled (No Meds)
JP	African American	Female	73 years	Uncontrolled
EB	Caucasian	Female	92 years	Low Risk, Medication Controlled
EW	African American	Female	62 years	Medication Controlled
DR	African American	Female	55 years	Uncontrolled
KD	African American	Female	69 years	Uncontrolled

*Type of Diabetic was obtained from the providers’ notes about the patient and their level of control with the diabetes

Results

Windshield Survey

To evaluate the resources available to the residents of Crittenden County, as well as the resources available to the patients of EAFHC, windshield surveys were conducted. During this survey, the physical environment of both the center and the area surrounding the center were noted. Results of the windshields are described in Table 4.

Table 4. Windshield Survey Results

	Category	Description
Physical Environment of EAFHC	Rooms	Stocked with some supplies (not with pap supplies); rooms are tight and small in size; contains examination table, stool, one chair, odoscope/nasoscope
	Waiting Room	Somewhat structured, chairs organized in tight rows
	Nurses’ Station/Providers’ Station	Nurses’ station is somewhat cramped, little work room; provider offices are more spacious; enough outlets for charging computers
	Lab Station	Very cramped and tight; microscope are squeezed onto a small cabinet
	Dental	Dental portion of EAFHC has more spacious rooms; rooms are stocked with dental supplies and equipment

Table 4. Windshield Survey Results (cont.)

	Category	Description
Physical Environment	Community Location	Rural
	Housing	Dilapidated, unkempt houses
	Businesses	Many small businesses
	Hazards	Many potholes
	Protective Services, Churches	Police and fire station present, multiple churches
Social Environment	Ethnicity/Race	Predominately African American/Black
	Education	1 active high and elementary school
	Transportation	No buses or trains present
Lifestyle	Nutrition	Three major grocery stores, over ten seen restaurants
	Drug/Alcohol	Advertisement for alcohol and cigarettes at local gas station
	Exercise	No parks, basketball courts, swimming pools, etc.
	Health Services (besides EAFHC)	Two medical facility, AIDS care center (ADAC)

Key Informant Interviews

A total number of six individuals were interviewed. Each response was summarized into four general themes: (1) the state of the community (2) the effectiveness of care delivery (3) the strengths of EAFHC (4) the biggest need of EAFHC. See Appendix – 3 for a summary of responses.

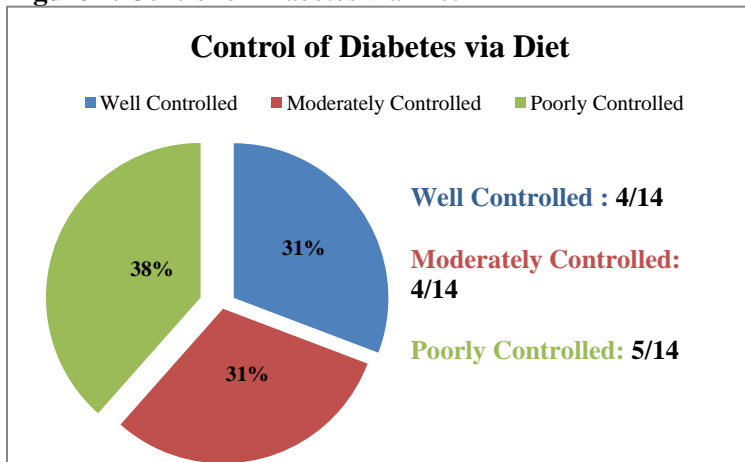
As for the informal interviews pertaining to diabetes, the overall consensus was that EAFHC has a high percentage of patients who struggle with the control of their diabetes. Some of the common reasons stated for difficulty in the control of patient diabetes include a lack of money, a lack of understanding in how to control their diabetes, a distaste for taking medication, a lack of affordable and accessible foods that are in adherence to a diabetic diet, a surplus of fast food restaurants, an inability to afford insulin, as well as a lack of insurance or under-insurance. A provider at Healthy Partners stated that one of the biggest issues that patients face in controlling their diabetes is a lack of money and insurance. She stated that a lack of money prevents patients from being able to afford their medications, as well as foods that are more suitable for their health. In addition, she mentioned that because most patients live paycheck to

paycheck, many of them have to make the decision on whether to spend money on quality groceries or to spend it on the rent and bills. In addition to this, a large majority of providers and nurses stated that some patients know how to control their diabetes, but choose not to. A provider at EAFHC stated that “many patients know what foods are good and what foods are bad for their diet. That’s why they smirk when you ask them about their diet at home. Unfortunately, we can only do so much when people are stubborn”. Some individuals also stated that a shortage of staple supermarkets added to poor control in diabetes.

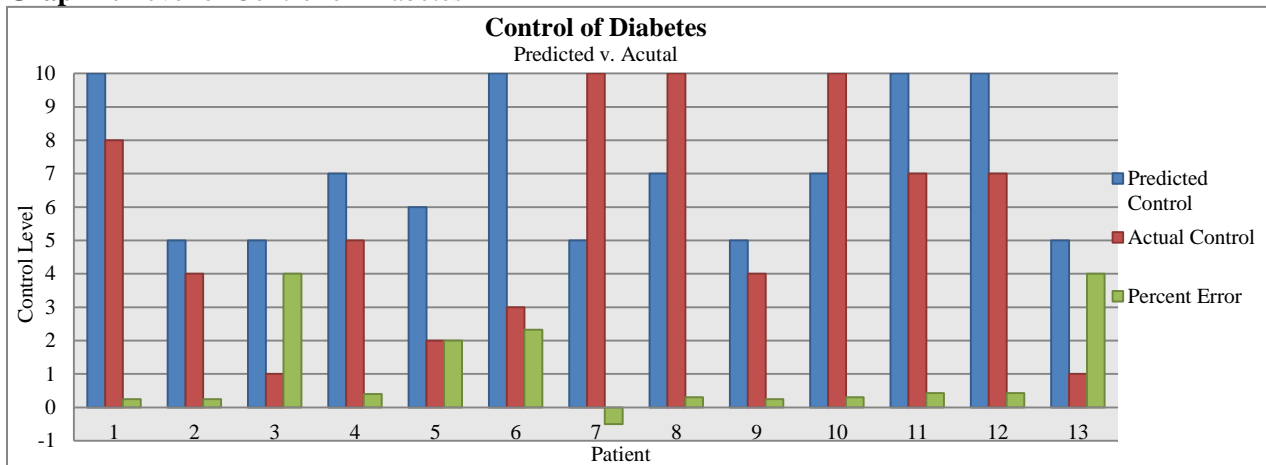
Patient Interviews

A total number of thirteen patients were interviewed, all of whom had varying levels of control with their diabetes. Based on patient response to three specific questions (questions number six, seven, and eight – see Appendix – 2), patient results were tallied and charted in Figure 2 and Chart 1. In addition, a summary of patient responses to the questions can be found in Figure 3, as well as in Appendix – 5.

Figure 2. Control of Diabetes via Diet

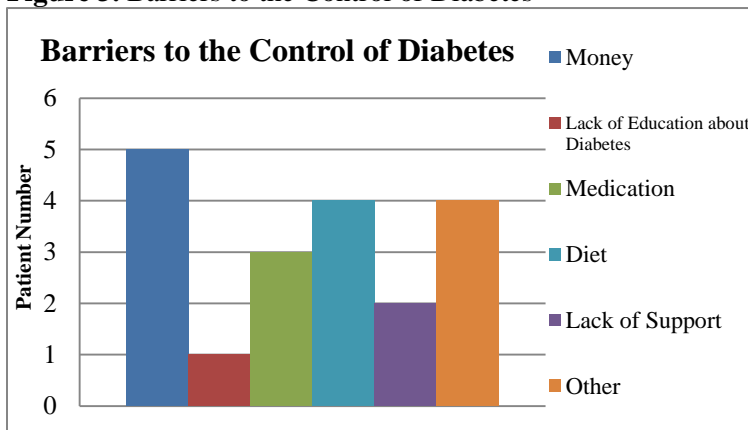


Graph 1. Level of Control of Diabetes



*Percent Error is reflected as a percentage of either inflation or deflation. Equation used to calculate the given number is: $[\text{predicted control} - \text{actual control}] / \text{actual control} \times 100\%$. For ease in reading, the given graph does not reflect the value multiplied by 100%.

Figure 3. Barriers to the Control of Diabetes



*Some patients selected more than one barrier to the control of their diabetes. Therefore, these numbers do not total to thirteen.

Discussion

Despite the insistent attention dedicated to preventive medicine, the patients of EAFHC are greatly faltering in the control of their diabetes. The key findings of the needs assessment revealed that the vast majority of patients at EAFHC live below the federal poverty line and are either uninsured or underinsured. Due to a lack in adequate coverage, the care in which they receive is limited and not sufficient for a healthy quality of life. In addition to this, the patients of EAFHC are disproportionately suffering from COPD, hyperlipidemia, CHF, hypertension, and diabetes.

Specifically for diabetes, it is one of the top ten health problems affecting patients in rural areas (6). As the level of remoteness increases in a residence, the number of hospitalization and deaths related

to diabetes also increases (5). This trend can be applied to EAFHC, a community health center stationed in a rural county in eastern Arkansas. Though there are patients who willingly choose not to adhere to the rules established in order to effectively control their diabetes, a large percentage of patients at EAFHC attempt to adhere to the rules given by their providers. Despite this attempt, however, many of these patients greatly struggle with the control and management of their diabetes. These patients experience adversities and barriers which ultimately affect their level of control of their diabetes. Many of the key informants stated that the main reason for the noted difficulty in the control of patient diabetes was due to a lack of money and/or insurance (Appendix – 3). When compared to the national average, EAFHC has a higher percentage of patients who are uninsured – seventeen-percent versus the national benchmark of eleven-percent (8). As stated by one of the key informants, a lack of insurance affects the overall delivery of care to a patient. Without the proper funds, patients experience difficulties in purchasing their medication, as well as foods that are in adherence to a diabetic diet. As stated by William, P. et. al., uninsured patients with diabetes have an increased risk to experience grave outcomes with their diabetes. These patients often have inadequate access to health services, as well as the medications necessary to effectively manage their diabetes (7). When asked why they were experiencing difficulty in controlling their diabetes, five out of thirteen patient interviewees stated that money was a major issue (Figure 3). Two interviewees specifically stated that due to a lack of money, they could not purchase foods that they knew were better for managing their diabetes. In addition, another interviewee stated that if EAFHC could provide more affordable alternatives to the prescribed medications, then his diabetes would be under better control.

Aside from the money barrier, patients also struggle with the control of their diabetes due to a limited access to healthy food options, as well as a lack of education on how to properly prepare diabetic-friendly meals. Multiple key informants stated that Crittenden County lacked an adequate supply of nourishing produce in order to foster a positive control of diabetes. Sixty-four-percent of the physical environment of Crittenden County contains fast food restaurants (8). This number far exceeds the national

benchmark – twenty-five-percent. During my windshield survey, I noted three major grocery stores – Big Star, Kroger, and Walmart. Despite the presence of these grocery stores, the quality of produce within the stores is not guaranteed. When asked about why they were experiencing difficulty in controlling their diabetes via diet, four patient interviewees mentioned that there were not many places to buy good food. Many patient interviewees stated that due to its convenience and affordability, they tended to eat fast food more than twice a week. Some patients did say that they wanted to lessen this number, but due to the crowdedness of the local Walmart, as well as a lack of fresh foods, it was difficult to make a real change. One patient stated that the produce in West Memphis was hardly ever fresh. This same patient stated that in order to find good vegetables and fruits that are also affordable, you had to search hard, which many people in West Memphis did not have time for. This same sentiment was echoed with many of the key informants, who stated that grocery shopping was difficult in West Memphis, Arkansas. Two of the key informants who are residents of Marion (roughly five miles outside of West Memphis) stated that they did their grocery shopping either at a local farmer’s market or Whole Food, both located in Memphis, Tennessee.

In addition to issues with finding fresh, quality produce, patient interviewees also stated having issues with cooking foods properly. Many of the patients stated that their biggest issues when it came to diet control was either a lack of knowledge in how to cook diabetic-friendly meals, a lack of cooperation from individuals preparing their meals, or a distaste for diabetic-friendly meals (Appendix – 5 and Figure 3). One patient stated that she knows to avoid food high in sugar, as well as red meat and pork, but beyond the scope of that, she does not know much more. When asked to choose which food item they preferred (see Appendix – 2, questions number six and seven), sixty-nine-percent of the patients demonstrated either a moderate or poor level of control with their diabetes via diet (Figure 2). One patient interviewee voiced her frustrations in controlling her blood-glucose levels at home. She stated that she rarely ate unhealthy. She watched what she ate, making sure to avoid fried and sugary foods and eating more fruits and vegetables. But when asked about the types of fruits and portion size of the fruits she

consumed, she admitted to eating strawberries, watermelon, and bananas in large quantities. She also admitted to not fully understanding the proper portion sizes of various food groups.

The last barrier which affected a majority of patients was their education on how to properly control their diabetes. When asked about their level of control of their diabetes, no patient interviewee rated himself or herself below a five (Graph 1). All interviewees felt that they had at least a moderate level of control when it came to the management of their diabetes. Many patients stated that they took the prescribed medication, in the correct doses, as well as monitored what they ate. When compared to their actual level of control, however, twelve out of thirteen patients had inflated their level of control by at least fifty-percent. The average level of control for all thirteen patients was 4.8, indicating that most interviewed patients do have a moderate level of control in their diabetes. Despite this fact, however, improvements can still be made in the management of diabetes at EAFHC.

Limitations

Despite the findings listed above, there were areas of limitation in the conducted pilot study. For starters, due to the six-week time constraint, I could not adequately address the needs of the interviewed patients. I set out to hold at least one educational class, where I talked to the patients about the importance of proper portion sizes, as well as how to properly read food labels. In addition, I planned on educating participants on the importance of knowing their calorie, fiber, and sugar intake. Unfortunately, this was not done. In addition, I had a small sample size of patient interviewees. I planned on interviewing at least thirty diabetic patients, five from each age range (Table 1), but due to a no-shows, as well as scheduling complications, this number was not obtained.

Some other barriers that I encountered included the number of HbA1c values available for each patient, the readability of my patient questionnaire, the integrity of responses received during the patient interviews, as well as the subjectivity of the questions asked. Pertaining to the HbA1c values, many patients had less than five recorded A1c values, which made it more difficult to assess the control of their

diabetes. In addition, some patients did not initially understand the questions they were being asked, which posed an initial speed bump in the interview process. Many patients feared that their responses would be reported to their providers. Because of this, they may not have answered questions based on their true preferences.

Recommendations and Conclusion

Despite the barriers of the study, the needs assessment conducted identified areas in which EAFHC can improve in order to better address the management of diabetes. Some suggestions given by the patients include the education of family/support systems of each patient, continuous education of diabetic patients during each scheduled visit, bi-monthly cooking classes demonstrating how to properly cook diabetic-friendly meals, and handouts/pamphlets with recipes that the patients can cook at home. In addition to this, one provider mentioned that monthly home visits, where someone checked the food pantry and refrigerator of diabetic patients could help to manage and control their diabetes. In doing this, patients could physically see which foods are beneficial and which ones are harmful to the management of their diabetes. I also think that EAFHC can benefit from having an on-site registered dietician. This individual would help alleviate some of the stress providers face when managing their diabetic patients. His or her role would strictly be to monitor the diet and lifestyle of each diabetic patient (as well as other illnesses affecting the patient population) at EAFHC. This person could dedicate more time to each patient's individual need, providing a more intimate relationship between provider and patient.

As stated by Paul, C. L., et. al., the use of continuing medical education (CME) is a tool commonly used by health centers in order to help improve their delivery of care (5). There is proven evidence that the use of CME programs, which provide exposure to educational material pertaining to the area of need, helps to improve the overall outcome of the patient. With this being said, it is safe to say that East Arkansas Family Health Center can benefit from the implementation of the above suggestion in order to help its patients in the control and management of their diabetes.

Appendix

Key Informant Interview Questions 1

Patient Interview Questions2

Key Informant Responses 3

Blood-Glucose Conversion Chart 4

Summary of Patient Responses to the Patient Interview 5

Name/Title:

Date:

In your own words, what is a Community Health Center?

What is your role at the East Arkansas Family Health Center/Arkansas Delta AIDS Care?

Nowadays, medicine is being driven towards the money specialties (ie. surgery, cardiology, dermatology, etc.). With this being the case, why did you choose to work in primary care (or more specifically, the HIV/AIDS population)?

How do you think patient care delivery differs at EAFHC when compared to a private practice/hospital-based practice?

How does a lack of insurance affect the delivery of care of a patient?

What are the common illnesses afflicting patients at EAFHC/ADAC? And why are they prevalent?

What do you think is EAFHC's biggest deficiency and what are your suggestions on improvement?

Initials:
Age:
Race:

1. If I gave you \$100, what one snack would you go out and buy?
2. What is your favorite beverage to drink?
3. What did you eat for breakfast yesterday morning?
4. What did you eat for lunch yesterday afternoon?
5. What did you eat for dinner yesterday evening?
6. Which of the following treats would you prefer to eat?
 - a. An apple pie
 - b. Frozen yogurt
 - c. Sugar-free ice cream
 - d. Chocolate chip cookies
7. Which of the following treats would you prefer to eat?
 - a. Fried chicken or baked chicken
 - b. Cheerios or Fruit Loop
 - c. Sauerkraut or coleslaw
 - d. Whole grain bread or white bread
 - e. Brown rice or white rice
 - f. Apple sauce or canned fruit (in syrup)
 - g. Whole milk or skim milk
 - h. Black coffee or coffee with cream and sugar
8. On a scale of 1 to 10, with 1 being never, 5 being somewhat controlled, and 10 being always, how well controlled is your diabetes?
9. Do you check your sugars at home? If so, what numbers do you see?

Why is it that you are an uncontrolled diabetic?

- a. Money
 - b. Lack of understanding in how to control diabetes
 - c. Difficulty/distaste for taking medication
 - d. Difficulty following the proper diet
 - e. Lack of support
 - f. Other
10. What would help you better control your diabetes?
- a. Pamphlets on diabetes (including recommended blood-glucose range, diets, etc.)
 - b. More affordable medication
 - c. Home visits
 - d. Bi-monthly educational classes

Results of the Key Informant Interviews

Themes	Major Findings
State of the Community	<ul style="list-style-type: none"> - Many patients live below the federal poverty line - Many patients do not have insurance or have Medicaid, which all care facilities do not accept - Patients live paycheck to paycheck - High pregnancy rate (teenage and young adult) - Population dependent on gov't assistance to live - COPD, diabetes, hypertension, hyperlipidemia
Effectiveness of Care Delivery	<ul style="list-style-type: none"> - Can only do so much with the amount of time and fee that EAFHC charges - Based on the acuity of the complaint, non-emergent symptoms are often triaged and patients fail to return for follow-up - Lack of access to resources leads to setbacks - Referrals are not always followed through. Despite this, however, EAFHC cannot keep paying for the same issues. This greatly affects patient care - Long wait time to be seen by providers
Strengths of EAFHC	<ul style="list-style-type: none"> - Affordable healthcare - Provides transportation - Providers/Staff has a good heart (will pay for meds when patients cannot afford it) - One of few health centers who accept Medicaid - Meets the needs of the unique community it serves - Provides holistic care to its patients - See less patients compared to a hospital → provides more intimate care
Biggest Needs of EAFHC	<ul style="list-style-type: none"> - More federal funding - More resources - Higher emphasis/enforcement of preventive medicine - Improvement in the education of patient population - Improvement on the delivery of care to patients without insurance

Blood Glucose Conversion Chart

HbA1C - mg/dl - mmol/L

HbA1C	4.0	4.1	4.2	4.3	4.4	4.5	4.6	4.7	4.8	4.9
mg/dl	65	69	72	76	79	83	76	90	93	97
mmol/L	3.6	3.8	4.0	4.2	4.4	4.6	4.8	5.0	5.2	5.4
HbA1C	5.0	5.1	5.2	5.3	5.4	5.5	5.6	5.7	5.8	5.9
mg/dl	101	104	108	111	115	118	122	126	129	133
mmol/L	5.6	5.8	6.0	6.2	6.4	6.6	6.8	7.0	7.2	7.4
HbA1C	6.0	6.1	6.2	6.3	6.4	6.5	6.6	6.7	6.8	6.9
mg/dl	136	140	143	147	151	154	158	161	165	168
mmol/L	7.6	7.8	8.0	8.2	8.4	8.6	8.8	9.0	9.2	9.4
HbA1C	8.0	8.1	8.2	8.3	8.4	8.5	8.6	8.7	8.8	8.9
mg/dl	207	211	215	218	222	225	229	232	236	240
mmol/L	11.6	11.8	12.0	12.2	12.4	12.6	12.8	13.0	13.2	13.4
HbA1C	9.0	9.5	10.0	10.5	11.0	11.5	12.0	12.5	13.0	13.5
mg/dl	243	261	279	297	314	332	350	368	386	406
mmol/L	13.6	14.6	15.6	16.6	17.5	18.5	19.5	20.4	21.4	22.4
<i>provided by Sue Rafati, LADA Life, www.ladalife.com</i>										

***Informal interviews:** individual titles and responses were not recorded due to confidentiality of the interviewee.

Ranking System: The ranking system was generated by using the guidelines created by the American Diabetes Association. In order to diagnosing an individual as diabetic, this individual must have two consecutive hemoglobin A1C (HbA1c) values that are greater than or equal to 6.5%. In addition to this, the individual can be diagnosed by having a fasting blood-glucose of greater than or equal to 126 mg/dL. I created my ranking system by starting at a HbA1c value of 5.7% and then grouped the categories in increments of five units. The ranking system can be found below:

10 – (5.7 – 6.2)	6 – (8.1 – 8.6)	2 – (10.5 – 11.0)
9 – (6.3 – 6.8)	5 – (8.7 – 9.2)	1 – (11.1 and above)
8 – (6.9 – 7.4)	4 – (9.3 – 9.8)	
7 – (7.5 – 8.0)	3 – (9.9 – 10.4)	

Summary of Patient Responses

Category	Major Findings
<p>General Level of Control</p>	<p>The average of all interviewed patients was 4.0 (based on the given scale stated in the methods), which is a moderate level of control. Most patients stated that they felt comfortable with the management of their diabetes.</p>
<p>Adherence to a Diabetic Diet</p>	<p>Most patients admitted to having difficulty with adhering to the diet. Reasons for difficulty include a lack of affordable foods, not knowing which foods to avoid, a distaste for certain foods, no convenient grocery stores, eating what others cook for them (therefore cannot control how food is prepared), not knowing how to properly read food labels</p>
<p>Level of Understanding “Good” and “Bad” Diabetic Foods</p>	<p>For the most part, most patients understood what foods were good for managing their diabetes, as opposed to those foods that were bad. Many patients chose foods that the American Diabetes Association classifies as healthy for diabetics (ie. baked chicken over fried chicken, skim/2% milk over whole milk). Many patients did, however, state that sometimes they still eat what is not healthy for controlling their diabetes simply because the food items taste better.</p>
<p>Suggestions for EAFHC</p>	<p>Bi-monthly cooking classes that show how to cook food according to the recommended guidelines, recipe handouts during each visit, more affordable medication/insulin test packs, home visits, and better education on how to control diabetes. Some patients also mentioned that they either did not need help, or that the center had been providing everything they possibly could in order to manage their diabetes.</p>

*Responses to Patient Interviews went beyond the scope of the listed questions. This chart reflects these responses.

Works Cited

1. “About Us.” (2013). *East Arkansas Family Health Center, Inc.* <<http://www.eafhc.org/>>.
2. “Crittenden County Health Profile Data”. (2011). *Arkansas Department of Health*. 1 – 7.
<<http://www.healthy.arkansas.gov/programsServices/healthStatistics/Documents/Publications/CountyHealthData/crittenden.pdf>>.
3. “Food and Fitness”. (2013). *American Diabetes Association*. <<http://www.diabetes.org/food-and-fitness/food/what-can-i-eat/>>.
4. Marchiando, Catherine. (2013) “East Arkansas Family Health Center – New Horizons Health Center: Capital Project Request for Funding”. *Guidian Healthcare Consulting*. 1 – 7.
5. Paul, C. L., et. al. (2013). “Diabetes in rural towns: effectiveness of continuing education and feedback for healthcare providers in altering diabetes outcomes at a population level: protocol for a cluster randomised controlled trial”. *Implementation Science*. 8 (30): 1 – 8.
6. Shephard, M. D. S., et. al. (2005). “The impact of point of care testing on diabetes services along the Victroia’s Mallee Track: Results of a community-based diabetes risk assessment and management program. *Rural and Remote Health*. 5 (31): 1 – 15.
7. William, P., Belue R., Figaro M. K., Peterson J., Wilds C. (2013). “The Diabetes Healthy Outcomes Program: Results of Free Health Care for Uninsured at a Federally Qualified Community Health Center”. *J Prim Care Community Health*.
8. “Scholar Handbook”. (2013). *GE-NMF Primary Care Leadership Program*. 1 – 51.