

2010

## Primary Care of the Adult with Diabetes

Debra Gates  
*St. John Fisher College*

### How has open access to Fisher Digital Publications benefited you?

Follow this and additional works at: [http://fisherpub.sjfc.edu/nursing\\_etd\\_doctoral](http://fisherpub.sjfc.edu/nursing_etd_doctoral)

---

#### Recommended Citation

Gates, Debra, "Primary Care of the Adult with Diabetes" (2010). *Nursing Doctoral*. Paper 5.

Please note that the Recommended Citation provides general citation information and may not be appropriate for your discipline. To receive help in creating a citation based on your discipline, please visit <http://libguides.sjfc.edu/citations>.

This document is posted at [http://fisherpub.sjfc.edu/nursing\\_etd\\_doctoral/5](http://fisherpub.sjfc.edu/nursing_etd_doctoral/5) and is brought to you for free and open access by Fisher Digital Publications at St. John Fisher College. For more information, please contact [fisherpub@sjfc.edu](mailto:fisherpub@sjfc.edu).

---

# Primary Care of the Adult with Diabetes

## **Abstract**

The landmark diabetes studies of the 1990's demonstrated to the world the importance of blood glucose control in diabetes mellitus. It is now without question controlling blood sugar significantly reduces the development of or delays the onset of diabetes related complications. Since the time of these research findings, there has been a tremendous amount of effort to both develop and study strategies that were most effective in managing diabetes. Despite this, it has been said that diabetes care in the United States is suboptimal (Mc Laughlin, 2000, p.5). Many studies individually show promise. Collectively these studies may also form the basis of support to the best approach to care. A description of the problem of diabetes in adults and a description of the current practice in the primary care setting precedes an analysis of the studies which have been categorized as to their relevance in support of the components of the Chronic Care Model.

## **Document Type**

Dissertation

## **Degree Name**

Doctor of Nursing Practice

Running Head: PRIMARY CARE OF THE ADULT WITH DIABETES

Primary Care of the Adult with Diabetes

State of the Science

Debra Gates

St John Fisher College

Abstract

The landmark diabetes studies of the 1990's demonstrated to the world the importance of blood glucose control in diabetes mellitus. It is now without question controlling blood sugar significantly reduces the development of or delays the onset of diabetes related complications. Since the time of these research findings, there has been a tremendous amount of effort to both develop and study strategies that were most effective in managing diabetes. Despite this, it has been said that diabetes care in the United States is suboptimal (Mc Laughlin, 2000, p.5). Many studies individually show promise. Collectively these studies may also form the basis of support to the best approach to care. A description of the problem of diabetes in adults and a description of the current practice in the primary care setting precedes an analysis of the studies which have been categorized as to their relevance in support of the components of the Chronic Care Model.

Diabetes mellitus (DM) is diagnosed with documentation of two elevations ( $\geq$  126 ng/dl) in the fasting blood sugar. “Type 1 DM results from immune mediated destruction of pancreatic beta cells resulting in a state of insulin deficiency” (Fonseca, 2006 p. 6). In the absence of insulin, the blood sugar rises and hyperglycemia results.

Type 2 DM results from a complex interplay of insulin resistance, progressive beta cell dysfunction and adipokines (hormones and cytokines produced by adipose tissue thought to contribute to the pathophysiology of type 2 DM). Type 2 is also a component of metabolic syndrome characterized by vascular inflammation, endothelial dysfunction, hypertension, dyslipidemias, central obesity and hypercoagulable states. Although insulin is present in the case of type 2 diabetes, there is a resistance to the effects of insulin at the cellular level. Blood sugar rises as a result. The population of people with metabolic syndrome is most at immediate risk of developing type 2 DM. (p. 21).

With the looming epidemic of obesity across all ages, this increases the magnitude of need to reach the goals for management of DM.

The landmark study, The Diabetes Control and Complications trial in 1993, demonstrated the relationship between the control of blood sugar and the significant reduction in diabetes related micro-vascular complications of retinopathy, nephropathy and neuropathy as well as the macro-vascular complications of coronary artery disease in those with type one DM (DCCT, 1993). The United Kingdom Prospective Diabetes Study (UKPDS) in 1998 demonstrated a similar relationship with those with type 2 DM.

Based on these findings, a steering committee was formed comprised of the most knowledgeable individuals in the field of diabetes care as well as consumers of diabetes care. The intent of this committee was to recommend specific performance and outcome measures for diabetes. The result of this work identified, glycemic (blood sugar) control, lipid (cholesterol) control, blood pressure control, regular foot exams, regular eye exams, and a regular tests of renal function, to be the desired quality measures (McLaughlin

2000, p. 6). These were communicated to the primary care practice setting and the expectation was for providers to manage this population and assist those with DM in meeting the identified measures.

At a time when there were few community resources, limited and inconsistent knowledge of the research of the medications and other aspects of care to manage this disorder, a flurry of more research and development of new methods of treatment sprang forth. Equipped with guidelines, new weapons (medications) and undisputed research, well intended primary care providers and patients set out to tackle blood glucose control and realize the associated benefits of decreased incidence of complications. Although full of promise, perhaps the new medications and treatment options coupled with lack of infrastructure to meet the care standards confused and frustrated the patients and providers of care. Perhaps the other pressures of the industry took priority. The new knowledge of the benefits of complication reduction through management of this complex disorder made it more urgent. Yet, study after study failed to find the magic bullet to consistently achieve blood sugar control. This kept the label, suboptimal diabetes care, accurate.

The burden of DM, with estimated cost in excess of \$132 billion (Fonesca, p. 589) per year, is high to the individual, family and community. It seemed like a noble and straightforward pursuit to reduce the chance patients would need to continue with suboptimal care. The complexity of the disorder demands a review of the many facets of diabetes care from the primary care setting to care components and specific interventions.

Detection and care for DM in the adult is provided in the primary care setting. Sometimes patients learn they have DM through screening once they reach a certain age,

if they have a positive family history or meet other risk criteria. Many patients are unaware they may have diabetes until they are hospitalized for another disorder or surgery when the associated testing reveals an elevation in the blood sugar. During pregnancy, screening is done if at high risk, i.e., there is a positive family history of diabetes or symptoms suggest the possibility. Those who are diagnosed with diabetes during pregnancy may seek earlier testing in adulthood as they are identified at high risk during their childbearing years. Once diagnosed, treatment begins. The cornerstones of treatment are nutritional therapy, exercise, diabetes self management education and self blood glucose monitoring. Medications are prescribed if indicated based on the level of the blood sugar and determination of type 1 or type 2 DM. Type 1 DM is treated with insulin. Algorithms of medication treatment options for those with type 2 DM are available based on the clinical guidelines. As previously mentioned, based on the Diabetes Quality Improvement Project (DQIP) a set of measures were developed and the indicators for diabetes quality set to be used in primary care. These are as follows;

**DQIP Accountability Measure Set: Synopsis**

1. Percentage of patients receiving  $\geq 1$  glycohemoglobin (HbA<sub>1c</sub> test/year
2. Percentage of patients with the highest risk glucose level (i.e., HbA<sub>1c</sub> >9.5%)
3. Percentage of patients assessed for nephropathy
4. Percentage of patients receiving a lipid profile once in 2 years
5. Percentage of patients with a low-density lipoprotein cholesterol level <130mg/dl
6. Percentage of patients with blood pressure of <140/90 mm Hg
7. Percentage of patients receiving a periodic dilated eye exam

**DQIP Quality Improvement Measure Set: Synopsis**

1. Hemoglobin A1c levels of all patients reported in five categories (i.e.,  $\leq 7.5\%$ , 7.51-8.50%, >9.50%, not measured)
2. Distribution of low density lipoprotein cholesterol values
3. Distribution of blood pressure values
4. Proportion of patients receiving a well-documented foot exam, including a risk assessment

**DQIP Patient-Reported Measure Set: Synopsis**

Quality Improvement Set

1. Self-management education
2. Medical nutrition therapy
3. Patient satisfaction (e.g., access to care, patient involvement in care decision, provider communication skills)

**Accountability Set**

1. Annual foot exam
2. Smoking cessation counseling (McLaughlin, 2000. pp. 2-3).

The question arises, in the case of adult patients with DM, why does the current method of service in the primary care setting not lead to the desired outcomes as established by the Diabetes Quality Indicator project (DQIP)?

In the pursuit of this question, the research was extracted using key words: diabetes mellitus, adult, adherence, compliance, quality, outcomes, relationship, barriers and gaps. A variety of data bases were queried, including EBSCO host web, Academic Search Premier, CINAHL, Medline, ProquestNursing, PsychARTICLES, SOCINDEX , Health Source: Nursing Academic, and the Cochrane Library. Quantitative, qualitative, and descriptive studies were included in the review as well as. Case studies, and systematic reviews were also reviewed. A variety and vastness to the research was discovered. With the determination of the standards, clinical guidelines and subsequently the measures of quality, many studies have been designed and conducted in search of the secret to why blood sugar control is so difficult.

The state of the science in managing this population is varied and diverse. However, with synthesis of the literature, one can see the value of the studies categorized under the components of the Chronic Care Model (CCM) which has demonstrated some promise to improve outcomes with the adult population with DM. Perhaps the shift in

focus comes from looking at what is working to manage this population instead of searching for a magic bullet in the way of medication, intervention, or patient transformation. Efforts in the last few years have shifted to study a supportive system of preventing or managing tremendously complex diseases.

The component of care for those adults with diabetes mellitus shown to be effective in the literature includes those of the chronic care model. According to Wagner, as cited in Bodenheimer, Wagner and Grumbach (2002), this includes, “community resources and policies, health care organization (goals structures and values), self management support, delivery system design, decision support (evidence based) and computerized clinical information systems” (p. 1776). The supporting studies can be categorized under the components of this model bolded in the description for easy identification.

Provider organizations need linkages with **community based resources** such as case management, self-help groups and education classes. As well **policy** needs to support the efforts of those managing and treating the disorder. **Self management support** involves collaboratively helping patients and their families acquire the skills and confidence to manage their chronic illness. **Decision support** includes integrating evidence based practice guidelines and standards into everyday practice” (Bodenheimer, Wagner, & Grumbach. (2002, p 1776).

The Diabetes Attitudes, Wishes and Needs (DAWN) cross sectional international study reported that providers in the primary care setting often did not identify the psychological problems that were affecting diabetes care and thus referred only 10% of those that needed to have been referred ( Peyrot, Rubin, Lautizen, Snoeks, &Skovlund, 2005. p. 1379). It was suggested that improvements in provider skill, workload and referral sources could assist in managing this more effectively.

Likewise, Cienchanoski, Katon, Russo, & Walker (2001) studied adult attachment theory. The findings showed a significant effect of the attachment style to glycemic control (hemoglobin A1C). “Patients who had a dismissing (inflexible) attachment style had significantly higher measures of glycemic control than patients with preoccupied or secure attachment” (p.32). This knowledge could improve control by targeting specific interventions or criteria for appropriate referral to meet the needs of those with dismissing styles as well as bring a realistic view of the ability to achieve target glycemic control ranges with this population.

In a study of 1,653 Veterans, health care providers are cautioned to consider the burden of diabetes care to their patients when making clinical and policy decisions about the management of chronic disease. Patient views of the burden were the strongest consistent independent predictor of both self-rated level of adherence to therapy and willingness to accept insulin therapy.” (Vjan, Hayward, Ronis, and Hofer, 2005, p. 481).

The “presence of co-morbidities limiting physical function, and cognitive function were associated with barriers to self management of diabetes and less glycemic control” as well (Bayliss, Ellis, Steiner, 2007 p. 395). A point was made for the provider to be more aware of sources of support and referral for this population. This in turn makes a argument for a case management approach, another component of a chronic care model, for optimum self management support.

Clark, Hampson, Avery & Simpson (2004) found the “intervention of follow up phone calls had the effect of an increased perception in patients that they had moved to the action phase of change from the contemplation level of change in managing their dietary fat reduction and lifestyle activity levels” (2004. p. 440). Patients in this study also “sustained the action phase of change after 12 months” (p. 446). This intervention

supports the chronic care model as well as follow up phone calls are often a component of case management in the CCM.

“General and diabetes specific communication conducted by the primary provider of diabetes management was found to support self management” in a study of patients from three Veterans Administration systems (Piette, Schillinger, Potter & Heisler. 2003, p. 628). The need for continuity of care with this population makes the chronic care model a logical choice.

Stubbs (2007), in a qualitative study of 21 adults with type 2 diabetes sought to “understand what type of care people with diabetes are looking for and what will help them be empowered in the management of their condition” (p. 191). Although conducted on a small population, powerful themes emerged. These include:

The relationship with the health care provider affects adherence to the management plan. Perception of diabetes affects adherence to management plan. Established health beliefs affect the way individuals respond to their diagnosis, Disparity exists in understanding of diet and exercise (p. 193).

This is helpful to the provider as well to sensitize them to the need to assess the level of change the patient may be at and incorporating this into decisions for the plan of care.

Moore and Charvat (2007) acknowledge “the minimal success rate health care providers have had at assisting individuals to adopt and sustain health lifestyles. The suggestion for providers is to move from deficit or problem oriented to affirmative models of thinking” (p. S64). A case approach is illustrated using appreciative inquiry. This suggests providers consider non traditional approaches to better assist patients in diabetes self management.

Three focus groups of 73 African Americans in a rural setting, suggested health care providers “tailor care to the lives and understanding of their patients and include

primary, secondary and tertiary prevention in diabetes care. The patient's ideas for comprehensive care also consider issues of transportation, cost, and access to specialists, alternative therapies and the role of religion and spirituality" (Utz, Steeves, Wenzel, Jones, Murphy, Hinton, & Andrews, 2006. p. 202-203).

Health care organization component of the chronic care model includes structure goals and values of the provider organization. Included are relationships with purchasers, insurers, and other providers. It is expressed that if the goals of the provider organization do not view chronic care as a priority, innovation will not take place. Delivery system design is the structure of the medical practice which supports the chronic care model (Bodenheimer, Wagner and Grumbach. 2002, p. 1774).

Included in these studies which have been categorized as relevant to these components of the chronic care model are suggestions for use of the transtheoretical model and the five stages of change in the primary care setting. A case study illustrates this "readiness for change concept as well as the five stages of change; pre-contemplation, contemplation, preparation, action and maintenance" (Singer, 2007, p. 11-13). Although case studies are low on the scale of strength for evidence, in the current environment of suboptimal outcomes in the control of diabetes, one must remain open to components of not only a shifting model of care but also paradigms of thinking.

The Diabetes Master Clinician Program was created by the Florida Academy of Family Physicians in 2003 to address the performance gap in diabetes care. Fifty eight practices and 8657 patients participated. The results demonstrated improvement in meeting the American Diabetes Association goals for; LDL cholesterol levels ( $\leq 100$  mg/ml, 53%), BP goal ( $\leq 130$ mm Hg systolic, 54%) and Hgb A1c ( $\leq 7$ , 54%). The percentages of clinics meeting all three goals, varied from 14% to 44%, but at the time of the study, these were a significant increase in the percentage meeting these outcomes nationally (7%). Cost savings were documented as well as calculated by an independent actuarial firm (Shahady, 2008, p. 331),

However, the total figure of cost savings was not documented in the study. In the practice setting, centralized reporting of these outcomes has only recently been mandated

by Medicare. Perhaps the 7 % is not truly reflective of the true percentages today. It has yet to be determined whether the 14-44 % is an actual improvement with more consistent data currently being collected across the country. Lessons learned from this study include the “potential for use of a diabetes registry, group visits and a team approach” (p. 341), again, components of a shift to a chronic care model. In addition, implementation tools were created and made available to providers through this study project.

Limitations included the lack of detail regarding the methods and control of variables for this observational study; however those in the field again may now look to the specific clinics with the best outcomes and suggest the most effective strategies to meet outcomes.

Bonomi, Wagner, Glasgow, and VanKorff (2002) developed a practical assessment tool to measure quality improvement in chronic illness care called the Assessment of Chronic Care (ACIC).

“Populations of those with diabetes as well as congestive heart failure were used to validate the tool to guide quality improvement efforts. The results from this study showed all ACIC scores being responsive to system improvements the teams made over the course of the collaborative ( $p < .05$ ). The most substantial improvements were seen in decision support, delivery system design and information systems” (p. 791).

Development of a valid and reliable tool for measurement of quality that also guides practices to improvement efforts will certainly contribute to management of this population. Perhaps this might serve as a good first step to assess practices and determine the improvement efforts that would be most important to the outcomes. The authors make note that this was “one of the first comprehensive tool to look at the organization of care for chronic illness rather than a traditional outcome or process measures” (p. 791). Certainly the wide spread study review method experience lends

support to consider adopting a standardized assessment, evaluation and improvement method.

Parchman, Pugh, Wang, & Romero (2007) used a cross sectional, observational study of 618 patients. Hemoglobin A1C of adults with type 2 DM and the practice consistency with the chronic care model (CCM) were measured. A significant relationship was found with ACIC score and hemoglobin A1C, but it varied with the self care behavior for exercise. The conclusions of this study supported the use of a CCM as the clinics with the highest ACIC scores were those with the best glycemic control (p. 801).

The Diabetes Priority randomized controlled trial of 886 patients receiving care from 52 primary care practices showed the “benefit of a computer assisted intervention in significantly improving follow up rates of foot exams, nutrition counseling and recommended laboratory testing” (Glasgow, Nutting, King, Nelson, Cutter, Gaglio, Rahm, Whitesides & Amthauer, 2004. p.1170-1171). The intervention was easily incorporated into a routine visit by practice staff and was very cost effective making it translatable to the practice setting.

Clancy, Huang, Okofua, Yeager, and Magruder ( 2006) used a randomized controlled trial of 186 patients with diabetes to study the effects of group visits to adhering meet the American Diabetes Association (ADA) guidelines. Although “there was significant improvement in the group visit patients to receive the ADA process of care indicators, data was collected using blinded medical record review” (p. 622). This suggests the possibility for gaps in data for analysis.

Davis, Sawyer, and Vinci further reviewed the literature related to the use of group visits (2008) and “concluded this method to be effective in improving glycemic control as well as other quality indicators” (p. 60). In addition, practical suggestions for implementation were offered.

Clancy, Brown, Magruder and Huang (2003) studied the effect of group visits on clinical outcomes in a population of 120 patients with diabetes. This represented those deemed medically and economically disadvantaged. The findings showed significant “improvement in achieving the ADA process of care indicators as well as significantly higher scores in the Trust in Physician scale” (p. 11).

Liebman and Heffernan (2008) studied the effect of community health workers to improvements in quality in diabetes care. Although the authors could not conclude the community health workers alone were effective in improvement, the drastic improvement in “keeping appointments 71.8% to 93.5 % and the improvement in glycemic control (hemoglobin A1C) 8.4% to 7.5% (and for those with an hemoglobin A1C >10, the percentage went from 18.2 % to 10.8%) was believed to have been linked. Community health worker value has been hypothesized to be the intervention to capture the population lost to follow up and at risk to adverse outcomes (p. 76).

In summary, this author has experienced instances of patients reporting taking less insulin to “make it stretch until the next check, not being able to buy the right food, the problem with cost when they are in the Medicare donut hole, etc. The list is endless. Even with the knowledge of the success of the CCM, primary and specialty care offices would struggle in the present reimbursement climate to have the resources they need to manage patients i.e. electronic data bases, diabetes educators, and case managers.

Furthermore, our current model and to some extent the CCM leaves the cornerstones of treatment up to the individual and becomes punitive when goals even attempted or not reached versus really understanding why. The ethics of this situation also comes to question as well as suggested by Chatterjee (2008) when health care providers “label patients as non compliant with out much thought having been given to the causes of poor adherence” (p.507). The transtheoretical change model suggests a new view of poor adherence.

It has been quite a discovery for this author to have a broader sense of the science of diabetes primary care in the adult population. Identified as the Silent Killer on a recently televised Public Broadcasting system program series Remaking American Medicine (2006), brings to light the issue of a common but complex situation. Even after this extensive review, all the pieces to the puzzle have not been uncovered. In fact, after this review and the hope of the CCM this author is not convinced this is the ultimate answer. The scope of the situation will require more action relative to health policy as well as incentive. Diabetes has been and continues to be a public health problem and therefore lends itself to the needs for public health control much in the way as other public health problems. As indicated in the name of the recent film, this problem is of epidemic proportions but silent. Hidden from true death rate statistics, masked as cardiovascular disorders, diabetes mellitus sits as the secondary or tertiary diagnosis. Of course having knowledge of the pathophysiology of diabetes, one can conclude the etiology for the cardiovascular disease and ultimate death is diabetes mellitus.

I have a sense, all will be revealed in time when we as a nation or world focus our collective energies on root causes and seek to take real action on diabetes. For now,

selecting the best approach with the knowledge we have at hand is the area of focus. Of great value will be for the practice areas to assess themselves using the ACIC and the DQIP and set the sail for improvement based on these findings. The realities of limits on resources and managed care pressures make this focused approach even more attractive. Unfortunately, it may be the insurance company payers to take the lead on this as they are the ones with the best data as to performance, and are currently in charge of the health care dollars. In many respects, this alone confounds the problem.

In my model of the future, the public health model will be used to identify, prevent and or manage diabetes. This might include such things like routinely doing risk factor screening of individuals at the places they work, learn or play. Referral to the most appropriate health agency would then be made such as to an exercise program which is at the worksite, school or community center. Health days will be as liberal as sick days to give incentive for those to care for themselves. Weight management and exercise will be rewarded by lower insurance premiums. Exercise supervised by health care professionals would be readily available to those with co-morbidities in need of advanced monitoring. Health policy would give restaurants and the food industry incentive to produce and sell more responsibly, as has occurred with the tobacco industry. For example, it should be as difficult to get a twinkie in this country as it is in Europe. Efforts would be made to build healthy communities where walking and exercising is so much a part of everyday life, businesses and schools include this as part of the routine day. Sometimes the answer to complex situations is to focus on the basics of health. As the qualitative studies revealed focusing on the little things to simplify the processes of health will occur when we truly focus on the messages from patients. Prevention of diabetes and diabetes complications

through education, nutrition, exercise, and treatment of appropriate medication regimes can significantly decrease the burden of diabetes care in this country. Patients have expressed the need to “work hard with it” (Utz et al., 2006). Now, it is time to use the best model to support this hard work.

References

- Bayliss, E., Ellis, J., and Steiner, J. (2007). Barriers to self-management and quality of life outcomes in seniors with co-morbidities. *Annals of Family Medicine*. 5, 395-401. Retrieved September 25, 2008 from *Ebsco host* data base.
- Bodenheimer, E., Wagner, E., and Grumbach, K. (2002) Improving primary care for patient with chronic illness. *JAMA*, 288, 1775-1779. Retrieved October 8, 2008 from [www.jama.com](http://www.jama.com) at Rochester General Hospital.
- Bodenheimer, E., Wagner, E., and Grumbach, K. (2002) Improving primary care for patient with chronic illness: the chronic care model-part 2. *JAMA*, 288, 1909-1914. Retrieved October 8, 2008 from [www.jama.com](http://www.jama.com) at Rochester General Hospital.
- Bonomi, A., Wagner, E., Glasgow, R., and Von Korff, M. (2002). Assessment of chronic illness care (ACIC): A practical tool to measure quality improvement. *Health Services Research*. 37, 791-820. Retrieved Oct 1, 2008 from *Ebsco host* database.
- Ciechanowski, P., Katon, W., Russo, J., and Walker, E., (2001). The patient and provider relationship: Attachment theory and adherence to treatment in diabetes. *The American Journal of Psychiatry*. 159, 29-35. Retrieved October 1, 2008 from Proquest Nursing and Allied Health Source.
- Chatterjee, J. (2006). From compliance to concordance in diabetes. *Journal of Medical Ethics*, 32, 507-510. Retrieved September 24, 2008 from *Ebsco host* database.

References Con't

- Clark, M., Hampson, S., & Avery, L., (2004). Effects of a brief tailored intervention on the process and predictors of lifestyle behavior change in patients with type 2 diabetes. *Psychology, Health and Medicine*, 9, 440-449. Retrieved September 25, 2008 from *Ebsco host* data base.
- Clancy, D., Brown, S., Magruder, K., and Huang, P. (2003). Group visits in medically and economically disadvantaged patients with type 2 diabetes and their relationships to clinical outcomes. *Topics in Health Information Management*, 24, 8-14. Retrieved Oct. 9, 2008 from *Ebsco host* database.
- Clancy, D., Huang, P., Okonofua, E., Yeager, D., and Magruder, M. (2007). Group visits: promoting adherence to diabetes guidelines. *Journal of General Internal Medicine*. 22, 620-624. Retrieved Sept. 29<sup>th</sup> 2008 from *Ebsco host* database.
- Davis, A., Sawyer, D., & Vinci, L. (2008). The potential of group visits in diabetes care. *Clinical Diabetes*. 26, 58-62. Retrieved September 20, 2008 from *Proquest Nursing and Allied Health Source* database.
- Fonseca, V. (2006). *Clinical diabetes translating research into practice*, New Orleans, Louisiana: Elsevier Inc.
- Glasgow, R., Nutting, P., King, D., Nelson, C., Cutter, G., Gaglio, B., Rahm, A., Whitesides, H., and Amthauer, H. (2004) A practical randomized trial to improve diabetes care. *Journal General Internal Medicine*, 19, 1167-1174. Retrieved October 8, 2008 from *Ebsco host* data base.
- Kalavatis, K. ( 2008). Diabetes educators are working hard to overcome financial barriers. *Endocrine Today*. 6, 12-14.

References con't

- Kulzer, B., Hermanns, N., Reinecker, H and Hack, T.(2007). Effects of self- management training in Type 2 diabetes: a randomized, prospective trial. *Diabetic Medicine*, 24, 415-423. Retrieved Sept 30, 2008 from *Ebsco host* data base
- Liebman, J., and Heffernan, D. (2008). Quality improvement in diabetes care using community health workers. *Clinical Diabetes*, 26, 75-76. Retrieved October 8, 2008 from *Proquest Nursing and Allied Health Source*.
- McLaughlin, S. ( 2000). The diabetes quality improvement project. *Diabetes Spectrum*, 13, 5-11. Retrieved October 22, 2008 from <http://journal.diabetes.org/diabetesspectrum/00v13n/pg5.htm>.
- Moore, S., and Charvat, J. (2007). Promoting health behavior change using appreciative inquiry; moving from deficit models to affirmation models of care. *Family Community Health*, 30, S64-S74. Retrieved October 1, 2008 from *Ebsco host*.
- Nagelkerk, J., Reick, K., and Meengs, L. (2006). Perceived barriers and effective strategies to diabetes self management. *JONA*. 151-158. Retrieved September 27<sup>th</sup>, 2008 from *Ebsco host* database.
- Parchman, M., Pugh, J., Wang, C., and Romero, R.(2007). Glucose control, self care behaviors, and the presence of the chronic care model in primary care clinics. *Diabetes Care*, 30, 2849-2857. Retrieved October 5, 2008from *ProQuest Nursing and Allied Health Source* database.

References con't

- Piette, J., Schillinger D., Potter, M., and Heisler, M. ( 2003). Dimensions of patient provider communication and diabetes self care in an ethnically diverse populations. *Journal of General Internal Medicine, 18*, 624-633. Retrieved September 25<sup>th</sup> from *Ebsco host* database.
- Peyrot, M., Rubin, R., Lauritzen, T. Snoeks, F., Mathews, D., and Skovlund, S. on behalf of the DAWN advisory panel (2005). Psychosocial problems and barriers to improved diabetes management: results of the cross-national diabetes attitudes wishes and needs (DAWN) study. *Diabetic Medicine. 22*, 1379-1385. Retrieved September 25, 2008 from *Ebscohost data* base.
- Shahady, E. (2008).Diabetes management: an approach that improves outcomes and reduces cost. *Consultant. 48*, 331-341.
- Shafer, M. (producer/director) (2006). Remaking American medicine; Healthcare for the 21<sup>st</sup> century [Motion Picture] (Available from the Public Broadcasting Service Cross Keys Media, Santa Barbara, CA).
- Singer, E.(2007). The transtheoretical model and primary care: “The times they are a changin”. *Journal of the American Academy of Nurse Practitioners. 19*, 11-14. Retrieved October 8<sup>th</sup> from *Ebsco host* database.
- Stubbs, M., (2007). Empowerment in middle-aged people with diabetes: the importance of working relationships. [Electronic version]. *Journal of Diabetes Nurisng. 11*, 190-195.

References con't

- The Diabetes Control and Complications Trial Research Group, (1995). The effect of intensive diabetes therapy on the development and progression of long term complications in insulin dependent diabetes mellitus. *New England Journal of Medicine* 329, 977-986.
- United Kingdom Prospective Diabetes Study (UKPDS) (1998), Relative efficacy of randomly allocated diet, sulfonylurea, insulin or metformin in patients with newly diagnosed non-insulin dependent diabetes followed for three years. *BMJ*, 310, 83-88.
- Utz, S., Steeves, R., Wenzel, J., Jones, R., Murphy, A., Hinton, I., Andrews, D., and Oliver, N. ( 2006). "Working hard with it" Self management of type 2 diabetes by rural african americans., *Family Community Health* 29, 195-205. Retrieved September 25, 2008. from *Ebsco host* database.
- Vjan, S., Haywood, R., Ronis, D., and Hofer, T. (2005). The burden of diabetes therapy implications for the design of effective patient centered treatment regimes, *Journal of General Internal Medicine*, 20, 479-482. Retrieved October 8, 2008 from *Ebsco host* data base.