

Collaborative Practice Benefits Patients: An Examination of Interprofessional Approaches to Diabetes Care

Kristin Hellquist, MS, CAE; Ryan Bradley, ND, MPH; Sean Grambart, DPM, FACFAS; Jane Kapustin, PhD, CRNP, BC-ADM, FAANP; Jeremiah Loch, CRNA, DOMTP, PhD, DAAPM

Kristin Hellquist MS, CAE on behalf of Coalition for Patients' Rights

Ryan Bradley ND, MPH Member, American Association of Naturopathic Physicians

Sean Grambart DPM, FACFAS Fellow, American College of Foot & Ankle Surgeons

Jane Kapustin PhD, CRNP, BC-ADM, FAANP Fellow, American Academy of Nurse Practitioners

Jeremiah Loch CRNA, DOMTP, PhD, DAAPM Member, American Association of Nurse Anesthetists

Corresponding Author: Jane Kapustin, PhD, CRNP, BC-ADM, FAANP

Email Address: Kapustin@son.umaryland.edu

For patients, navigating the US health-care system can be difficult due to its complexity. Patients with a multilayered condition like diabetes can face challenges accessing the full range of health-care providers who are trained and qualified to ensure patients receive the care that best meets their individual needs. However, overcoming barriers and leveraging the right array of health-care providers to cooperatively treat a complicated and prevalent disease state such as diabetes can mean better health maintenance, faster healing, and less discomfort for patients, demonstrating the best offerings of interprofessional, collaborative health-care practice.¹

The proportion of adults reporting barriers to timely primary care has increased over the past decade, according to a recent study in the *Archives of Internal Medicine*. More than 12% of respondents to the National Health Interview Survey reported at least one barrier to primary

care, including the hours available to patients, transportation problems and excessive wait times for appointments. Barriers reported were actually up over the last 10 years from 2009, and solutions cited included increasing the supply and availability of primary care providers.²

Delivering quality, cost-effective patient care can sometimes be inhibited by practitioner “turf” battles, when multiple providers can offer the same or similar services. These battles are often the result of tension between a provider who has traditionally performed a procedure or treated a certain condition versus a provider whose scope of practice is growing and can now treat the patient autonomously or as part of the health-care team. Consider the case of diabetes, which a third of Americans will have by 2050 if current trends continue.³ According to the American Diabetes Association, patients with diabetes have average medical expenses approximately 2.3 times higher than patients without the disease. It is estimated that one in every 10 health-care dollars is spent on diabetes.⁴ States are looking to various policy options to help curb this detrimental and costly issue facing many citizens.⁵

Many health-care providers treat diabetes and its related conditions. Scope of practice battles can lead to legislation preventing a nurse practitioner from treating diabetic patients without a doctor's oversight or limiting the area adjacent to the feet that a foot and ankle surgeon can treat. Across the country, more than 960 bills impacting scope of practice were proposed in 2011.⁶ Restrictions in scope of practice can impede a patient's effort to seek treatment from a full range of professionals. Optimally, care is delivered most effectively when the entire team of health-care providers collaborates to use each member's unique and specialized training and expertise to help patients manage their diabetic symptoms and find comfort.

The following four examples illustrate a variety of effective health-care provider partnerships where the diabetic patient can benefit from collaborative care.

Foot and Ankle Surgeons (DPM) Collaborate With a Diverse Team of Health Professionals to Benefit Hospitalized Diabetic Patients

Diabetic foot ulcers are estimated to have an occurrence rate of approximately 25% of patients with diabetes.⁷ One of the sequelae of ulceration is infection, which has been reported to range anywhere from 40% to 80%.⁸ Diabetic foot ulcers are the most common reason for hospital admissions as well as lower extremity amputations.⁹⁻¹² Even within the diabetic population, risk for hospital admission is 56 times greater and risk for amputation in diabetics with foot ulcers versus diabetics without ulceration is 155 times greater.¹³ Once a diabetic foot ulcer or infection has occurred, a multidisciplinary approach is imperative for treatment of this potentially devastating condition.

Using a fictitious case report as an example, a typical scenario is a 55-year-old male who presents to the emergency department with fevers and chills as well as increasing redness, swelling, and drainage from a foot ulcer that he has had for several weeks. The patient has poorly-controlled diabetes with peripheral neuropathy. The patient is admitted to the hospital through the internal medicine hospital team and started on IV antibiotics. The infectious disease team is consulted for the appropriate broad spectrum coverage. With this typical condition, the patient's diet is so poorly managed that both endocrinology and dietitians are necessary.

The foot and ankle surgical service is consulted to evaluate the extent of the infection. Advanced practice providers such as nurse practitioners are part of the foot and ankle team. In order for proper healing to occur, the patient must have an adequate vascular supply, which can be assessed using non-invasive methods such as transcutaneous oxygen pressures and arterial Doppler studies. If there is a poor vascular supply, the vascular surgery or interventional radiology team can perform revascularization.

Radiographs of the foot may or may not reveal osseous changes consistent for osteomyelitis and advanced imaging such as magnetic resonance imaging can be used to aid in the diagnosis of osteomyelitis. If the bone is infected, the foot and ankle surgeon may perform amputation of the infected bone and/or soft tissue. Once the infected tissue has been removed, the wound care center may use hyperbaric oxygen, dressing changes, or a wound vacuum to aid in soft tissue healing and coverage. Once the wound is healed, accommodative inserts can prevent further ulceration and reduce the risk of the ulceration cycle beginning again.

The use of a total team approach is absolutely necessary for treatment and prevention of diabetic foot ulcers and infections. Every member of the treatment team offers valuable expertise that leads to the proper prevention and care of these conditions, making it an optimal patient experience.¹⁴

Diabetes Care Collaboration Between Nurse Practitioners, Certified Diabetes Educators and Doctors of Pharmacy Help Patients

A nurse practitioner (NP) manages comprehensive care for chronic diseases such as diabetes mellitus through a multi-disciplinary practice where patients' needs are met by a variety of health-care professionals.¹⁵ Consider the fictitious case report of a 48-year-old African-American female who has had Type 2 diabetes for more than 8 years. The NP seeing her for the initial visit notices that her hemoglobin A1C (HbA1c) is 10.2% and her fasting blood glucose is 334 mg/dL. The patient reports blurred vision, polydipsia, and polyuria occurring for weeks. Her current medications include glipizide 5 mg daily, metformin 850 mg twice a day, and lisinopril 20 mg daily; she is only testing her blood glucose each morning. She is drinking juice to satisfy her thirst and is not exercising on a regular basis. She has smoked half a pack of cigarettes daily for more than 25 years and expresses interest in quitting.

After discussing treatment options with the patient, the NP initiates daily long-acting insulin therapy and increases the frequency of self-monitoring blood glucose levels to include at least one postprandial reading a day along with fasting levels. Because she will need increasing doses of insulin to help her reach a goal of 7.0% HbA1c, she is directed to increase the dose of insulin glargine by 2 units every 3 days as long as her fasting blood glucose is over 120 mg/dL.

In order to provide comprehensive care for the patient, the NP involves other team members at the clinic. The patient is referred to a certified diabetes educator to teach her how to administer her insulin and manage other aspects of diabetes care, such as hypoglycemia management and exercise. The educator instructs the patient to record blood glucose readings and then establishes a mechanism for reporting readings on a weekly basis. By collaborating with the NP and sharing aspects of the patient's plan of care via the electronic medical record (EMR), the educator can assist with further insulin titrations between her clinic visits.¹⁶

The patient is also referred to a nutritionist to learn about protein intake and carbohydrate counting, healthy food choices, and weight management and is scheduled to see a pharmacist practitioner who has a Doctorate of Pharmacy (Pharm D) for smoking cessation. The pharmacist practitioner involves her in a support group for smoking cessation and initiates over-the-counter agents to manage nicotine cravings. Again, the plan of care and the patient's responses are shared via the EMR so that the entire team is informed.

The patient enrolls in the clinic's comprehensive diabetes management classes where diabetic educators and nurses teach topics such as management of hypoglycemia, foot care, balancing exercise and diet, and coping with lifestyle changes. Small group sessions offer the additional advantage of allowing patients to learn from each other's

experiences and receive social support from people with common issues.

On her second clinic visit 3 months later, the patient is testing her blood sugars at least twice a day and taking a higher dose of glargine. The current blood glucose level is 178 mg/dL and the HbA1c is 7.8%. She stopped smoking five weeks ago. Although the patient did not reach the optimum goal of a HbA1c of 7%, her overall status has improved greatly. Through the use of interprofessional collaboration, the patient has benefited from the collective expertise of multiple health-care professionals to help her cope with this chronic disease.

CRNAs and Health Psychologists Work in Tandem to Treat Pain Effectively in Diabetic Patients

Certified Registered Nurse Anesthetists (CRNAs) who practice as pain specialists treat patients at pain care centers and clinics. CRNAs are often asked to see diabetic patients who are showing signs and symptoms that indicate pain management is needed. Often, these patients, experiencing painful peripheral neuropathies, have sought treatment from a variety of practitioners, hoping that what each individual practitioner has in their “black bag” will relieve their discomfort.

CRNA pain specialists are adept at evaluating and diagnosing multiple focal, regional, and global pain conditions and providing multiple approaches in pain medication management, including high-dose opioid therapy and interventional pain techniques. Many CRNAs have acquired individual clinical skills in hypnotherapy, botanical medicine, homeopathy, and psychotherapy as well.

What individual CRNA pain specialists have to offer may well benefit many patients suffering with peripheral neuropathies; however, it is fully recognized that long before patients experience signs and symptoms, there have been underlying biochemical changes that precede the manifestation of pain. Dysfunction in the areas of assimilation, defense and repair, energy, biotransformation, and elimination, as well as integrated psychological and emotional stressors, sleep disturbances, and dietary imbalances (particularly grossly deficient consumption of fresh, whole plant foods) have all contributed to set the stage from which signs and symptoms emerge and are maintained. CRNAs function from a “whole person” or “holistic” perspective, recognizing that their particular training and clinical skills firmly rely upon an integrated approach to treatment. From a CRNA standpoint, relying only upon a particular injection technique or sole opioid management, while ignoring the entirety of the human matrix, is considered inadequate to address and treat a diabetic patient’s painful condition. As wholesystem practitioners, CRNAs recognize that successful evaluation and management of pain related to peripheral neuropathies requires access to, and coordination among, multiple health-care practitioners, each having highly specialized input to treat the entire patient’s needs optimally.

Frequently, consideration must be given to long-term opioid management for patients with severe neuropathies. Such an approach requires careful consideration of the impact of opioids, specifically on the immune, gastrointestinal, and central nervous systems; assessment of elimination pathways; and both the beneficial and risk factor effects opioids can have on psychological, emotional, and general human functioning. This is where the value of the interprofessional approach becomes evident. For opioid management to be successful, patients must also have a thorough assessment by a health psychologist, which includes identification of psychological and emotional risk factors. While medications are prescribed by a CRNA pain specialist, it is really a joint decision that is made between the health psychologist and medication prescriber as to whether a certain person is a good candidate for long-term opioid therapy. Additionally, many patients are enrolled in a health psychologist-sponsored pain management education program that includes presentations by various health-care experts on such topics as dietary factors related to pain, stress management, movement therapies, mindfulness training, and acupuncture. Individualized psychological counseling is provided as needed and continued monitoring of pain reduction and improved functioning is jointly assessed by the CRNA pain specialist and the health psychologist. General laboratory and urine metabolite values are routinely monitored and all local referring primary care physicians have access to electronically maintained pain clinic records on their patients.

Coordination of Diabetic Primary Care Through Licensed Naturopathic Physicians Aids Patients

Type 2 diabetes epitomizes the need for “holism” in clinical medicine because diabetes impacts all systems in the body—including the emotional and spiritual “systems.” The training and practice philosophy of licensed naturopathic physicians (NDs) establish the framework for a clinical approach that routinely includes the “whole person.”¹⁷ NDs are prepared and eager to include holism in diabetes treatment and management, while recognizing both the severity of risk from this debilitating chronic disease and the need for frequent multidisciplinary medical management. Classified as “complementary and alternative medicine” by the National Institutes of Health, NDs play diverse roles in patients’ care, which are dependent upon their scope of practice in an individual state. In most cases, NDs contribute to diabetes care as an adjunctive provider to patients’ primary and specialty care providers; however, NDs serve as primary care providers in Alaska, California, Montana, New Hampshire, Oregon, Utah, Washington, and Vermont. Even though technically an adjunct provider, NDs frequently act as *de facto* primary care providers in their ability to consolidate and coordinate care for patients.¹⁷

Regardless of their formal role, they share a common approach to diabetes care, which is to re-establish the

foundation of health by offering guidance and support to establish healthy dietary, physical activity, stress management, and sleep habits, combined with the coordination of specialty providers as needed to establish a patient's optimal care team. In their efforts to help patients coordinate the complex care teams often required to treat diabetes, NDs collaborate with many providers from diverse disciplines. Because recent survey findings report that patients with poorly-controlled diabetes may pursue complementary and alternative medicine secondary to dissatisfaction with their conventional health-care,¹⁸ and approximately 13% of all visits to NDs are by people with diabetes,¹⁹ NDs have a unique opportunity to re-engage patients in their self-management and necessary medical care.

The evidence supporting the role of NDs in diabetes care comes from two practice-based observational studies describing patient and practice characteristics and evaluating practice outcomes in cohorts of patients pursuing ND care for their diabetes.^{20, 21} Data from these studies suggest ND care is mostly adjunctive (80%) and that guideline-recommended²² dietary and physical activity counseling is delivered at a very high frequency (90%-100% of patients receive). Supporting a "holistic" approach, including emotional health, stress management counseling is also delivered commonly (47% of patients received). Referrals to other provider types were common and included: nutritionists for additional dietary support, psychologists for behavioral counseling, acupuncturists for pain management, and other specialty ND providers including physical medicine (ie, massage, osseous adjustments, and other manual therapies) and homeopathy. Additionally, clinical risk factors appear to improve during ND care for diabetes, including improved glucose control, blood pressure, and triglycerides. New "control" per American Diabetes Association standards was achieved in an additional 26% of patients for glucose, 16%-27% of patients for blood pressure, and 14% of patients for triglycerides. One of these reports²⁰ also includes some specifics on the frequency of common dietary recommendations to patients, eg, higher protein (88%), lower simple carbohydrates (81%), high fiber (75%), low glycemic index (50%), etc. and the evidence base for commonly recommended clinical nutritional treatments, (eg, omega-3 fatty acids=Grade B).

A typical fictitious case illustration is an obese 55-year-old woman with poorly-controlled diabetes, pain in multiple joints, and suspected ophthalmic complications. Because of her dissatisfaction with prescription medications for her diabetes, she has not visited her primary care provider for three years, does not take her prescribed oral medications regularly due to side effects, and is unaware of her current glycemic status.

On a review of systems, she complains of blurry vision that has worsened over the last year, but denies having an optometry or ophthalmology consultation within the past 5 years. In addition to complaints about her

vision, she has foot, ankle, and knee pain, which limits her physical activity. She also reports sleep disruptions, including snoring and "panicky breathing" that wake her from sleep. Upon reviewing her diet and self-care practices, she has a very high carbohydrate-based diet (including nightly binges on high-carbohydrate foods), she does not monitor her blood glucose, and she limits her physical activity to essential walking during activities of daily living, and reports her stress level as an "eight out of 10" due to workplace stress and emotional abuse. The ND learns through physical exam that her blood pressure is 155/95 mmHg, she has reduced visual acuity, has reduced peripheral pulses, and poor differentiation of sites upon monofilament testing. Her point-of-care hemoglobin A1C (HbA1c) is 9.5%.

In this clinical situation, the ND will counsel the patient on self-efficacy strategies to re-engage her in the health-care system and her own self-management. The ND will initiate counseling on dietary strategies to reduce blood glucose and may recommend more intensive counseling by a nutritionist. Because there are specific eating behaviors that are contributing to her poor glucose control, additional referral to a behavioral psychologist is likely; ideally those dually trained in clinical nutrition or disordered eating, to assist with cognitive behavior approaches to improve her eating patterns and to address her reaction to the underlying work place stressors. In the interim, the ND is likely to recommend mind-body therapies, like meditation, yoga, or Qigong for stress management.²³⁻²⁵ In addition to providing recommendations for adjunctive clinical nutrition interventions for her suspected neuropathy, eg, alpha-lipoic acid or vitamin B12, the ND would likely either refer to a podiatrist, neurologist, physical therapist, chiropractor, and/or physiotherapist to assist her in securing appropriate footwear and additional assessment of the contribution of neuropathy versus postural patterns to her current physical pain.²⁶⁻³⁰ Because prescription medication management is required for her elevated blood glucose and hypertension, the ND may manage these medications directly or more commonly refer back to the acting primary care provider (or offer resources for establishing new primary care). A consultation with a pharmacist would be arranged as needed to provide an opportunity to discuss medication side effects. She would also be referred to an optometrist or ophthalmologist who is a retinal specialist for a complete retinal examination. Finally, because of the disrupted sleep reported on her review of systems, she would be referred to a sleep specialist for assessment of obstructive sleep apnea.

The ND will also utilize available community resources, eg, job placement or job counseling services, in their approach to diabetes care (as called for in the Chronic Care Model), recognizing that her current work environment negatively impacts her self-management behaviors.^{31,32}

After 3 months of care, the patient found prescription medications that she tolerates and adheres to with the coordinated assistance of her primary care provider and a pharmacist, had visited an ophthalmologist and had surgical stabilization of early diabetic retinopathy, had been fitted with a continuous positive airway pressure (CPAP) device that improved her sleep quality, and returned to her nutritionist and psychologist frequently to continue her exploration of her disordered eating and the triggers for her behavior. She also found she enjoys the calm of meditation and practices it regularly when stressed at work. She found the new low glycemic index, high plant-based protein diet recommended by her ND kept her blood glucose well-balanced and reduced the urges for additional snacking. Her blood pressure now reaches recommended targets for control at 128/78 mmHg and her hemoglobin A1c has been reduced to 7.3%, approaching good control.

A naturopathic physician focuses on helping patients improve their diet, engage in physical activity and reduce stress levels, while providing expert advice on clinical nutrition approaches to treatment and helping patients navigate the complex world of both complementary and conventional medical specialists. In collaboration with a team of health-care providers, this holistic approach to caring for patients with chronic conditions like Type 2 diabetes can help break the pattern of treating Type 2 diabetes like an acute condition, by exemplifying the benefits of embracing the complementary and cooperative roles of diverse health-care providers to help ensure every patient achieves a state of ongoing wellness.

Strengthening Interprofessional Collaboration for Patients

In order to meet the needs of a growing diabetic population, efforts must be made to expand access to all clinicians, while also strengthening the infrastructure of clinical practice and facilitating the delegation of tasks to a broadened spectrum of caregivers in new models of care. Optimal patient care for those with diabetes and other health-care needs will best come from protecting patients' ability to access all types of health-care professionals. This includes the obvious cost savings that could be achieved by allowing for a range of access to various providers who could offer more cost-effective options to achieve good outcomes.

Yet, in the face of looming provider shortages, many allopathic- and osteopathic-organized medical associations continue work to limit the scope of practice of non-MD or DO providers. Often, this is due to misinformation about the training, education, licensure, certification, and modern scope-of-practices of health-care practitioners. With the health-care system in the United States at a crossroads and in a time of economic uncertainty, all members of the health-care team must strive to provide patients access to safe, high-quality, and cost-effective health-care. This is paramount for effectively responding to the diabe-

tes epidemic and the high societal and personal costs at stake if collaboration is not optimized to serve this population effectively.

Each of the cases discussed above outlines collaborative care for the patient with diabetes and has been written by representatives of organizations that typify the members of the Coalition for Patients' Rights (www.patientsrightscoalition.org). The coalition represents more than 3 million licensed health-care professionals committed to ensuring patients have the right to make informed decisions about their health care and who provides it to them and their families. More than 37 national and state-based associations belong to the coalition and collectively they are dedicated to educating the public and decision-makers about the importance of collaborative health-care teams and the qualified professionals who are team members. The coalition recognizes that in order to meet the American health-care system's growing and increasingly diverse needs, patients must rely on a diverse array of licensed health-care professionals, including advanced practice and registered nurses, audiologists, foot and ankle surgeons, naturopathic doctors, occupational therapists, physical therapists, and psychologists. The coalition was created to protect patient access to their choice of clinicians. The coalition has worked to provide a variety of materials and resources for professionals, patients, legislators, and policymakers, and has also facilitated in-person meetings to advance the discussion around patient access to a full spectrum of providers.

Patients with diabetes highlight exactly why health-care professionals must not waste time battling over scope of practice issues and get back to caring for patients. Resources are more wisely spent working together to provide the complex care diabetic patients and others need. By collaborating, professionals share a variety of valuable perspectives and experiences to provide the best care.

Acknowledgments

The authors would like to thank Coalition for Patients' Rights Communications Workgroup members Maureen Shekleton, Jan Towers, and Gene McGill, as well as former workgroup member Karen Howard for assistance in editing and coordinating the development of this article.

© 2012 Hellquist et al. This open access article is distributed under a Creative Commons Attribution License, which allows unrestricted use, distribution, and reproduction in any medium, providing the original author and source are credited.

HIP is a quarterly journal published by Pacific University | ISSN 2159-1253 | commons.pacificu.edu/hip

Hellquist K, Bradley R, Grambart S, Kapustin J, Loch J. Collaborative practice benefits patients: an examination of interprofessional approaches to diabetes care. *Health Interprofession Pract*. 2012;1(2):eP1017.

Available at: <http://commons.pacificu.edu/hip/vol1/iss2/3>
ISSN 2159-1253 H& IP
Health & Interprofessional Practice | commons.pacificu.edu/hip
1(2):eP1017 | 1

REFERENCES

- National Council of State Boards of Nursing. Changes in Healthcare Professions' Scope of Practice: Legislative Considerations. National Council of State Boards of Nursing. https://www.ncsbn.org/ScopeofPractice_09.pdf. Published May 2006. Accessed May 17, 2012.
- Cheung PT, Wiler JL, Ginde AA. Changes in barriers to primary care and emergency department utilization. *Arch Intern Med*. 2011;171(15):1397-1399.
- No authors listed. Diabetes: Successes and Opportunities for Population-Based Prevention and Control. Centers for Disease Control and Prevention. <http://www.cdc.gov/chronicdisease/resources/publications/aag/ddt.htm>. Updated August 1, 2011. Accessed May 17, 2012.
- No author listed. The Cost of Diabetes. American Diabetes Association. <http://www.diabetes.org/advocate/resources/cost-of-diabetes.html>. Accessed May 17, 2012.
- The National Council of State Legislators staff. Diabetes State Legislation Overview, 2007-2010. The National Council of State Legislators. <http://www.ncsl.org/Default.aspx?TabId=13822>. Accessed May 17, 2012.
- National Conference of State Legislatures staff. Scope of Practice Legislative Database, 2011-2012. National Conference of State Legislatures. <http://www.ncsl.org/default.aspx?TabId=22376>. Updated March 13, 2012. Accessed May 17, 2012.
- Singh N, Armstrong DG, Lipsky BA. Preventing foot ulcers in patients with diabetes. *JAMA*. 2005;293(2):217-208.
- Prompers L, Huijberts M, Apelqvist J, et al. Delivery of care to diabetic patients with foot ulcers in daily practice: results of the Eurodiale Study, a prospective cohort study. *Diabetic Med*. 2008;25(6):700-707.
- Lavery LA, Armstrong DG, Wunderlich RP, Tredwell J, Boulton AJ. Diabetic foot syndrome: evaluating the prevalence and incidence of foot pathology in Mexican Americans and non-Hispanic whites from a diabetes disease management cohort. *Diabetes Care*. 2003;26(5):1435-1438.
- Lipsky MS, Sharp LK. Preventive therapy for diabetes: lifestyle changes and the primary care physician. *Am Fam Physician*. 2004;69(2):269-270, 273.
- Lavery LA, Peters EJ, Armstrong DG, Wendel CS, Murdoch DP, Lipsky BA. Risk factors for developing osteomyelitis in patients with diabetic foot wounds. *Diabetes Res Clin Prac*. 2009;83(3):347-352.
- Berendt AR, Peters EJ, Bakker K, et al. Diabetic foot osteomyelitis: a progress report on diagnosis and a systematic review of treatment. *Diabetes Metab Res Rev*. 2008;24(Suppl 1):S145-S161.
- Lavery LA, Armstrong DG, Wunderlich RP, Mohler MJ, Wendel CS, Lipsky BA. Risk factors for foot infections in individuals with diabetes. *Diabetes Care*. 2006;29(6):1288-1293.
- Carls GS, Gibson TB, Driver VR, et al. The economic value of specialized lower-extremity medical care by podiatric physicians in the treatment of diabetic foot ulcers. *J Am Podiatr Med Assoc*. 2011;101(2):93-115.
- O'Connor PJ, Spert-Hillen JM. The role of diabetes educators in the medical home. *Diabetes Spectr*. 2009;22(2):124-126.
- Deakin T, McShane CE, Cade JE, Williams RD. Group-based training for self-management strategies in people with type 2 diabetes mellitus. *Cochrane Database Syst Rev*. April 2002;(2):CD003417.
- Fleming SA, Gutknecht NC. Naturopathy and the primary care practice. *Prim Care*. 2010;37(1):119-136.
- Bradley R, Sherman KJ, Catz S, et al. Survey of CAM interest, self-care, and satisfaction with health care for Type 2 diabetes at Group Health Cooperative. *BMC Comp Altern Med*. 2011;11(1):121.
- Hawk C, Ndetan H, Evans MW. Potential role of complementary and alternative health care providers in chronic disease prevention and health promotion: an analysis of National Health Interview Survey data. *Prev Med*. 2012;54(1):18-22.
- Bradley R, Oberg EB. Naturopathic medicine and Type 2 diabetes: a retrospective analysis from an academic clinic. *Altern Med Rev*. 2006;11(1):30-39.
- Bradley R, Kozura E, Buckle H, Kaltunas J, Tais S, Standish LJ. Description of clinical risk factor changes during naturopathic care for Type 2 diabetes. *J Altern Comp Med*. 2009;15(6):633-638.
- US Preventive Services Task Force. The Guide to Clinical Preventive Services 2006: Recommendations of the U.S. Preventive Services Task Force. Philadelphia, PA: Lippincott Williams and Wilkins; 2006: 125.
- Rosenzweig S, Reibel DK, Greeson JM, et al. Mindfulness-based stress reduction is associated with improved glycemic control in Type 2 diabetes mellitus: a pilot study. *Altern Ther Health Med*. 2007;13(5):36-38.
- Hegde SV, Adhikari P, Kotian S, Pinto VJ, D'Souza S, D'Souza V. Effect of 3-month yoga on oxidative stress in Type 2 diabetes with or without complications: a controlled clinical trial. *Diabetes Care*. 2011;34(10):2208-10.
- Sun GC, Lovejoy JC, Gillham S, Putiri A, Sasagawa M, Bradley R. Effects of Qigong on glucose control in Type 2 diabetes: a randomized controlled pilot study. *Diabetes Care*. 2010;33(1):e8.
- Ziegler D, Ametov A, Barinov A, et al. Oral treatment with alpha-lipoic acid improves symptomatic diabetic polyneuropathy: the SYDNEY 2 trial. *Diabetes Care*. 2006;29(11):2365-2370.
- Ziegler D, Gries FA. Alpha-lipoic acid in the treatment of diabetic peripheral and cardiac autonomic neuropathy. *Diabetes*. 1997;46(Suppl 2):S62-S66.
- Ziegler D, Hanefeld M, Ruhnau KJ, et al. Treatment of symptomatic diabetic polyneuropathy with the antioxidant alpha-lipoic acid: a 7-month multicenter randomized controlled trial (ALADIN III Study). ALADIN III Study Group. Alpha-Lipoic Acid in Diabetic Neuropathy. *Diabetes Care*. 1999;22(8):1296-1301.
- Ziegler D, Nowak H, Kempler P, Vargha P, Low PA. Treatment of symptomatic diabetic polyneuropathy with the antioxidant alpha-lipoic acid: a meta-analysis. *Diabetic Med*. 2004;21(2):114-121.
- Sun Y, Lai MS, Lu CJ. Effectiveness of vitamin B12 on diabetic neuropathy: systematic review of clinical controlled trials. *Acta Neurol Taiwan*. 2005;14(2):48-54.
- Bodenheimer T, Wagner EH, Grumbach K. Improving primary care for patients with chronic illness. *JAMA*. 2002;288(15):1775-1779.
- Bodenheimer T, Wagner EH, Grumbach K. Improving primary care for patients with chronic illness: the chronic care model, Part 2. *JAMA*. 2002;288(14):1909-1914.

"Food is Nature's Medicine!"
Your patients are unique ...
... don't they deserve an
individual nutrition program?

metabolic balance
the Original

- ▶ Patient centric weight management
- ▶ Individualized nutrition plan
- ▶ Scientific blood analysis
- ▶ Prescribes whole foods
- ▶ Personal coaching
- ▶ Integrated and adaptable
- ▶ Low cost / fast ROI
- ▶ Proven effectiveness



Learn the Method ...

... from the founder Dr. Wolf Funck

September 27-30 in Toronto, Canada
 call 905-617-1359 for more information

October 5-7 in Los Angeles, CA
 call 619-894-7893 for more information

Get your **Free Info Kit** at BeACoach.Metabolic-Balance.Com
 or call us for your **Special Introductory Offer**



"It is now more than one year that I added the metabolic balance® program into my holistic health practice and I notice consistently remarkable results. My patients are happier, have less pain, sleep better, have increased vitality, have reached and maintained their weight goal, and cherish their newly acquired eating style."
 Dr. Brigitte Essl, CA

Phone: 619-894-7893

www.metabolic-balance.com