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The Role of Traditional Chinese Medicine in the Care and Management of Chinese Diabetic Patients

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CHAPTER 1. INTRODUCTION

Chinese-speaking diabetic patients and Traditional Chinese medical practices

The growing epidemic of diabetes mellitus (DM) (WHO: Diabetes Fact Sheet, 2009; Gerberding, 2004) disproportionately affects certain ethnic groups (Maskarinec et al., 2009). Chinese Americans have diabetes rates are 2.5 times higher than in the general US population, and 5-7 times higher than Chinese living in China (Indian Society of Health Administrators, 2009). The potential outcomes of the disease, such as blindness, amputations, and cardiovascular and kidney disease, are often avoidable with lifestyle changes and health care. Chinese American diabetic patients often do not receive recommended levels of care, partly due to cross-cultural communication gaps between Chinese American diabetic patients and Western medical providers. Information from Western doctors often is not effectively received by Chinese diabetic patients, in part because doctors are often unaware of beliefs and practices commonplace to their Chinese patients, such as Traditional Chinese Medicine (TCM), including acupuncture and Chinese herbs (Najm, Reinsch, Hoehler & Tobis, 2003). The Western provider's gap in awareness about Chinese traditional medical practices adversely affects patient care and communication, and patients are less likely to trust and share such information with providers. This gap indicates a critical need for developing culturally-appropriate strategies that can incorporate Chinese health practices into existing Western medical practices (Moy, Greenberg & Borsky, 2008). To improve cultural concordance between providers and patients, there is a need for increased understanding and communication in *both* directions. Beyond the issue of cultural awareness and trust, Western providers also need to know about potential medical interactions, both beneficial and risky, between Chinese and Western medical treatments (Liu, Zhang, Wang & Grimsgaard, 2002).

Elderly Chinese-speaking Asian Americans are the population most likely to use Traditional Chinese Medicine (McFarland, 2005). Asian Americans, including Chinese-Americans, are the fastest-growing segment among elders in the United States. According to the US Census Bureau, in 2000 they represented 16 percent of the population over age 55, and this number increased to 20 percent by 2009 (US Census Bureau 2009). While on the whole Asian Americans have a bimodal distribution pattern in terms of income, with one cluster being higher than the median income of the overall population and another cluster being below the median (US Census Bureau, 2002), the Asian *elderly* population generally is more impoverished (AARP Public Policy Institute, 2004). Overall, Asian elders are a vulnerable group with high rates of poverty, low educational attainment, limited English proficiency, and low levels of assimilation into mainstream society. (The exceptions are Japanese Americans, who have few new immigrants, and Asian Indians and Filipinos who in general are aging in the United States after immigrating during the mid-1960's and 1970's as professionals, and most are fluent in English. However these two groups include vulnerable elders as well.) (Shibusawa and Chung, 2009)

Combining the facts that: (1) Asians exhibit a higher rate of diabetes than Whites, (2) most Asian diabetics are of the older generations, (3) Asians are the fastest-growing segment among elders, and (4) Chinese-speaking and other Asian elders have a high rate of use of Traditional Chinese medicine, we see the growing importance of examining the use of traditional medicines among Asian diabetics. This paper focuses on Chinese-speaking diabetics, because they are a great starting point for studying the larger Asian population, since Chinese (including Taiwanese) represents the largest segment (24.3%) of Asian Americans (US Census Bureau, 2007). Chinese-speakers include Asians of a number of other nationalities as well. The implications of studying TCM use among Chinese-speaking diabetics reach beyond this

population, and also have relevance to the many other Asian populations who use TCM such as Vietnamese, Koreans, Japanese, Indonesians, and Thai. The topic also has implications for the growing number of Americans at large who use Traditional Chinese Medicine.

One of the greatest challenges to forming bridges between Western and Traditional Chinese Medicine is that the fundamental concepts and terminologies of the two systems are so dramatically different from each other. Substantial barriers to integrative medicine currently exist between Traditional Chinese medical providers and Western medical providers in delivering diabetes care in the US due to the lack of understanding and trust of each other and lack of institutional parity between the two medical traditions, with traditional Chinese medicine lacking political and scientific legitimacy (Leslie, 1976). Also, little or no modern medical research exists to fully understand the impact of TCM on diabetes or other health outcomes (Grant et al., 2009). Conceptual, methodological and financial barriers challenge efforts to conduct research in TCM. The few rigorous studies that do exist suggest that Traditional Chinese Medicine therapies such as acupuncture and herbs, when practiced by a qualified physician, are shown to be safe and effective for certain health conditions, and may be safe and effective for many other conditions that have not yet been fully examined (NCCAM, 2004). Much more documentation and research on TCM is needed to support the efforts in developing an integrative medical curriculum, potential health care systems restructuring, and new service delivery budgetary mechanisms to fully integrate the system of TCM with Western Medicine.

This paper examines literature on the history and current state of integrative TCM and Western medicine in China and the US, how Western medicine currently perceives and understands TCM, similarities and differences in diabetes diagnosis and treatment for TCM and Western medicine, and the potential medical interactions between TCM and Western medicine.

describes the qualitative study that examines the role of TCM in the health care of Chinese American diabetic patients, in order to increase Western providers' cultural awareness and medical understanding of TCM, and to consider including TCM providers in a team care intervention for Chinese diabetes patients. In addition, the paper also provides implications for research, health care, and policy for the purpose of providing better integrative care to patients who are already choosing to use Traditional Chinese Medicine, such as Chinese-speaking diabetic patients.

DEFINITIONS

Since there is often misunderstanding of what exactly is meant by terms like "Traditional Chinese Medicine (TCM)," "complementary medicine," or, for that matter, "Western medicine," it is useful to start with brief definitions and descriptions of a few terms, including definition of Chinese medicine, Western Medicine, and "complementary and alternative medicine," as well as descriptions of the TCM therapies that we will focus on, which include acupuncture and herbal medicine.

Definition of Traditional Chinese Medicine

Traditional Chinese Medicine is one of the oldest healing systems in the world (NCCAM, 2010). It is also known as Chinese Medicine and Oriental Medicine. It is a whole medical system based on a concept qi, or vital energy, which flows throughout the body as well as throughout the universe. The opposing forces of yin and yang regulate a person's spiritual, emotional, mental, and physical balance. Yin is associated with negative polarity, dark,

feminine, cold, slow, passive nature, and solid physical matter. Yang is associated with positive polarity, light, masculine, hot, fast, active nature, and energy as opposed to matter. Disease results from the flow of qi being disrupted and yin and yang becoming unbalanced. Traditional Chinese Medicine therapies include acupuncture, herbal and nutritional therapy, moxibustion (burning herbs to create heat at certain points on the body), restorative physical exercises, meditation, dietary and lifestyle counseling, and massage techniques (Wilcox, 2001). These therapies are aimed at restoring balance between yin and yang forces in the body. Among these therapies, this paper focuses on two: acupuncture and herbal therapy.

Description of acupuncture and points

Acupuncture involves penetrating the skin with thin, solid, metallic needles that are manipulated by the hands or by electrical stimulation (NCCAM, 2010). The Classic TCM theory recognizes about 365 points, said to be located on fourteen main meridians connecting the body. The fourteen main channels are associated with specific organs, although not in the anatomical sense that biomedical physicians are accustomed to. Between five and twenty needles are used in a typical treatment (Kaptchuk, 2000). Most sessions last up to one hour, although they can be as short as fifteen minutes. Needles are often left while the patient lies or sits relaxed, and are removed at the end of the session. Acupuncturists may also use heat (moxibustion) and electrical stimulation. These treatments are individualized to the person's condition. The sessions typically occur one to two times a week, and the total number of sessions depends on the condition, disease severity, and chronicity (NCCAM, 2004).

Description of traditional Chinese herbal therapy

Chinese herbal therapy uses parts of plants such as the leaves, roots, stems, flowers, and seeds. Usually, herbs are combined in formulas and given as teas, capsules, tinctures, or powders (NCCAM, 2010). Sometimes animal and mineral derivatives may also be used. The Chinese pharmacopia contains thousands of substances. Several hundred are in common usage today. When Chinese herbs are prescribed, most often they are used in the formulas containing between 4 and 20 single herbs. The traditional method of preparation is decoction: the herbs are boiled typically for 30-60 minutes, and the tea is drunk several times during the day. Herbs are also available in other forms, such as tablets, pills, powders, capsules, water extractions, and alcohol extractions. Other terms for herbal therapy include herbal medicine and herbology.

Definition of Western medicine

Western medicine (Atlantic Health, n.d.) is a whole medical system based on the biomedical sciences of Europe and the USA, which in the nineteenth century made great advances such as the invention of the microscope and germ theory. The "gold standard" for scientific evidence of best medical practices is thought to be double-blind randomized controlled human studies. Western medicine is the predominating system offered in hospitals and clinics in this country. It is practiced by holders of M.D (medical doctor) or D.O (doctor of osteopathy) degrees and by their allied health professionals, such as physical therapists, psychologists, and registered nurses. Other terms for Western medicine include conventional medicine; mainstream medicine; orthodox medicine; biomedicine; and allopathy.

Definition of complementary and alternative medicine

Complementary medicine is usually defined as medicine used *together with* conventional

medicine; "alternative medicine," on the other hand, is used *in place of* conventional medicine (Mehta & McCarthy, 2009). In the United States, acupuncture is considered part of "complementary and alternative medicine" (CAM). In recognition of the increased rates of use, the National Institutes of Health (NIH) officially created the National Center for Complementary and Alternative Medicine (NCCAM) in 1999. NCCAM is the federal government's leading agency for scientific research, funding, technology, and information on and training in CAM. CAM, as defined by NCCAM, is "a group of diverse medical and health care systems, practices, and products that are not presently considered to be part of conventional medicine" (NCCAM: "CAM basics: What is Complementary and Alternative Medicine?", 2010).

In the remainder of this background paper, we will cover in Chapter 2: The historical evolution of integrated medicine in China and in the United States; Chapter 3: Scientific understanding and use of TCM in the United States; Chapter 4: Diabetes care – comparison of TCM and Western Medicine for definition, diagnosis, pathology, and treatment of diabetes, and potential medical interactions between TCM and Western Medicine; Chapter 5: Research Question and Methods; Chapter 6: Results; and Chapter 7: Conclusions.

CHAPTER 2. THE HISTORICAL EVOLUTION OF INTEGRATED MEDICINE IN CHINA AND IN THE UNITED STATES

While the integration of modern Western medicine with the ancient practices of Chinese medicine is a new and largely unexplored field in the United States, it is already the norm in China to offer both modalities side by side in all the major hospitals and clinics. Here we look at the evolution of these two medical worlds, and the infusion of each medical system into the other world. This chapter will discuss: (1) In China: Traditional Chinese Medicine in China – past and present; Western medicine takes over in China; Return to TCM in China, and integration with Western medicine; (2) In the United States: History of TCM in the United States; Current use of TCM in the United States; Governing bodies of TCM in the United States; TCM in Western medical institutions; and /*(3) The concept of multiple medical systems.

IN CHINA – CHINESE MEDICINE, WESTERN MEDICINE

Traditional Chinese Medicine in China – past and present

The oldest archeological evidence of medical practice in China dates back to the Shang dynasty (ca. 1766-1100 BC). The use of the term "traditional Chinese medicine" presently refers to the school of "systematic correspondence," which is the latest of a number of major conceptual systems that unfolded over a period of nearly 3,500 years in China (Mehta &

McCarthy, 2009). The other major schools of thought, which either originated in China itself or were adopted from foreign cultures, included oracular therapy, demonic medicine, religious healing, pragmatic drug therapy, Buddhist medicine, the medicine of systematic correspondence, and ultimately, modern Western medicine (Unschuld, 1988). These seven major conceptual systems did not succeed each other in linear fashion, but rather there was a great deal of overlap, with some concepts from earlier systems carrying through to later systems.

Western medicine takes over in China

Portuguese missionaries and traders introduced the first Western doctors to China in the early 1500's (Spence, 1975). Western medicine started becoming a significant presence in the 1800's, and the first modern medical school in China, Canton Missionary Hospital, was established in 1866 (Croizier, 1968). Western medicine became even more prominent than Chinese medicine in China after the Nationalist Party came to power with the 1911 revolution (Chen, 2008). In 1914, the Minister of Education, Wang Ta-hsieh, stated, "I have decided in the future to abolish Chinese medicine and also not to use Chinese drugs" (Croizier, 1968). It was not until after the Nationalists were overthrown by Mao Tse-Tong in 1949 and the Communist Party and the People's Republic of China was established that Chinese medicine again received strong political and legal support. Nevertheless, traditional Chinese medicine continued to play a central role in Chinese healing practices irregardless of politics.

Return of traditional medicine in China, and integration with Western

Mao dramatically improved the nation's health by reforming the Chinese health care system and merging traditional Chinese and Western medicines (Miller and Strickler, 1980). Infant mortality decreased five-fold, from 250 infant deaths out of every 1000 live births to less than 50, from 1945 to 1980. Life expectancy more than doubled, from 32 years to 70 years (Jamison, 1984). Mao effected such changes through emphasis on preventive medicine, accessible health care, mass health education, and the synthesis of a culturally comfortable and economically beneficial merging of traditional Chinese and Western medicines (Miller & Strickler, 1980). From 1956, traditional Chinese medicine became a required subject in all modern medical schools (Agren, 1975).

In 1980, a national conference convened to determine the future direction of the integration of traditional Chinese and Western medical systems. Out of this meeting came the "Three Roads Policy" which advocates the simultaneous development of three branches of medicine in China today: traditional Chinese medicine, Western medicine, and the combination of both systems – the "third road" (Chen, 2008). A number of research facilities now exist which conduct experiments on herbal remedies. These research facilities include the Institute of Acupuncture and Moxibustion, the Tianjin Herbal Institute, and the Institute of Materia Medica. As for hospitals and clinics, nearly all facilities across China are staffed both by practitioners of traditional Chinese medicine and modern Western medicine, even up to the level of the hospital directors. Hospitals focusing on Western medicine, equipped with the most sophisticated Western medical technology, also have a department of traditional Chinese medicine, a Chinese herbal pharmacy, an acupuncture clinic, and sometimes a department of combined Chinese and Western medicine as well. Hospitals focusing on Chinese medicine will also likely have a

Western-style pharmacy, a diagnostic laboratory, and possibly a surgery department. Additionally, acupuncture may be combined with newer technologies such as electro-stimulation, and acupuncture using lasers rather than needles (Dickstein, 1987).

In pluralistic medical societies such as China, "a variety of treatment options are available that patients can choose to utilize exclusively, successively, or simultaneously," and each alternative will mean something different to the individual patient with respect to its philosophical basis and the ideology, theory, and history it represents (Stoner, 1986). Indeed, in China, traditional and modern medicine compete with one another at some levels (e.g., allocation of resources such as funds for training, upgrading facilities, and research projects), but are complementary in providing health care to the majority of Chinese people who often use more than one system simultaneously.

While there are some physicians who have received comprehensive training and are truly adept in both systems, they are few in number. Most practice whatever form of medicine they have been educated in and work closely with their colleagues in the other system to integrate traditional with Western medicine, with each side frequently referring patients to the other. However, the situation does arise where, as traditional medicine doctor Wu Zhi-Cheng described, "Sometimes the doctors might disagree on the proper diagnosis or treatment. When this happens, they do one of three things: (1) ask the patient or family for their treatment preference (2) ask the hospital president to make the decision; or (3) work together as a team and treat the patient both ways (Dickstein, 1987).

Although official government health policy claims that traditional and Western medicine are equally valuable to Chinese society, there is evidence that Western medicine plays a more dominant role in the health care system (Dickstein, 1987). For example, there is unequal

proportioning of traditional and Western medical subjects between the two medical school curricula, i.e., biomedicine represents a larger component of the curriculum than does traditional medicine in medical schools. Also, practitioners of both systems increasingly emphasize the use of Western diagnostic methods.

IN THE UNITED STATES – CHINESE MEDICINE, WESTERN MEDICINE

History of TCM in the United States

Acupuncture has been used in the United States for about 160 years (National Cancer Institute, n.d.; Takaki, 1989). During the Gold Rush, the first waves of Asian immigrants to the US brought with them traditional medical practices from their home country, but these practices hardly spread beyond the Chinese-American population until recently. One type of TCM, acupuncture, first became better known as an effective form of pain treatment in the US in 1971 when *New York Times* reporter James Reston wrote about how doctors in China used needles to ease his pain following surgery. His report prompted a flurry of interest and stimulated multiple basic science studies in the US. As a result, acupuncture has become the most recognized TCM modality and the most widely studied complementary alternative and medical (CAM) therapy (Astin, Marie, Pelletier, Hansen & Haskell, 1998).

Current Use and regulation of TCM in the United States

Traditional Chinese Medicine is now widely used within the US, particularly acupuncture, and the trend is increasing. According to the NIH, in 1997 more than one million people were served with acupuncture. In the 2002 the number doubled to 2.1

million, and in 2007, tripled to 3.1 million. These figures are believed to be an underestimation, due to sampling and cultural factors (Burke, Upchurch, Dye & Chyu, 2006). **The best predictors of acupuncture use are Chinese descent and age between 55-64 years old** (McFarland, 2005). TCM is also increasingly used across and outside of the Asian-American communities. Asian Americans were nearly thirteen times more likely to use acupuncture as compared to white Americans. In addition, Asian Americans were almost three times more likely to report herbal medicine use when compared with whites (Among Asians, there are also important ethnic variations in use.). Asian Americans are less likely than non-Hispanic whites to disclose CAM use to conventional healthcare providers, suggesting that it is particularly important that physicians query Asian American patients about CAM use (Mehta, Phillips, Davis & McCarthy, 2007). Due to these cultural factors, it is believed that measurements of acupuncture use are underestimates, because the population that most frequently uses TCM is not equally represented in studies, and is also likely to under-report their use of TCM.

As for regulation of acupuncture in the United States, acupuncture providers are licensed in 41 states. Most states require practitioners to take the licensure examination administered by the National Certification Commission for Acupuncture and Oriental Medicine (NCCAOM). TCM practitioners with NCCAOM certification are considered reliable and reputable because they have met established standards of competency. To appear for the licensure examination, candidates are required to have certain prerequisites, including formal education or apprenticeship, or both. Fifty acupuncture schools have been accredited throughout the United States. The Accreditation Commission for Acupuncture and Oriental Medicine (ACAOM) is the

national accrediting agency recognized by the US Department of Education to accredit acupuncture programs at the graduate level (US Dept. of Education, 2011).

While the same accrediting agencies provide training and certification for Chinese medicine herbology, certification is not required in order for a person to practice herbal medicine. TCM herbal remedies fall under the jurisdiction of a dietary supplement through the Food and Drug Administration (FDA). Consequently, they are not subject to the same intensity of quality and efficacy control as prescription medications. Chinese herb products can be found through some TCM practitioners, health foods stores, and ethnic foods stores. As an "alternative medicine" therapy, they are entering mainstream society enough to be found in fashionable outlets such as Whole Foods Market.

TCM and Western medical institutions

Chinese medicine has become more common and accessible through research, endorsement and use by respected health institutions such as the World Health Organization, National Institutes of Health, Kaiser Permanente, the US military, and leading medical school hospitals like Duke, Stanford and UCSF. These institutions have funded their work in Chinese medicine mostly through federal and private grants. For example, the Osher Center at UCSF was given two prestigious Center of Excellence awards from the National Institutes of Health (NIH) in 2004 and 2008 for integrative medicine research, and since the Center's creation, their cumulative research funding has grown to $28 million.

However, for many institutions as well as consumers, cost is still a hurdle to access. Most insurance carriers do not cover TCM, especially with regard to herbal remedies and massage. Costs for Chinese medicine services vary depending on the nature of the condition

being treated, the treatments used, the length of the patient visit, and the region of the United States. In the Bay Area, the cost of an acupuncture treatment ranges from $20 to $120. In addition, herbal medicines vary in cost, depending on the formulation.

For example, at Asian Health Services (AHS) in Oakland, an acupuncture clinic was opened in 2010. Two MD's at AHS are licensed to practice acupuncture.[1] For these two physicians, since acupuncture is part of their scope of practice, AHS can bill insurance companies for these services for qualified patients. However this mechanism of reimbursement is not adequate to cover the cost of the services, as reimbursement rates are low compared to commercial rates for acupuncture, or compared to physicians' reimbursements for Western health services (Chen, 2010).

One of the challenges involved in covering costs for acupuncture services at AHS is that these physicians spend more time with each patient – usually 45-60 minutes – and so they might be considered to be not as "productive" clinically. The rebuttal to the lower productivity is that the acupuncture is still competitively efficient cost-wise, because there is no imaging, surgery, or other costly procedures. Yet the challenge remains of making acupuncture affordable to consumers (Chen, 2010; Suzuki, 2010).

THE CONCEPT OF MULTIPLE MEDICAL SYSTEMS

In most of the world, multiple medical systems coexist (Dickstein, 1987). Here in the US as well, many medical modalities are used. The mainstream medical system is powerful and

[1] The certification process for MD's is abbreviated compared to the Master's degree training, and does not include full differential diagnosis by Chinese medicine theory or herbology.

well-organized, but many people in America also regularly utilize "alternative" medicines, or use them in conjunction "integratively" with conventional medicine. Chiropractors are a common example. Acupuncture, homeopathy, and various other practices are also increasing in use among the mainstream. While the use of these "alternative" systems is on the rise among the population, there is still a wide separation between the status of "conventional" and "alternative" medicine especially in the conventional attitudes of Western practitioners. While some Western health care providers are more open to other medical modalities than others, the societal philosophy is rooted in a hierarchical attitude that considers other treatment modalities as, at best, alternative or adjunctive therapies, or simple quackery at worst.

The preeminence of Western allopathic medicine in a country like the United States causes laymen and specialists to identify its professional institutions with *the* medical system. All other practices are then considered to be irregular, and thus to be aberrations of the system or altogether outside of it (Leslie, 1976).

In other parts of the world, particularly in some Asian societies such as China and India, traditional medical practices are integrated with Western biomedicine such that they co-exist as "normative institutions." (Leslie, 1976). In China, government and private hospitals commonly offer both traditional Chinese medicine and "modern" medicine – two systems based on fundamentally different philosophies and understandings of physiology – yet they do not see this as discrepant or in need of cognitive resolution in order to integrate both paradigms in their daily practices.

SUMMARY

Traditional Chinese medicine has a recorded history dating back 3500 years (Mehta and McCarthy, 2009). In China it went through a period of political suppression, but since the mid-1950's China's medical system has evolved to integrate traditional Chinese medicine with Western medicine. In the US the use of TCM is on the rise (Burke, Upchurch, Dye & Chyu, 2006). It is most used by older generations of Chinese descent, but TCM is also becoming more common among the population at large. Elder Chinese in particular are less likely to report their use of TCM to their Western providers. Traditional Chinese medicine is still mostly offered separately from the dominant Western medical institutions, but some major well-respected research and health care facilities are beginning to research and integrate TCM. Lack of coverage by most insurance companies makes it financially difficult for Western clinics to provide acupuncture and other Chinese medicine modalities, and for consumers to afford them. The fact that the use of TCM in this country is on the rise, despite the financial barriers, is a strong indicator of people's preference for it.

Several European countries are ahead of the United States in the integration and availability of traditional Chinese medicine alongside mainstream modalities (Dharmananda, n.d.). For example France has gone so far in its research of TCM as to develop its own unique approach to acupuncture therapy, now known as "French energetic acupuncture". In Italy, the number of MD's licensed in acupuncture in 2004 was about 10,000. In comparison, the US has more than five times the population, but has half the number of MD acupuncturists. Britain and Germany are also among the European countries that embrace acupuncture more than the US.

CHAPTER 3. SCIENTIFIC UNDERSTANDING AND USE OF TCM IN THE UNITED STATES

Most of the research done on Traditional Chinese Medicine has been and is conducted in China. There is a serious dearth of studies on Traditional Chinese Medicine that meet the Western scientific gold standard of randomized double-blind placebo-controlled studies. However the research is beginning, and some results are coming forth. Here we will briefly describe current research on TCM in the US, including discussions on efficacy and safety; and we will describe how Western medicine currently integrates TCM into American medicine. Where possible, we will specifically discuss diabetes. This chapter will take us through: (1) Challenges to the Western scientific study of Chinese medicine; (2) Research on acupuncture; (3) Research on Chinese herbs; and (4) Combining Eastern and Western: herb-drug interactions.

CHALLENGES TO THE WESTERN SCIENTIFIC STUDY OF CHINESE MEDICINE

One of the great challenges to forming bridges between Western and Traditional Chinese Medicine is that the fundamental concepts of the two systems are so vastly different from each other. Some of the basic terms of Chinese medicine, such as "qi" or "yin and yang", have no equivalent in the English language. Even the terms that can be translated may still carry little meaning for the Westerner, for example the very fundamental concept of "meridians", the common diagnosis of "liver attacking spleen", or a medicinal herb's action of "draining damp-heat".

In addition to these cultural and language differences that challenge the conceptual understanding of TCM according to Western thinking, there are also difficulties in using typical Western scientific methods of evaluation such as placebo studies (Parish, 2004). Take for example researching acupuncture for analgesia, which is currently the use for which acupuncture is most known by mainstream Western medicine. The mechanism of action for analgesia seems to be stimulation of a muscle's small diameter nerve fibers that eventually enter the dorsal horn of the spinal cord. An impulse is delivered to other levels in the spinal cord, the midbrain, and the hypothalamic-pituitary system, where neurotransmitters are released that limit pain. When needling occurs in the region of pain, all three centers are activated to relieve pain. When needles are placed distant from the pain site, the midbrain and hypothalamic-pituitary system are still activated but are much less effective at relieving pain. Placing needles at alternative sites remains the basis for so-called "sham" acupuncture, used in many studies as a control. The activation of the midbrain and hypothalamic-pituitary system, as mentioned above, may make this practice an ineffective control or placebo mechanism (Melzack, 1984).

Because it is suspected that sham needles may trigger some physiologic changes that could affect study results, researchers in Germany developed acupuncture needles with a plastic hub that covers the site of penetration into the skin (Parish, 2004). The placebo needles are blunt and touch the skin, causing a slight pinprick sensation, but they do not penetrate the skin. They had a group of sixty patients who underwent actual acupuncture with the study needles followed by a second treatment with the blunt placebo needles. More of the volunteers felt penetration and "deqi" (the "qi" sensation that is sometimes experienced when needles are placed properly) with the acupuncture needles. But, they report that none of the volunteers suspected that the placebo needles had not penetrated the skin. This tool may improve the quality of future studies.

Another difficulty with study quality is the concept of acupuncture as a single therapy. TCM trained practitioners in the United States tend to examine patients differently and to provide treatments using the "classic acupuncture method". This therapy is based on the belief that each patient presents with a unique set of symptoms and signs. This results in unique treatments for each patient. What this means is that ten patients presenting with migraine headaches will receive ten different treatments (Parish, 2004).

Of course funding, or lack thereof, is also one of the limiting factors to studying Chinese medicine. The NIH has demonstrated its belief in the worthiness of researching Chinese medicine and other "complementary and alternative" medicines (CAM), and allotted $526 million of its budget to CAM in 2009 (NIH budget, 2010). However this amount must be further divided among TCM and all the other types of complementary and alternative medicines, and in the end research funds are still severely lacking.

Notwithstanding conceptual, methodological and funding challenges, research on Traditional Chinese Medicine is beginning to accrue, regarding safety, efficacy, and physiological/biochemical mechanisms.

Next, we briefly describe current research in the United States on TCM safety, efficacy and mechanisms, and the current state of integration of TCM into the Western medical system. Where possible, we specifically discuss diabetes diagnosis, treatment, and self-management.

RESEARCH ON ACUPUNCTURE

Safety of acupuncture

Before Western physicians can consider embracing Chinese medicine as a complementary modality for Chinese-speaking diabetic patients, an important and obvious

question is, are acupuncture and herbs safe? A review of 175 systematic reviews and meta-analysis studies of acupuncture (Parish, 2004) concluded that the incidence of adverse events in acupuncture is quite low. The estimated frequency of adverse events is roughly one per one million visits.

According to the NIH, acupuncture is considered safe when performed by an experienced practitioner using sterile needles. When not delivered properly, for example with unsterile needles or with improper technique, acupuncture can cause serious adverse effects, including infections and punctured organs. The U.S. Food and Drug Administration (FDA) regulates acupuncture needles for use by licensed practitioners, requiring that needles be manufactured and labeled according to certain standards. Relatively few complications from the use of acupuncture have been reported to the FDA, in light of the millions of people treated each year and the number of acupuncture needles used.

Efficacy of acupuncture

There have been many studies on acupuncture's potential health benefits for a wide range of conditions. The World Health Organization has published a review and analysis of controlled clinical trials in acupuncture treatment (WHO, 2003). They include a list of twenty-eight conditions "for which acupuncture has been proved – through controlled trials – to be an effective treatment". This list includes: adverse reactions to chemotherapy, depression, dysentery, hypertension, induction of labor, leukopenia, correction of malposition of fetus, and stroke, to name a few. They further list sixty-three conditions "for which the therapeutic effect of acupuncture has been shown, but for which further proof is needed". This group of conditions

includes such diverse conditions as: acne, alcohol dependence, asthma, diabetes, female infertility, hyperlipidemia, drug and tobacco dependence, nosebleed, and obesity.

The National Institutes of Health convened a consensus conference to address the efficacy of acupuncture (NCCAM, 2004). Their conclusions provided a more modest list, citing "promising results" in the efficacy of acupuncture in the treatment of adult post-operative and chemotherapy nausea and vomiting, as well as the treatment of postoperative dental pain. They further cite that acupuncture may be a "useful adjunctive treatment or an acceptable alternative" in the treatment of addictions, headache, menstrual cramps, tennis elbow, fibromyalgia, myofascial pain, osteoarthritis, low back pain, and carpal tunnel syndrome. In the United States, while acupuncture has been embraced as a viable treatment modality, its role has largely been limited to the treatment of painful conditions.

Summarizing earlier research, the 1997 NIH Consensus Statement on Acupuncture found that, overall, results were hard to interpret because of problems with the size and design of the studies. In the years since the Consensus Statement was issued, the National Center for Complementary and Alternative Medicine (NCCAM) has funded extensive research to advance scientific understanding of acupuncture. Some recent NCCAM-supported studies have looked at:

- Whether acupuncture works for specific health conditions such as chronic low-back pain, headache, and osteoarthritis of the knee
- How acupuncture might work, such as what happens in the brain during acupuncture treatment
- Ways to better identify and understand the potential neurological properties of meridians and acupuncture points

The National Cancer Institute reports that laboratory and animal studies of acupuncture for cancer treatment suggest acupuncture can reduce vomiting caused by chemotherapy and may help a person's immune system work better. They theorize that acupuncture may work by causing physical responses in nerve cells, the pituitary gland, and parts of the brain.

Lack of research on acupuncture for treatment of diabetes

Well-designed studies on the use of acupuncture for diabetes is lacking. Acupuncture for diabetes is much more difficult to examine by Western scientific methods than, say, acupuncture for pain – hence the popularity of acupuncture for pain management. Acupuncture for diabetes is more difficult to standardize for study because patients' body types and symptoms are so diverse, and according to TCM principals, the treatment for each patient would be unique.

Acupuncture research – analgesia is the hot topic

The most well-known application for acupuncture in the US is by far pain management, and it is the most well-researched application (NCCAM, 2004). The Alliance Institute for Integrative Medicine in Ohio offers the scientific explanation that needling the acupuncture points stimulates the nervous system to release chemicals in the muscles, spinal cord and brain. These chemicals will either change the experience of pain or trigger the release of other chemicals or hormones which influence the body's own internal regulating system. The needles also reduce muscle spasm and cause a healing response at the site of insertion. New fMRI (functional MRI) scans show a redistribution of blood flow in the brain with acupuncture treatment.

Several other prevailing theories have emerged from research to explain why acupuncture

appears to work (Parish, 2004). The "augmentation of immunity theory", suggests that acupuncture exerts an effect on hormone levels, triglycerides, prostaglandins, white blood cell counts, gamma globulins, opsonins, and general antibody levels. The "endorphin theory" suggests that acupuncture stimulates the release of endorphins, neurotransmitters found in the brain with morphine-like properties. The "neurotransmitter theory" suggests that specific neurotransmitters (like serotonin or noradrenaline) are stimulated by acupuncture. The "circulatory theory" states that acupuncture constricts or dilates blood vessels by causing the release of vasoactive substances. One of the more popular theories is the "gate control theory". This theory suggests that the nervous system regulates pain via the transmission of pain impulses along nerve fibers. Small nerve fibers transmit pain signals, but can become overwhelmed when too many impulses are generated. This effectively closes the "gate" and pain impulses do not get transmitted to the brain. It is believed that acupuncture stimulates and overwhelms these gates, effectively blocking pain impulses (Melzack, 1965).

RESEARCH ON CHINESE HERBS

Safety of Chinese herbs

The NIH's stance on the safety of TCM herbs is as follows (NCCAM, 2004):

> *"The U.S. Food and Drug Administration (FDA) regulations for dietary supplements (including manufactured herbal products) are not the same as those for prescription or over-the-counter drugs; in general, the regulations for dietary supplements are less strict. There have been reports of products being contaminated with drugs, toxins, or heavy metals or not containing the listed*

ingredients. Some of the herbs are very powerful, can interact with drugs, and may have serious side effects. For example, the Chinese herb ephedra (ma huang) has been linked to serious health complications, including heart attack and stroke. In 2004, the FDA banned the sale of ephedra-containing dietary supplements used for weight loss and performance enhancement, but the ban does not apply to TCM remedies or to herbal teas."

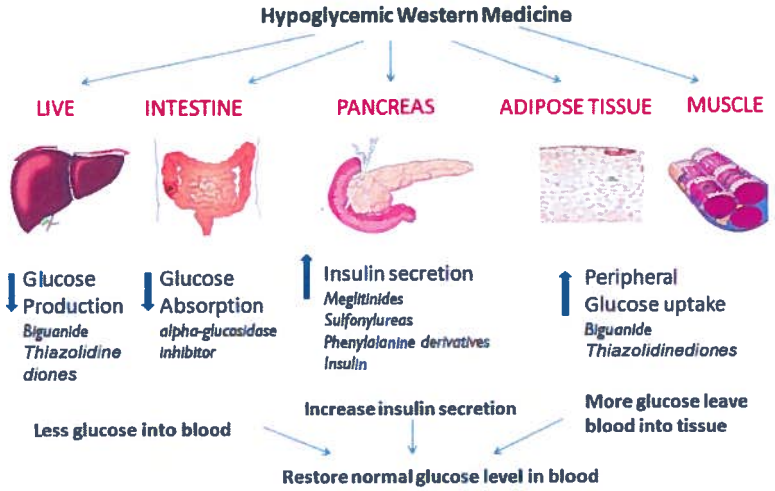
Regarding the safety of Chinese herbs used particularly for the treatment of diabetes, a Cochrane review (Liu, 2002) was conducted regarding Chinese herbs used particularly for diabetes, and concluded that herbs used for diabetes are very safe, and perhaps can provide some therapeutic effect. However the review also concluded that well-designed studies are lacking, and more studies are needed.

Preceding Western scientific investigation, there also exists traditional knowledge regarding safety of Chinese herbs. Some herbs have known toxic qualities that are documented in Chinese medicine texts. Some herbs are also potentially teratogenic (dangerous to the fetus). They are classified into two categories: prohibited, and, "prescribe with caution." (Thai, 2004).

In addition to toxicity of single herbs, pharmacodynamic interactions between herbs have been documented in Oriental medicine. The Eighteen Incompatibles are a classic list of 18 herb-to-herb interactions, and the Nineteen Counteractions a classic list of 19 herbal combinations in which the herbs counteract each other. Combinations of such herbs are related to adverse side effects and/or toxic reactions. These lists are taught to all students of Chinese medicine, and are available in *The Chinese Materia Medica*, a standard reference book on medicinal substances used in Chinese herbal medicine (Bensky, Clavey, Stõger & Bensky, 1986).

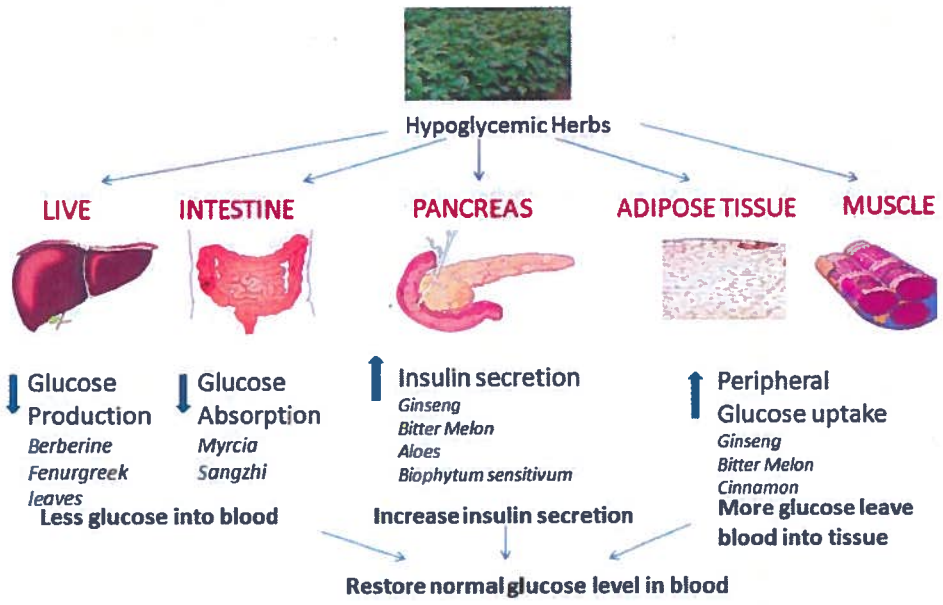
Biochemical mechanisms of Chinese herbs for treatment of diabetes

In Western understanding, pharmaceuticals used to treat hyperglycemia can be categorized by their physiological mechanisms of actions as follows:



(Hui, 2009, *sic)*

Current research allows for some common Chinese herbs used to treat diabetes to be understood in the same categories:



Three commonly used herbs for diabetes treatment that have been studied in detail are ginseng, bitter melon, and rhizoma coptidis (Hui, 2009). (The major active ingredient in rhizoma coptidis is berberine, which is also an active component of a number of other herbs.) Although evidence from animals and humans consistently supports the therapeutic activities of ginseng, berberine and bitter melon, multi-center large-scale clinical trials have not been conducted to evaluate the efficacy and safety of these herbal medicines. Appendix B provides diagrams illustrating the current understanding of the biochemical actions of these substances.

HERB-DRUG INTERACTIONS: INTEGRATING EASTERN AND WESTERN

Safety issues in combining Chinese herbs and Western drugs

The topic of safety of Chinese herbs becomes more complex when considering medical interactions between Chinese herbs and Western drugs, which becomes an important consideration when dealing with patients who are using both modalities.

General principles of interactions

As mentioned above in the section "Safety of Chinese herbs", herbs and drugs can interact with a net result of increasing or decreasing the effect of one or both substances, or creating a toxicity (Dharmananda, n.d.). These potential interactions may be beneficial or detrimental to the patient. Most interactions fall into one of two categories: pharmacokinetic interactions lead to alterations of drug or herb absorption, distribution, metabolism or elimination thereby affecting the amount of available drug. Pharmacodynamic interactions alter the way the drug or herb interacts with its receptor, thereby causing pharmacological or toxic actions.

Few well-designed studies have examined the safety and effectiveness of combining Chinese herbs with Western medications (Liu, 2002). One of the many challenges to studying this topic is that the Western pharmacopeia is constantly evolving (Chen, 2010). But based on known information about general mechanisms of actions of drugs and of Chinese herbs, some potential incompatibilities can be foreseen and avoided. For example:

- herbs or drugs that alter the stomach pH or intestinal motility, including those in the categories of purgatives and cathartics, may interfere with the absorption of other herbs and drugs or nutrients from the intestine.
- Any substances that enhance the detoxification systems in the liver, such as herbs that treat "liver qi stagnation", will result in more rapid metabolism of any drugs or herbs that are degraded by the affected liver systems. Drugs metabolized by the liver include, among others, the commonly used anti-blood-clotting drug warfarin, as well as various drugs used against anxiety, depression, insomnia, and cardiac arrhythmia.

A commonly recommended practice for avoiding or minimizing pharmacokinetic interactions is to separate ingestion of herbs and drugs by at least 2 hours (Lin & Fang, 1990). This method may not completely avoid such interactions, especially with herbs that affect liver systems.

Overdose versus interaction

Some potential side effects of combining Chinese herbs and drugs are not technically defined as "interactions", but rather an issue of not considering the explicit actions of the substances, leading to either overdose, in the case of herbs and drugs with similar actions, or cancelling out of medical effects, in the case of herbs and drugs with opposite actions. It has

already been reported that the traditional Chinese medicine for diabetic control, if used with insulin injection or oral antidiabetics, may cause hypoglycemia (Cheng, Leung & Leung, 2003). Other situations to watch out for include (Cheng, Leung & Leung, 2003):

- stimulant herbs and qi- or yang-tonifying herbs may increase blood pressure and level of mental and physical activity. These should be used cautiously with sympathomimetics, anti-depressive medications and stimulants.
- Herbs with anti-inflammatory actions and which contain known steroidal compounds, such as Rx Glycyrrhizae (licorice) should be used cautiously with anti-inflammatory steroidal drugs such as cortisone.
- Herbs in the "invigorate blood stasis" category can enhance circulation, and should be avoided or used very cautiously before surgery, or with drugs like Coumadin and heparin, which have similar actions and have a narrow therapeutic dosage window.

Herb-to-drug interactions

The highest risk of clinically-significant interactions occur between herbs and drugs that have sympathomimic effects, cardiovascular effects, diuretic effects, anti-coagulant effects, and anti-diabetic effects. Appendix A provides more detail on precautions for these categories of herbs (D'Arcy, 1993).

Summary of herb-drug hot-list

The cautions above are too much for Western health care providers to watch out for, especially since they are not intimate with the Chinese pharmacopia. Some providers feel more

comfortable with a simple list of the most common and serious herb-drug interactions to watch out for. There is no definitive list, because research is so lacking. Here are summaries of recommendations from two sources:

(1) Rocky Mountain Herbal Institute gives the following summary of their findings: (Rocky Mountain Herbal Institute, 2004).

> Patients should not try to mix drugs that have a narrow therapeutic range (digitalis, theophylline, lithium, and warfarin) with potassium lowering herbs (licorice, and aloe), herbal stimulants (ephedra, caffeine, guarana, green tea), and antiplatelet herbs (Ginkgo, bilberry leaf, ginger, black cohosh, and Chamomile).

(2) A literature review published by American Journal of Chinese Medicine in 2003 yielded the following guidelines (Cheng et al., 2003):

- The co-administration of herbal ephedrine (ma huang) and monoamine oxidase inhibitors increases the risks of hypertensive crisis and cerebral vascular accidents (Tan, 2001).
- Ginkgo(Ginkgo biloba) interactions include bleeding when combined with warfarin, raised blood pressure when combined with a thiazide diuretic and coma when combined with trazodone.
- Hemophiliacs, patients on anticlotting treatment and those who have been scheduled for operations should refrain from taking ginkgo, danshen, danggui, garlic and papaya.
- Ginseng (Panax ginseng) lowers blood concentrations of alcohol and warfarin, and induces mania if used concomitantly with phenelzine.

It is important to keep all these precautions about potential interactions and dangers of herbs in perspective: the same review also give cautions for such common food items as ginger

(caution with high blood pressure) and garlic (changes pharmacokinetic variables of paracetamol, decreases blood concentrations of warfarin and produces hypoglycaemia when taken with chlorpropamide).

Working with patients to watch out for herb-drug interactions:

Eisenberg, et al reported that about 60% of the people surveyed did not discuss their CAM use with their primary care physicians (Eisenberg, 1993). Immigrant patients are even less likely to report their use of CAM due to language and cultural barriers. For example, many patients do not want to appear disobedient toward their providers by admitting that they are seeking other treatments, or think their providers do not care or need to know about their traditional practices. Immigrant patients may not think about potential negative medical interactions between traditional and conventional medicines because the traditional medicines have been such an integral part of their culture. Also effects of medical interactions may take weeks or months to be apparent, so patients do not make the association between the combination of medicines and the effects.

Therefore, Western health care providers who work with immigrant patients should take measures to bridge this communication gap.

SUMMARY

Despite the conceptual, scientific and financial challenges to researching and integrating TCM, it is an important and worthwhile field to explore because current research has led the National Institutes of Health, the World Health Organization, and a number of leading medical

institutions to conclude that traditional Chinese therapies are promising in terms of safety and efficacy. Much more research is warranted, regarding TCM modalities such as acupuncture and herbs on their own, and also regarding the highly complex issue of combining herbs with Western pharmaceuticals. However research is limited by funding, and therefore requires national reprioritization of support for these topics.

For Western practitioners who serve immigrant East Asian populations, the issue of increasing understanding about Traditional Chinese Medicine is not only a matter of medical efficacy, but also of cultural literacy, because TCM may be common to their clientele. Therefore what knowledge exists needs to be made available in digestible format to Western health care providers, particularly those who work with East Asian populations.

Since research shows that Chinese herbs can be potentially dangerous by themselves and in combination with Western pharmaceuticals, and since Asian patients are most likely to use these therapies yet less likely to discuss their use with Western medical professionals, it is also important to make information available to these consumers about potential safety issues with Chinese herbs. As for the patient population of Chinese-speaking diabetics, even though Chinese herbs used directly in diabetes syndromes have been determined to be generally safe, many of these patients also have complicating conditions such as heart conditions and high blood pressure, and these conditions are associated with greater risk of herb-drug interactions. Therefore it is important for Western health care providers to ask informed and culturally sensitive questions to screen for use of traditional medical practices.

CHAPTER 4. DIABETES CARE – COMPARISION OF DEFINITION, DIAGNOSIS, PATHOLOGY, AND TREATMENT OF DIABETES BETWEEN TCM AND WESTERN MEDICINE, AND POTENTIAL MEDICAL INTERACTIONS

Many Chinese-speaking diabetic patients may be using both Western and traditional Chinese health care simultaneously. In order to examine how these dual systems can best fit together for these patients, we should know about how each system understands and treats diabetic syndromes. Here we will discuss how TCM and Western medicine each understand the following regarding diabetes: (1) Definition and diagnosis of diabetes; (2) Etiology and pathogenesis; and (3) treatments.

DEFINITIONS OF DIABETES

Western definition of diabetes

In Western medicine, diabetes mellitus is the name of a syndrome whose main characteristics are abnormal insulin secretion, elevated glucose levels, and a variety of complications, such as nephropathy, retinopathy, neuropathy, and accelerated atherosclerosis (Funk, 2003). Its etiology seems to be a variable interaction between hereditary, dietary, and environmental factors. There are two main types of DM, Type I or insulin-dependent diabetes

mellitus (IDDM). and Type II or noninsulin-dependent diabetes mellitus (NIDDM). (Other types include gestational diabetes and diabetes insipidus)..

The Western medical diagnosis of diabetes mellitus is based on ("Report of the Expert Committee on the Diagnosis and Classification of Diabetes Mellitus," 1997): 1) unequivocal elevation of plasma glucose concentration along with the typical symptoms of polyuria, polydipsia, ketonuria, and unexplained rapid weight loss, 2) a fasting plasma glucose concentration equal to or above 126mg/dL, or 3) elevated plasma glucose concentration after an oral glucose challenge on more than one occasion. See Appendix D for Western medical diagnostic criteria for diabetes mellitus.

Chinese medicine equivalent of diabetes

In Traditional Chinese Medicine, diabetes is commonly referred as "wasting-thirst (Xiao-Ke) syndrome" (*Clinical Manual Of Oriental Medicine, An Integrative Approach,* 2005). However, it is important to keep in mind that even though they share many similarities, they are not equivalent. Both diabetes and Wasting Syndrome are characterized by the presence of the three P's, namely polyuria, polydypsia and polyphagia. Diabetes is defined as an increase in blood glucose level, with or without the presence of the three P's. In addition, diabetes may have many complications that are not present in Wasting Syndrome, such as visual disturbance, impotence, amenorrhea, and frequent infections. Conversely, Wasting Syndrome is diagnosed based on the presence of three P's. Polyuria, polydipsia and polyphagia may be caused by actors other than diabetes, such as fever, dehydration, or kidney diseases. *Even though there are differences between the Western diagnosis of "diabetes" and the Chinese medicine "wasting*

thirsting", in this paper, diabetes and "wasting-thirst syndrome" will be used somewhat interchangeably.

Based on the relative severity of the three excessive symptoms of polyuria, polydypsia and polyphagia, the patterns of wasting-thirst may be divided into "upper burner", "middle burner" and "lower burner" patterns (Wu & Fischer, 1997).

The upper, middle and lower burners, collectively known as the Triple Burner, are common terms in Chinese medicine. Clinically, the terms upper, middle and lower energizer are often applied to generalize the functions of the internal organs of the chest and abdominal cavity. Above the diaphragm is the upper energizer which includes the heart and lung; between the diaphragm and umbilicus is the middle energizer which includes the spleen and stomach; and below the umbilicus is the lower energizer which includes the kidney, intestines and bladder. The upper, middle and lower burners combine in order to carry out the digestion, absorption, distribution and excretion of water and food (*Chinese Acupuncture and Moxibustion,* 1999).

Upper Wasting Syndrome is characterized by Lung heat drying up the moisture, leading to polydypsia; middle Wasting Syndrome is characterized by Stomach heat damaging fluid, leading to polyphagia; and lower Wasting Syndrome is characterized by Kidney deficiency, leading to polyuria. Furthermore, patients with high blood glucose commonly show signs of damp accumulation and Spleen deficiency (Dampness is a complex concept in Chinese medicine that is related to obesity, disturbance in fluid processing, and a multitude of other manifestations.) Overall, the clinical presentation of patients with diabetes can be summarized as Yin deficiency with damp and heat (*Clinical Manual Of Oriental Medicine, An Integrative Approach,* 2005).

ETIOLOGY AND PATHOGENESIS

Western medicine etiology and pathogenesis of diabetes

Diabetes mellitus is a syndrome with disordered metabolism and inappropriate hyperglycemia due to either a deficiency of insulin secretion or to a combination of insulin resistance and inadequate insulin secretion to compensate. Type 1 diabetes is due to pancreatic islet beta cell destruction predominantly by an autoimmune process, and these patients are prone to ketoacidosis. Type 2 diabetes is the more prevalent form and results from insulin resistance with a defect in compensatory insulin secretion. Factors predisposing a person to diabetes include, among others, genetics, an autoimmune problem, obesity, and viral infections. Lack of insulin action results in hyperglycemia, increased fat storage, and vascular disease. Diabetic complications are largely the result of vascular disease affecting both the microvasculature (retinopathy, nephropathy, and some types of neuropathy) and the macrovasculature (coronary artery disease, peripheral vascular disease) (Funk, n.d.; Masharani, n.d.).

Chinese medicine etiology and pathogenesis of wasting-thirsting

The following cursory discussion of the Chinese medicine understanding of diabetes (*Clinical Manual Of Oriental Medicine, An Integrative Approach,* 2005) will not be clearly understandable to the Western reader, but deeper explanation and discussion is beyond the scope of this paper. The reader should get a sense that there is an internal logic of causality in Chinese medicine, and see that Western and Chinese medicine recognize many of the elements of wasting-thirst patterns to be part of what Western medicine knows as diabetes, but should not worry about the Chinese medicine terms or concepts that are not easily understood.

"Wasting-Thirst" patterns are related to a constitutional vacuity of yin, improper diet and eating habits, emotional disturbance and overindulgent sexual activity. The pathogenesis of wasting-thirst is attributed to yin vacuity and dryness heat, with yin insufficiency as the root and heat-dryness as the branch. Very often, these two give rise to one another, with severe heat-dryness depleting yin and the depletion of yin allowing exuberant heat-dryness.

Pathological changes occur mainly in the lung, stomach and particularly the kidney. Yin deficiency coupled with heat-dryness can lead to blood stasis, producing secondary conditions such as pulmonary tuberculosis, cataracts, night blindness, ulcers stroke and edema. If the yin-fluids are severely depleted, unbalanced yang may rise to the surface and escape, producing symptoms of headache, agitation, nausea, vomiting, dry red tongue and lips and deep rapid breathing. In severe cases cold limbs, faint pulse, coma and prostration can occur.

The three Chinese organ systems mainly responsible for the mechanisms are the spleen, lungs and kidneys. The liver is also always affected. Yin and yang imbalances of these organ systems explain the various symptoms of diabetes, including: obesity and fatigue, anorexia, emaciation, and muscular atrophy (spleen weakness); polydipsia (heat damages yin fluids in the stomach and lungs); urinary problems , impotence (kidney yang and yin); and blood stasis (liver). Damp heat is often involved, resulting in sores, urinary disturbances, impotence, restless leg syndrome, and/or vaginitis.

TREATMENTS

Western treatment of diabetes

The Western medical treatment of diabetes (*Clinical Manual Of Oriental Medicine, An Integrative Approach,* 2005) primarily relies on dietary avoidance of sugars and sweets, the regular scheduling of meals, weight loss (for NIDDM), and, when necessary, insulin replacement therapy. There are several different types of injectible insulin currently prescribed in the US, each having their own time to onset of action, peak action, and duration of action. The categories of injectible insulin include: rapid-acting, short-acting, intermediate-acting, long-acting, and pre-mixed. Complications of insulin treatment include insulin shock, i.e., hypoglycemia, if too much insulin or too little food are taken, local reactions to insulin injections, such as heat, induration, erythema, and urticaria, and insulin resistance. Several oral sulfonylureates that lower blood glucose level may be used to treat selected patients. However, these are not adequate for treating IDDM patients. When hypertension complicates diabetes, diuretics and sympathetic inhibitors may accelerate or worsen impotence.

Chinese medicine treatment of wasting-thirsting

Chinese medicine treatment of wasting-thirsting (*Clinical Manual Of Oriental Medicine, An Integrative Approach,* 2005) is based on a differentiation of upper, middle or lower burner syndrome, and aims to rebalance the organ systems affected. In addition to herbal medicine and acupuncture therapy, treatment of wasting-thirst patterns should include the alleviation of psychological stress and abstinence from sexual activity. Particular attention should be paid to keeping the diet light and bland, and patients should avoid overeating. Diets should include

grains and cereals with vegetables, legumes, lean meat and eggs. Hot, spicy and stimulating foods should be prohibited.

A number of Chinese herbs may be used for wasting-thirst syndromes, depending on the patient's specific symptoms. See Appendix C for a partial list of herbs. Herbs are normally used in a formula containing several herbs.

Depending on the type of diabetic syndrome and other health factors, the use of the Chinese herbs would likely have to be continued for quite some time (the exception might be some cases of lowered insulin production, which could possibly be remedied by one or two months of therapy with herbs). However, positive effects on symptomatic manifestation of diabetes is reported to occur in the first few weeks of treatment (Dharmananda, 2003).

SUMMARY

Western and Chinese understandings of diabetes syndromes overlap and also differ. It would be unwieldy for most Western health care providers to study Chinese medicine in-depth; however getting some exposure to basic concepts and terminology will allow the Western provider to understand their Asian patients' cultural-medical framework.

In working with Chinese-speaking diabetic patients who may already be choosing to use some form of traditional Chinese medicine, the question is, how can the two modalities of Eastern and Western medicine best complement each other for these patients? Ancient Chinese texts do not answer this question, because they were written before the advent of modern medicine. Neither does recent research provide the answer, since it has not yet adequately examined Chinese medicine or its integration with Western. Perhaps we can draw insights from

TCM practitioners with experience working in China's health care system, where the two worlds are working together in treating diabetes as well as other diseases. A qualitative study of these practitioners' experiences would not qualify as the gold standard of randomized double-blind placebo studies; but since some American patients already use both modalities, and are not waiting for the studies to come out, the insights we may find from experienced practitioners may provide a starting point for dealing with a situation that already exists for some patients, especially older Chinese-speaking patients.

Hence, we designed a study to examine Chinese diabetic patients' use of Traditional Chinese Medicine, and to explore TCM providers' knowledge and insights about TCM and integration with Western medicine for this patient population.

CHAPTER 5. RESEARCH QUESTION AND METHODS

RESEARCH QUESTION

The study describes the role of Traditional Chinese Medicine in the health care of Chinese American diabetic patients, in order to increase Western health care providers' cultural awareness and medical understanding TCM as it affects their Chinese diabetic patients. The major study domains include: (1) Basic knowledge of TCM diagnosis and treatments for diabetes; (2) Interpersonal communication between Chinese American diabetic patients and TCM providers; (3) Potential medical interactions (both positive and negative) between TCM and Western treatments; and (4) What information TCM and Western providers would each need in order to work together in a team care intervention for Chinese diabetes patients. In this chapter, we discuss the study protocol, sample, data collection, data analysis, and study limitations.

STUDY PROTOCOL

This study has two components:

(1) *Traditional Chinese Medicine (TCM) Key Informant (KI) Interviews:* We conducted 12 Key Informant Interviews with Traditional Chinese Medicine providers in order to explore the following: interpersonal communications between TCM provider and diabetic patient; treatments for diabetes; potential medical interactions between TCM and Western treatments;

and what information TCM and Western providers should each know about the other group if they were working together in a team intervention.

(2) *Chinese Diabetic Patient Focus Groups:* We added questions to 3 Patient Focus Groups that were organized by a project conducted at Asian Health Services (AHS) in Oakland, in partnership with Health Research for Action (the research arm of the School of Public Health at UC Berkeley), named "A Patient-Centered Strategy to Reduce Diabetes Disparities in Chinese Americans" (PI: Ivey). The purpose of that study is to design and assess the feasibility of a cultural-specific pilot team care intervention for Chinese diabetic patients. The Focus Groups explored patients' experiences in managing diabetes and receiving health care. The new measures that our study added to the Focus Group questionnaire are: the participants' use of Traditional Chinese Medicine (what types of treatment are used, how often, and where these are obtained), and participants' interpersonal communications with TCM providers (what information is shared, level of trust, and influence of these interpersonal interactions on patients' beliefs and actions).

By gathering information from both TCM providers' and Chinese diabetic patients' perspectives, we were able to get a richer picture of the role of TCM in patients' lives. Data from TCM providers were more robust than data from patients, because patient data came from only a few questions inserted into another study's Focus Groups which mostly focused on issues of diabetic treatment other than TCM, whereas TCM KI Interviews focused entirely on questions regarding TCM and its integration for diabetic patients.

SAMPLE

(1) *TCM KI Interviews*: We sought out 2 groups of participants through purposive sampling and snowball sampling, with input from accredited TCM colleges, personal networks, and study participants: (1) 8 licensed TCM practitioners working with Chinese patients in the greater Bay Area, and preferably with AHS patients; and (2) 4 specialists in Traditional Chinese herbology who may have more information than average practitioners about risks and contraindications of herbs, and medical interactions with Western medicines. The KI eligibility criteria included: ≥18 years old; have been working as TCM practitioners for ≥ 5 years; working in the Greater San Francisco Bay Area; have provided care to diabetic patients for ≥ 2 years; and have patients who speak Chinese or are of Chinese descent.

(2) *Patient Focus Groups:* The project at AHS, "A Patient-Centered Strategy to Reduce Diabetes Disparities in Chinese Americans" (Ivey, PI) organized 3 patient focus groups (2 Cantonese and 1 Mandarin) with a total of 15 participants across all 3 groups. The Chinese patients were recruited from among their intervention group. Eligible participants included Cantonese- or Mandarin-speaking Chinese American patients, ≥18 years old, with an ICD-9-CM diagnosis of Type 2 diabetes. Patients were excluded if they had co-morbidities that would limit their ability to participate in the intervention, such as significantly impaired cognition, Alzheimer's disease, schizophrenia, significantly impaired mobility, HbA1c levels <6 or >11, or recent history (last 6 months) of cancer, myocardial infarction, cardiac surgery, or stroke. Such patients may require special considerations that would not be appropriate for

a general diabetes intervention. Participation eligibility was determined mainly by chart review, with screening by phone for age and significant mobility impairments.

DATA COLLECTION

1) *TCM KI Interviews*: Interviews were conducted in English. Participants were offered the choice of having the interview conducted in Mandarin or Cantonese, but all chose English. Each participant chose the location for their interview. Most took place at their offices, while one took place at the participant's home. Sessions were audio recorded and transcribed. The author conducted all the interviews. She sat facing the key informant, with an audio recorder placed in between. She took notes on a laptop computer, and angled her body and computer such that the computer was not directly between her and the key informant, but they could still easily make eye contact. Interviews lasted between 45 minutes and 1 hour. Transcriptions were done by the author and one assistant working closely with her. See Appendices E and F for TCM KI Screener and Interview Guide.

2) *Chinese Diabetic Patient Focus Groups:* Focus groups were conducted in Mandarin (1) or Cantonese (2). Focus groups took place at Asian Health Services (AHS), a federally qualified health center in Oakland Chinatown. It is easily accessible by public transportation. The AHS large conference room, in which the focus group took place, has a large table in the center of the room. Refreshments including dim-sum, fruits and hot tea were provided for the participants on a side table. The Recorder was sitting on one end of the table while the Facilitator in the middle on one side of the table. The

Coordinator sat along the perimeter of the participants. A flipchart was placed on the table to remind participants of instructions and questions. Including consent and pre-survey, the focus groups lasted between 1 and 2 hours (See Appendices G and H for Chinese Diabetic Patient Focus Group Pre-Survey and Interview Guide.)

DATA ANALYSIS

Ethnographic research involves a constant analysis of data to uncover trends, patterns, issues, and themes as they unfold (Bernard, 1995). Data in this study included transcriptions, summary notes and field notes from semi-structured KI interviews and patient focus groups. We were able to check back with KI participants to verify details that were unclear in the original interviews.

The process of developing and testing analytical categories started with repeated review of the data, and looking for interesting patterns, noting details that were expected or that stood out as surprising, puzzling, inconsistent or contradictory, and also noting any unknown folk terms. Data were coded by systematically reading and rereading the entire set of transcriptions of KI interviews and patient focus groups, to categorize multiple ideas and issues using an "open coding" process (Emerson, Fretz & Shaw, 1995). The identification of ideas and issues led to more focused coding whereby more finely nuanced topics and themes were identified. Using constant comparative methodology, data within a category were compared to develop sub-categories and new categories, and to explore mutual relationships and internal structures of categories. Memos were written to correspond with transcriptions and codes, and the themes were identified through this multi-stepped process of sifting, sorting and diagramming themes.

Ethnographic analysis is an iterative process of general reading, close reading and writing, followed by general reading that directs the researcher's attention more deeply in to the data. (Hammersley, 1997). Field notes and written notations read as a whole after coding facilitated recognition of progressively more focused coding. Patterns were identified throughout this process and were collected into major, overarching themes.

Checking for validity of conclusions included assessing typicality of examples, searching for negative cases, triangulating across different data sources and stages, making explicit and analyzing assumptions, and assessing the role of the researcher in shaping the nature of the data and findings. Credibility was strengthened by comparisons of narratives across participants, and between TCM providers' input and the AHS patients' inputs. Data were further contextualized by additional review of cross-cultural and complementary and alternative medicine literature. The products of the process are descriptions, explanations, theories, and recommendations for future steps in integrative medical practice and research.

LIMITATIONS

Sampling biases

(1) *TCM KI Interviews:* We had hoped to recruit a pool of KIs that included two characteristics: (1) typical East Bay TCM providers reflective of the types of providers patients might see, and (2) providers who have expert knowledge in diabetes treatment, risks of TCM, and risks and benefits of integration. We ended up with a sample heavily weighted towards experts, and not a representative sample of providers whom patients might see. Our attempts at recruiting "typical" practitioners in the neighborhood of AHS involved identification of

candidates by walking around neighborhoods with many Chinese residents or workers and looking for storefronts advertising acupuncture and Chinese herbology; however, the practitioners we approached in this way declined to participate. We inferred that the factors influencing this disinterest include language barriers and general distrust of researchers. The sample of TCM providers we ended up with may be biased towards practitioners who know more than the average practitioner regarding herbs and/or integration. This population is useful for gathering expert information about issues like herb safety issues and best practices for integration, but possibly the population does not reflect the typical TCM providers who are working with diabetic patients.

(2) *Chinese Diabetic Patient Focus Groups:* The study sample may be biased towards patients who lean more towards Western health services than TCM as compared to the broader population of Chinese-speaking diabetic patients, since not only are all the patients in the study under regular care with a Western MD, but also they all opted to participate in the study, which shows a certain amount of trust and comfort with Western services. We are lacking data as to what percent of AHS's patient population, and the broader Chinese-speaking diabetic population, seek care with TCM providers; but we suspect that the actual percentage is higher than indicated by this study population.

CHAPTER 6. RESULTS

DEMOGRAPHIC CHARACTERISTICS

Traditional Chinese Medicine (TCM) Key Informant Interviews

Of the 12 TCM Key Informants (KIs) interviewed, 42% are female and 58% are male. The length of time in practice ranged from 6 to over 50 years. Two are a father-son team who work together.

Modalities practiced: 75% of TCM KIs are licensed in TCM, including both acupuncture and herbology. Two KIs (17% of total) are MD's licensed in the USA and practicing at Asian Health Services, and did fellowships in acupuncture but do not have the full training in TCM theory, diagnosis, and herbology; however they are the most familiar with the patient population at AHS, so they can give unique inputs to this study. One KI (8% of total) is an herbalist who does not practice acupuncture; he is located in the center of Oakland's Chinatown very near to AHS, is well known and has many Chinese patients. Specialized knowledge/positions include: 75% have extensive background in Western medicine, as detailed in the table below.

TABLE 1: TCM Key Informant demographics (n = 12)

Gender	
Female	42%
Male	58%
Length of practice	From 6 years to over 50 years
Modalities (acupuncture, herbology, Western medicine)	
Acupuncture and herbology	75%
Western medicine and acupuncture, no herbology	17%
Herbology only	8%
Background in Western medicine	
MD's in the US	17%
MD's in China – worked in integrative setting	17%
TCM providers in China – worked in integrative setting	42%
Total with extensive Western background	75%

Chinese Diabetic Patient Focus Groups

Of 15 Chinese diabetic patients in the Focus Groups, 67% are females and 33% males. Their ages are between late 40's and early 80's. All speak either Cantonese or Mandarin. Two are married to each other.

TABLE 2: Chinese Diabetic Patient demographics (n = 15)

Gender	
Female	33%
Male	67%
Age range, years	40's – 80's

The study results are reported in two parts: (1) Chinese Diabetic Patients' Experiences with Traditional Chinese Medicine (TCM); and (2) Integration of TCM and Western medicine.

Chinese Diabetic Patients' Experiences with Traditional Chinese Medicine (TCM)

The patients' experiences with TCM include use of TCM health care modalities like herbs and acupuncture, and also include TCM provider-patient communications. This section discussess: a brief summary of the key themes, further examination of select themes (Chinese diabetic patients' use of TCM, communications between TCM providers and Chinese diabetic patients, and safety risks in the use of TCM), and implications of the results.

Major Themes

This section summarizes major themes from TCM Key Informants (KIs) and from Chinese diabetic patients.

Major themes from Traditional Chinese Medicine (TCM) Key Informants (KIs)

Treatment modalities that KIs commonly offer to Chinese diabetic patients include: acupuncture, moxibustion, herbal formulas, and advice. Several KIs mentioned that with diabetes treatment, extended and consistent use is needed in order to obtain results. In terms of advice to Chinese diabetic patients, many KIs mentioned that they routinely give advice, and we noted that the content of their advice is similar to the advice given by Western providers. When asked about safety risks involved in TCM for Chinese diabetic patients, KIs identified two safety issues: contaminants in some herbal products, and lack of proper training on the part of some TCM providers whom patients see. The frequency of communications between KIs and their Chinese diabetic patients ranges anywhere from weekly to once every 2-3 months.

Major themese from Chinese diabetic patients

Most Chinese diabetic patients participants have had experience with traditional Chinese medical practices, with varying results in terms of efficacy. The few who tried TCM for treatment of diabetes only tried it for a short period of time. Several patients spoke of trust of TCM providers as variable, the level of trust depending on the provider's experience, and the outcome of the treatments. Some patients use Chinese medicinal herbs without consulting a TCM provider, but rather purchase the herbs based on recommendations of family, friends, or

newspaper. Some patients mentioned the same 2 safety issues that KIs brought up, which are: contaminants in herbal products, and lack of proper training of some providers.

Putting together these data from KI providers and from patients, we report on 3 topics that emerged regarding Chinese diabetic patients' use of TCM: (1) TCM modalities used by Chinese diabetic patients; (2) Communications between TCM providers and Chinese diabetic patients; and (3) Safety risks in the use of TCM .

TCM MODALITIES USED BY CHINESE DIABETIC PATIENTS

In Chapter 1 we discussed common TCM modalities. Here we look at our data on what modalities are offered by TCM provider KIs in the study, what modalities Chinese diabetic patients in the study report using, and what results patients have seen with use of TCM.

TCM KI perspective

Most KIs reported that common treatment modalities they provide to diabetic patients include acupuncture, moxibustion, herbal formulas, and patient education. A few practitioners provide additional offerings like qi gung exercises or nutritional supplements, and a few offer only acupuncture, or only herbology. Several KIs mentioned that for treatment of diabetes, consistent and long-term treatment is necessary for results to be achieved. KIs discussed TCM theories and differential diagnosis for diabetes, and these were the same as we found in our literature research – for more details please see chapter 4.

TCM Key Informant: *"What does Chinese medicine treatment mean?.... Herbs, acupuncture, moxibustion, qi exercise."*

Chinese diabetic patient perspective

Patients were asked about their use of two common TCM modalities: acupuncture and herbs. Most patients in the study reported having used herbs, and a few have used acupuncture. In the results, "positive effect" is defined as improving the condition for which they sought treatment. "Negative effect" is defined as causing an adverse outcome.

Table 3: Patient experiences of Chinese herbs and acupuncture (n=15)

Experience of:	**Experience**				**Inexperienced**	**Didn't say**
	Positive effect	Negative effect	No effect	**Total used it before**		
Chinese herbs	40%	7%	20%	**60%**	**20%**	**20%**
Acupuncture	7%	0%	7%	**13%**	**47%**	**33%**

(Note: One patient had both positive and negative experiences with herbs.)

The few patients who tried TCM treatments for diabetes only used it for a short period of time (less than 1 month). One patient reported twice trying an herb that her mother recommended for hyperglycemia, and experiencing immediate dizziness and sweating which she attributed to hypoglycemia.

Chinese diabetic patient: *"I've heard a lot about buying pig's pancreas and boil it.... they say it's very good. They also say to boil corn silk, boil more corn silk. They say it can lower blood glucose. I've tried them.... I've boiled them before."*

Implications

1. *High rates of use of TCM:* Sixty per cent of patients in the study reported having used TCM. As discussed in methods, the use of TCM may be even higher in the broader population of Chinese diabetic patients, because our sample contains only patients who are using Western health care regularly. But even a 60% use rate is high enough to show that Western providers need to know about patients' informal integration of TCM and Western treatments. Also Western providers need to think about what role we can play in minimizing the risks and maximizing the benefits of the integration. Issues of integration will be further discussed under the next section of Results, on "Integration".

2. *Paradox in patterns of use of TCM for diabetes treatment:* We note a paradox between the frequency and duration of treatment that providers say is necessary to obtain results with treatment of diabetes, versus the pattern of use that patients report. TCM providers say that for diabetes, consistent and long-term treatment is necessary for results to be achieved. In contrast, patients who tried TCM for diabetes report using it for only short trials before giving up. Hence we note that it is not surprising that the patients generally did not see positive results for their diabetes, leading to some patients' conclusion that TCM is not effective for diabetes.

3. *Recommendations:* Our recommendations to Western providers regarding Chinese diabetic patients' use of TCM are incorporated into the recommendations later in this chapter in the section on "Integration of TCM and Western Medicine".

COMMUNICATIONS BETWEEN TCM PROVIDERS AND CHINESE DIABETIC PATIENTS

Here we describe frequency of visits, content of communications, and level of trust between patient and provider.

TCM KI perspective

KIs see an average of 39 patients per week, with an average of 7.5% Chinese diabetic patients. Frequency of patient visits depends on the stage of diabetes: pre-diabetics are encouraged to come once a week to get intensive advice and treatment to avoid progressing to diabetes. Patients with complications may also come weekly. The remainder of patients come between once a week and once every two months.

Communications with patients includes patient advice and education on: diet, exercise, stress, sleep and lifestyle; potential outcomes of uncontrolled hyperglycemia; and the necessity of regular Western treatment and monitoring.

> *Field note 8/20/10: Patient advice from KIs is very similar to that given by Western health providers, with one difference being that TCM providers place more emphasis than Western providers do on stress as a factor in high blood sugar.*

> *TCM KI: "Usually we will check their diet list, what they're eating breakfast, what they're eating lunch, what they're eating dinner, we find out if need to give them some*

advice to change their diet.... [We also educate patients on] stress, and exercise. Maybe we give them some education course or give them website to take a look."

Chinese diabetic patient perspective

When patients experience acupuncture, it is experienced through a visit to a TCM practitioner; Chinese herbs, on the other hand, can either come from a TCM practitioner's prescription, or be purchased without a visit to the TCM practitioner, but rather based on the recommendation of family, friend, or newspaper. While 60% of patients reported having used Chinese herbs, only 20% reported having seen a Traditional Chinese Medicine (TCM) doctor.

Of those who saw TCM doctors, some have seen practitioners in the US, and some in China. Regarding communications on diabetes from a TCM provider, patients reported a variety of experiences, including: no advice; same diet advice as Western doctors; and one patient reported being told that the TCM doctor can cure them. Patients' trust in providers also varies - some patients say they would trust what the provider says, and some say their trust level depends on what kind of training the provider has, and whether the treatments work. One patient distrusts all TCM providers.

Chinese diabetic patient: *"[The TCM doctor tells diabetic patients to] eat less sweets, exercise more. It's about the same. The protocol is about the same. I don't know, maybe they're just following what the Western doctors are saying."*

Chinese diabetic patient focus group:

Facilitator: Would you trust a traditional Chinese medicine provider?

A&B: Yes, I will trust him/her.

Facilitator: Would you change your behavior for your diabetes treatment?

B: yes, I will follow his/her advices.

Facilitator: What about you, Mrs. Lee?

C: I agree.

Chinese diabetic patient: "All the [TCM] doctors are bad docors. They re always lying, if they can swindle money from you then they are a doctor."

Implications

1. *Use of herbs without monitoring by a TCM provider:* We see from the data that many patients may be using Chinese herbs without advice or monitoring from a TCM provider. Since these herbs can have medical effects, if the patients' information about the herbs is inadequate, use of the herbs can create health effects, which makes it crucial for Western providers to know about the use of Chinese herbs. Not only do the herbs carry potential effects by themselves, they may also interact medically with Western pharmaceuticals – this is discussed further under "Integration".

2. *TCM providers' messages to patients can reinforce Western providers' messages to patients:* Given that Western care providers have a problem with effectively delivering health messages to Chinese diabetic patients, it is a very significant finding that TCM providers' health messages to Chinese diabetic patients are very similar to the health

messages that Western providers are trying to deliver, including lifestyle advice and the need to adhere to Western providers' instructions. Therefore if a Chinese diabetic patient is already choosing to see a TCM provider, then the TCM provider could play an important role in reinforcing these common messages, in a way that is culturally concordant and hence more effective for the Chinese diabetic patient. Our related recommendations are incorporated into the next Results section, on "Integration".

SAFETY RISKS IN THE USE OF TRADITIONAL CHINESE MEDICINE

Safety risks mean potential harmful medical outcomes from the use of TCM. Risks related to medical interactions between TCM and Western medicine are discussed later in the results on "Integration".

TCM KI perspective

Most KIs said that TCM is very safe, and carries a negligible level of risk when used correctly by a properly trained provider. Risk comes from lack of provider training, or improperly processed herbs. Several KIs discussed these risks in more detail:

1) Some TCM providers are not properly licensed, which means they may be underqualified. Patients often go to less expensive providers or providers who are familiar to them, rather than choosing providers based on credentials.

2) Some Chinese herbal products can be contaminated with toxins. Most Chinese herbs are imported from China, where often there is no quality control. Some herbs have been found to contain heavy metals and Western pharmaceuticals that are added during processing. One MD acupuncturist at AHS reported a case he experienced of a child who suffered from heavy metal poisoning from a patent Chinese herb formula.

TCM Key Informant: *"The Western medicine doctor who have Asian patients who see a TCM practitioner, they need find out if the practitioner has license and experience. What's here important is absolutely this one basic thing: if the practitioner uses Chinese medicine properly. So that means if this Asian person goes to someone just in Chinatown or someone on the street, someone with no license, or even licensed but they don't have the experience to treat this disease, then they can prescribe the wrong stuff, and absolutely they can harm the patient. Same as any Western medicine, you need to see who has the license, and who has the experience. Absolutely, you know Chinese medicine is in so many, many Asian cultures, they are poor, they don't want to go to doctor with the license, they just do what their grandmother say, what their neighbor say, they go to the shop what the people say, 'Oh you use this certain thing,' they want to use the same thing. This thing is very important for the medical doctor to know. If they do not go to see professional [TCM practitioners], definitely they can take lots of wrong stuff."*

TCM Key Informant: *"I think it's still generally still safe, because Chinese medicine as I know just emphasize treat the primary condition. The only thing I suggest if they are*

taking medication and at the same time they also want alternative medicine, they'd better ask the acupuncturist's background, or their confidence, or you have maybe a consultation first, ask the question and their treatment plan, and you also present all of the Western medicine report, and history, and see if this acupuncturist has enough knowledge to handle this case."

Chinese diabetic patient perspective

Patients mentioned two safety concerns that are a risk to health in using TCM:

1) Some TCM providers are not properly trained.
2) Herbal products can be contaminated with toxins.

Chinese diabetic patient: "I'm not saying Chinese doctors are not good. Those who have learned it are good, but those who have only learned a little bit, some have only gone to a couple of classes and don't do it correctly. Those are no doctors. The real doctors are good."

Chinese diabetic patient: "I don't buy traditional Chinese medicine now. I don't trust traditional Chinese medicine here. Some medicine might be poisonous."

Implications

Because TCM KIs and Chinese diabetic patients named the same two risks of undertrained providers and contaminated herbal products, Western providers should be aware of these two risks. There are ways to reduce these risks. To avoid under-trained TCM providers,

patients should be referred to public directories of licensed TCM practitioners. Also patients should ask their providers for credentials. As for herbal products safety, there are providers in the Bay Area who perform their own quality control tests regularly, and only import from providers in China who have a good record of no contaminants in their herb products.

We make the following recommendations for reducing safety risks in the use of TCM:

1) Written information should be made available to both providers and patients to educate on these risks, and to provide resources for finding licensed TCM providers and quality-controlled herb products.

2) Providers should screen their Chinese patients for use of TCM providers and herbs, and educate patients about the potential risks of untrained providers or herbs from sources that are not tested for quality control.

Integration of Traditional Chinese Medicine (TCM) and Western Medicine

Integration of Traditional Chinese medicine with Western medicine means the use of elements of both systems simultaneously (not necessarily on the same day, but in the same time period so that effects of the two treatments overlap). As we saw in the previous section of this chapter on Chinese diabetic patients' experiences with TCM, many patients are *already* using both TCM and Western modalities, so in effect they are already integrating the two systems, but informally. This fact opens up questions for the concerned physician, including: What are the

medical benefits and risks from this integration? And how do we coordinate clinical care from Eastern and Western medicine to maximize the benefits while minimizing the risks? In Results Part 2 we discuss various aspects of integrating TCM and Western medicine in the lives of Chinese diabetic patients. Here we present: (1) a brief summary of the major themes; (2) discussion of select themes (benefits of integration, risks of integration, model of integration); and (3) implications.

MAJOR THEMES

This section summarizes major themes from TCM Key Informants (KIs) and from Chinese diabetic patients.

Most of the data comes from TCM provider Key Informants (KIs), who were asked at length regarding integration issues, whereas patients were not directly asked about integration, however some patients brought it up on their own.

Themes that are present in the data more frequently and from more participants are generally considered as more robust; however some data that are brought up by only 1 or 2 of the KIs are still very significant, because these KIs may be experts on certain topics that other informants are not. The study findings from KIs are not a survey of average TCM practitioners' practices and views, but rather a exploratory collection of ideas from experts in the field of TCM for Chinese diabetic patients in a region of North America with one of the largest populations of overseas Chinese. This collection can be analyzed to get a sense of what we need to research further in broader and deeper studies.

Major themes from Traditional Chinese Medicine (TCM) Key Informants (KIs):

1. *Integration improves medical outcomes*

   KIs spoke of a number of ways that integrating TCM with Western medicine can improve medical outcomes for patients. Many KIs mentioned that TCM and Western medicine share the common goal of preventing pre-diabetics from progressing to diabetes. For patients who have already progressed to diabetes and need to take hypoglycemic medications, several KIs said that TCM can help to stabilize or even decrease the level of hypoglycemic medications in the long term; however, they said that for diabetic patients who depend on insulin, Chinese medical treatment does not substitute for or allow the cessation of insulin use, which provides immediate glycemic control, but rather TCM gives slower, longer term improvement in glycemic control. Western medications can cause various side effects, and several KIs said that TCM can help treat these side effects so that patients can better tolerate the medications. As for the complications of diabetes that result from uncontrolled high blood sugar, several KIs said that TCM can treat these when sometimes Western medicine cannot offer much.

2. *Integration improves cultural competence*

   A few KIs mentioned that integration improves cultural competence of Western providers by increasing Western provider-patient cultural concordance, and honoring patients' preferences for culture-specific health care. One KI mentioned that by tapping into existing TCM provider-patient communications to reinforce Western health messages, integration can improve patient compliance and education.

3. *Safety: medical risks of integration*

Several KIs mentioned that lack of integrative knowledge and experience on the part of both TCM and Western providers exposes patients to risks that would be avoidable if providers were aware of patients' use of both systems, and if providers were knowledgeable about potential medical interactions between Chinese and Western medicine treatments. One of these avoidable risks, as mentioned by some KIs, is "double treatment overdose," or strongly treating hyperglycemia with both TCM and Western medications simultaneously, possibly leading to hypoglycemia. Aside from this risk, herbs used to treat diabetes are considered very safe by all providers. Another potential risk that some KIs mentioned comes from combining certain herbs with blood thinning medications, leading to bleeding problems.

4. *Models of integration – guidelines and protocols*

KIs mentioned some facilitating factors, challenges, and strategies for integration. A facilitating factor mentioned by several KIs is that they have personal experience in integrated systems and they have seen it work very successfully to benefit the patient, so they can use their personal experience to guide current and future efforts in integration. Challenges mentioned by some KIs include financial and insurance limitations as barriers to patients' accessing Chinese medicine. Other challenges mentioned by some KIs include lack of knowledge on the part of both Eastern and Western providers regarding integration, and lack of scientific studies. As for strategies, most KIs say that ideally, both sides should know more about each other and communicate with each other; however a few KIs say that it is not necessary for the Western provider to understand the

Chinese medicine. A few KIs say that acupuncture is simpler to integrate than herbs, and therefore is a better starting point. However, one KI points out that since patients are already integrating herb use with Western treatments, there is an immediate need for further examination of herb-drug integration.

Major thmese from Chinese diabetic patients

1. *Patient preferences*

   A few patients expressed preference for integrative services and information for diabetes from their Western providers.

2. *Barriers to integration*

   A few patients spoke of financial and insurance problems as barriers to using Chinese medicine alongside Western.

Combining these data from TCM KIs and Chinese diabetic patients, we now present the findings by topic: benefits of integration, risks of integration, models of integration, and implications from these findings.

BENEFITS: HOW INTEGRATION IMPROVES CARE FOR CHINESE DIABETIC PATIENTS

INTEGRATION IMPROVES MEDICAL OUTCOMES

This section identifies specific areas of the diabetic patient's medical treatment where Chinese medicine can help Western medicine to improve the patient's medical outcomes. These areas include: preventing pre-diabetics from progressing to diabetes; stabilizing or even decreasing the level of medications needed for controlling blood sugar; treating complications of diabetes; and treating side effects of Western medication.

Prevention for pre-diabetics

TCM provider KIs agree with Western medicine that the best time to treat diabetes is *before* it becomes full-blown diabetes. KIs report that they see pre-diabetic patients more frequently (more visits per patient per unit time) than stabilized diabetic patients with no complications, in order to aggressively treat underlying systemic causes of hyperglycemia, and to provide and reinforce patient education so as to effect change in those patients' lifestyle habits.

> <u>TCM provider:</u> *"A huge number of my patients have high risk of diabetes, family history, gain weight, pre-diabetic, not diabetic yet.... Best time to help them because they are high risk. A lot of them didn't even tell me their family history, but when I treat them and talk to patient, I can see they have those issues. The good thing is we can do*

acupuncture, we have high risk pre-diabetics, we can help them change food style, manage weight, combine with herbs, they don't need any drugs."

Stabilizing or decreasing the level of medications needed for blood sugar control

All KIs agreed that if a person has passed the pre-diabetic phase and has full-blown diabetes and uncontrolled hyperglycemia, then insulin is needed for fast control of blood sugar. TCM treatment alone will not meet the patient's needs, because herbs and acupuncture work much more slowly to control blood sugar. However TCM treatment can still play a complementary role, because the treatments target the underlying "imbalances" leading to hyperglycemia. Over time, TCM can help keep drug doses from increasing, or sometimes can even slowly lower the required dosage. TCM providers advise their patients that they must continue their insulin regimen in order to avoid the dangerous outcomes of hyperglycemia.

TCM Key Informant: From my experience I think Western medicine mostly treats the symptoms, which is secondary, meaning they treat the blood sugar. So most medications just decrease or stabilize blood sugar; but not many emphasize for the primary. In Chinese medicine we divide the secondary, or symptoms, from the primary, which are different kinds of pathologies. So the TCM actually is very good for treating the balance, or regulating their primary condition. So if Western and TCM can work together, probably we can get the best results for the patient. That's why I started my clinic, I usually use the herbal medicine and treat the primary condition. My treatment doesn't interrupt any medications. We understand the medications, their function, their target, and their indications, and then we can use the TCM and treat the other primary

problems, such as other indications, symptoms, or the pathology. We got great results. Several patients after the TCM treatment started decreasing their medications. Why can TCM work for diabetic patients? Because TCM not only pays attention to the blood sugar. The blood sugar has many reasons that might cause it to be high, even if a person's pancreas is normal, but maybe from stress, from unhealthy foods, or unhealthy lifestyle. Even other diseases such as coronary heart disease, or hypertension, or obesity. So all of the other disease can cause the blood sugar to be high. So that's why when TCM treats the diabetes, we not only focus on the blood sugar, but we also need to look at the primary causes, the primary reasons, and see what is unbalanced. So that means TCM maybe works not really quickly like Western medicine, can't see results immediately like one day or a few days, we maybe need a couple months. But this approach can combine together with Western medicine, because one works for immediately, and one for long-term, ok, for primary. So together it's better. But just like you say, if the doctor does not really understand Western medicine or Chinese medicine, it is difficult for them to combine the two.

TCM Key Informant: "I think in some cases Chinese herbs may be a little bit slow to get result, then they do need stronger treatment from Western medical doctor to control them right away.... We always say Western medicine is one leg, and Chinese medicine is other leg, and people walk better with 2 legs."

TCM Key Informant: "We can also use the acupuncture and herbal medicine to slowly, slowly decrease the need for Western medication. That means this person adhered and

responded very well to both [TCM and Western treatments], and we try to decrease the medication dosage, and step by step slow down the dosage. I have several successful cases who took the medication before and now they decrease a lot, because they got to the point where their Western doctor said it was OK to decrease the medication, and everything feels ok when they decrease the medication."

Treating complications of diabetes

Patients with advanced diabetes deal with complications such as neuropathy, circulatory problems, and nephropathy. Often Western treatments can offer patients only limited help for these issues. KI providers report that acupuncture and herbs can offer patients a lot of support for these complications.

Chinese diabetic patient: "I use acupuncture often. I had it here [in AHS's acupuncture pain clinic]. It was pretty good."

TCM Key Informant: "They found in China...TCM treatment for diabetic patient with neuropathy, and nephropathy – kidney problem. They found out they can really help with kidney function. They can reduce urine protein.... They treat people with affected vision, we can use herbs and acupuncture to help. They even treat in China the gangrene. They use internal herbs and external wash. I think the herbs really help with that, internal combination with external."

TCM Key Informant: *"Some of the sequelae, peripheral neuropathy, responds great to acupuncture. It depends on if you talk about the disease or the sequelae, because each warrants different therapies."*

TCM Key Informant: *"I think if [Western providers] are making a team with TCM providers, checking the blood sugar definitely is one of the big markers to see if you improve or not improve. Even if the blood sugar stays at the same level, it might be maybe the Chinese herbs, acupuncture, breathing exercise, etc. can definitely lower the dosage of the drugs, that should be wonderful. This is one of the goals we can go for. And then also the Chinese herbal medicine is very good for the side effects of the diabetes, for example the diabetes leg edema, poor circulation, purple bruises, which the Western medicine cannot do too much about. And acupuncture can do a lot for the bruised legs, and nerve sensations on the feet, talking about numbness of the toes, diabetes legs you know. Chinese medicine treats it by helping to promote the circulation, and strengthening the qi."*

TCM can help patients tolerate Western medications by treating side effects

Some people perceive use of TCM as an attempt to get away from Western treatment, and hence they think TCM use is intrinsically at odds with Western medicine. But several KIs spoke of one potential function of TCM as being supportive of Western drug use by alleviating drug side effects and therefore allowing the patient to tolerate the drug better. Specific side effects of drugs that KIs report having treated effectively include thirst, digestive problems, and sleeping problems. One KI spoke of a patient who was too weak to tolerate Western

medications, but with TCM treatment, she got to the point of being able to use Western medications.

> *Chinese diabetic patient: I take [Chinese herbal formula name]. If you take it it's good for you. There are several kinds that are good....You can sleep better and you'll be more stable.*

> *TCM Key Informant: "The patient tells you medication name....When you make the prescription of herbs or acupuncture points, you will avoid any contraindications for these drugs, or you can do the other side, you can make up [for the functions that the drugs don't cover], and also maybe you can lessen side effects of the drugs.*

Implications

Our data suggest that integration can improve Chinese diabetic patients' medical outcomes. However, several KIs pointed out, as did our background literature review, that research in this field is extremely lacking. This field of study is worthy of greater attention and funding from the national down to the local level of our nation's health care system, because the problem of diabetes is so critical; the problem is even worse for Chinese patients than for the overall population; and currently our health care system is failing to answer this problem. Therefore we recommend that:

1) Public and private institutions should budget more funds for research on TCM and diabetes care.

INTEGRATION IMPROVES CULTURAL COMPETENCE

As discussed in Chapter 1, health care to Chinese diabetic patients is suboptimal, in large part because of a two-way gap in communication between Western provider and patient that lowers provider cultural competence. Study participants indicated that integrating TCM with Western medicine would increase Western medicine's cultural competence with Chinese patients, in a number of ways: (1) Integration increases cultural concordance between Western provider and Chinese patient; (2) Integration honors patients' preferences for culture-specific health care; and (3) Integration can reinforce health messages that Western providers are trying to deliver to Chinese diabetic patients, because TCM providers are giving the same messages in a way that is culturally concordant for this population.

Integration increases cultural concordance between Western provider and Chinese patient

Several KIs mentioned that patients may hide their use of TCM for fear of their Western providers' disapproval. A few KIs said that some Western providers do indeed disapprove and tell their patients not to use traditional medicine, but that this rejection of TCM is due to lack of knowledge, and is not founded on objective data, and therefore is overly conservative. Some KIs said that Western providers, by possessing some understanding of Traditional Chinese medicine practices, can decrease the cultural gap with patients, allowing patients to feel comfortable and confident to report their use of and ask questions about traditional medicines.

> <u>TCM Key Informant:</u> *"Some patients don't want to tell their doctor they are on herbs, because they say, 'Oh my doctor won't be happy if they know I'm taking herbs.' I hope*

doctors will be more open minded, it's better for the patient, so they can monitor, if they need to check something."

Integration honors patients' preferences for culture-specific health care

Several patients mentioned their interest in receiving more integrative information and services from their Western physician, health coach, or dietician. It is noteworthy that patients in the Focus Groups were not asked about their preference for integration, but several patients spoke of it spontaneously without being prompted.

Chinese diabetic patient: "I think that the dietician could provide some advice regarding traditional Chinese medicine."

Chinese diabetic patient: "Maybe you can suggest providing more information like whether Ginseng is good for diabetic patients or not. Traditional Chinese providers have the knowledge, but we don't."

TCM KI (AHS MD acupuncturist): "It benefits patients' health outcomes to be able to access care that they are familiar with through their parents or through their culture."

Integration can reinforce Western health messages to patients

All KIs reported engaging in patient education with Chinese diabetic patients, and data revealed that the content of their messages to patients is very much the same as the messages that

Western providers are trying to deliver to patients, including (1) advice on dietary and lifestyle changes, and even (2) the necessity of adherence to Western medical care.

1) *TCM advice on dietary and lifestyle changes:* Just like Western health messages, TCM advice for diabetic patients emphasizes education on diet and lifestyle. The main difference is that TCM emphasizes stress control for diabetes more than Western medicine does.

2) *TCM providers urge adherence to Western medical care:* Many KIs indicated, without being prompted, that they encourage their patients to see their Western provider regularly, to take their insulin and other medications as instructed, and to monitor their blood sugar. And when KIs detect a health issue such high blood pressure, retinal degeneration, or liver failure, they urge the patient to see their Western provider for diagnosis and treatment. In this regard, the TCM provider not only offers complementary care that can medically benefit the patient, but also serves as a crucially needed cultural liaison to the patient's Western care services.

The KIs who are MD's at AHS both spoke about the challenge of patient education for Chinese diabetic patients, given both cultural factors and the lack of time that MD's have with patients. They may see a patient for only 15 minutes every 3 or 4 months, and it is very difficult and sometimes impossible to give effective patient education on top of the basic medical management in the 15 minutes.

TCM Key Informant: *"....I suggest patients to see their Western doctor to keep track or follow up.... Sometimes with very severe patients, we need to send them to the Western doctor to check if they have complications, such as maybe eye problem or kidney problem.... If there's cancer, or some organ problem, they need to get diagnosis and treat it by Western medicine."*

TCM Key Informant: *"I say you absolutely 100% listen to the MD."*

Chinese diabetic patient: *"There wouldn't be a Chinese doctor who would say, 'just take my medicine and stop your Western medicine.'"*

TCM Key Informant (AHS MD acupuncturist): *"I had a patient who was not open at all to Western meds..... I think he's probably dead now. He was a young guy, he went blind within the 1 or 2 yrs I took care of him. He was strongly into the Chinese Medicine approach.... In that case if I had had a Chinese medicine doctor here whom he trusted in the team, perhaps he would have been open to Western meds.... Maybe the Chinese medicine doctor could have said hey, what we're doing with Chinese Medicine is not completely doing the job for you, and you know actually some of these Western meds work. Maybe he would have been open to it."*

Implications

We saw in Chapter 2b that Chinese-Americans are the most likely subpopulation to use alternative medicines (McFarland, 2005), but also the least likely to report their use (Mehta et al.,

2007). This phenomenon contributes to the cultural gap and lack of trust between Chinese patient and Western provider. Bringing TCM into Western providers' awareness and into the communications between Western provider and patient helps bridge the gap in culture and trust. If Western providers can provide advice about safe and effective TCM, they would not only be providing an important health service, but they would also be honoring patients' preferences.

Some Western providers might fear that accepting or encouraging a patient's choice to use TCM could increase the risk of a patient not seeking Western medical care, or not following his or her Western provider's advice or prescriptions. But our findings suggest that on the contrary, TCM providers are likely to reinforce Western health messages. Any and all reinforcements of patient education messages are highly valuable, because as we discussed in Chapter 1, health care delivery to Chinese diabetic patients is far from optimal, in part because of the two-way communication gap. For patients who communicate with TCM providers, the patient education messages from the TCM providers would be highly effective because they are delivered in a culturally concordant fashion.

We recommend the following to improve cultural concordance between Western providers and Chinese diabetic patients:

1) Encourage Western providers to learn some basic principles and terminology that would help them communicate with their Chinese patients about use of Traditional Chinese Medicine. Methods for learning about TCM include: disseminating information about existing CEU classes on the subject; inviting teachers to conduct classes; and creating a pamphlet that provides some basic information for Western providers regarding TCM.

These actions can be taken on many levels – by individual clinics and hospitals, by departments of public health, and on a national level.

2) Western providers should ask their Chinese patients about use of TCM.

3) If a Western provider learns that a patient is seeing a TCM provider, communication should be established between the TCM and Western providers so that they can coordinate to reinforce patient education messages.

RISKS: SAFETY RISKS IN INTEGRATION, AND METHODS FOR MINIMIZING RISKS

"Safety" in integration involves examining what are the medical risks associated with integrating TCM with Western treatments. The 3 main safety issues that came up in the data were: (1) "double treatment overdose," (2) combining certain herbs with blood thinning medications, and (3) lack of knowledge regarding integration on the part of both TCM and Western providers.

Risk: "Double treatment overdose"

"Double treatment overdose," as one KI calls it and which a few others spoke of, is a risk of using strong treatment from both Western and Eastern medicines to lower blood sugar, potentially leading to hypoglycemia. KIs reported that this outcome is rare, because usually herbs do not have a strong immediate effect on blood sugar. However one patient reported that

on two occasions she ingested an herb that her mother recommended for controlling blood sugar, she experienced immediate dizziness which she attributed to a hypoglycemic effect from the herb.

> *Field note 8/18/10: A Cochrane study shows that herbs for hyperglycemia are safe (*Liu, 2002).

> *TCM Key Informant: "If you are already full, your stomach full with food, big steak [symbolizing Western medical treatment for hyperglycemia], at the same time do you want to also eat very delicious Chinese dish [symbolizing TCM treatment for hyperglycemia]? You don't need double treatment overdose. Even though it's different, you treat the sugar problem, you will be overdosed. Unless they already have lower sugar, so that they don't need too much drug to control the blood sugar, in that case you may add herbs to help them maintain."*

Risk: Combining certain herbs with blood thinning medications

Several KIs said that the category of herbs used to "move blood stasis", when combined with blood thinners like aspirin and Coumadin, can cause bleeding problems, similar to overdose of blood thinners.

> *TCM Key Informant: "Maybe the patient say is taking blood thinner -- not talking about diabetes [treatment directly], but blood thinner might be for diabetes legs maybe -- and you have high blood pressure, if you push the energy too much strengthen the qi, it might*

cause blood hemorrhage. That means that if you talk the medical interactions with the drugs, herbs for diabetes are not bad, but if you use it for circulation, it might be that you have to be caution about it. The diabetes drugs I don't see anything that big in the interaction."

Risk: Lack of knowledge about integration on the part of both TCM and Western providers

Several KIs pointed out that knowledge about integration of TCM and Western medicine is limited, due to limited existing research. What knowledge does exist on integration is hardly known by Western and even many TCM practitioners, because formal integration is still new in the US. This lack of knowledge increases the risk to patients who use both TCM and Western medicines together.

In terms of TCM provider knowledge, a few KIs who are TCM educators explained that a few years ago the licensing board for Traditional Chinese Medicine practitioners increased the required licensing exam content on the topic of herb-drug interactions. Some providers also mentioned that there is increased availability of continuing education classes available on herb-drug interactions and TCM-Western integrative medicine.

However 2 KIs said that these changes are only starting to take effect in recent years, so providers trained earlier may have less knowledge in herb-drug interactions. An even greater risk comes with practitioners who are not legally licensed at all. Some providers and a few patients brought up the issue of patients choosing TCM providers who are not properly trained, based on low price for services or on recommendations of friends and family.

In terms of Western health care provider knowledge of TCM, both KIs who are MD acupuncturists at AHS said that even though they practice acupuncture, they know a minimal

amount about the deeper theory of TCM, and almost nothing about Chinese herbology or its interactions with Western drugs; and typical MD's know even less than they do.

> *"TCM Key Informant: "Many Western medications and herbal medicines have contraindications, they may have interaction with each other. [Cites 2 examples: combining blood thinners with "move blood stasis herbs," and double treatment overdose.] So that's why when you use herbal medicine, you also need to know the Western medicine. Most Western practitioners don't use herbal medicine together with Western. But this is why we need to ask all the herbalists, they need to know the medication very well, because when you prescribe any herbal medicine the formula, you need to know about the patient's medication information. So this is very important. That's why now in our acupuncture school we emphasize a special class in herbal-drug interactions. Even the state board acupuncture licensing exam contains 5% content on contraindications between the drugs and herbal medicines."*

IMPLICATIONS

Now that we have looked at the risks of TCM-Western integration that the providers and patients brought up, we want to examine how to minimize these risks. Below are recommendations for solutions to each risk drawn both from data and from our literature research and field notes.

Solutions for avoiding "double treatment overdose"

KIs brought up the following solutions for avoiding the risk of hypoglycemia from double treatment:

1) Many KIs will not treat blood sugar directly if the patient is on insulin; rather they focus on the body's mechanisms that underlie the blood sugar problem, for example tonifying the spleen/stomach or tonifying kidney yin and yang. These mechanisms which the TCM providers spoke of are the same as those discussed under TCM Theory of Part 1.

2) Several KIs said that if they have any concern about potential "double treatment overdose" or any other adverse effects, they instruct the patients to carefully monitor blood sugar and watch out for symptoms, and if any symptoms are detected, appropriate adjustments can be made to the herb formula.

3) Several KIs said that it is standard practice to advise patients to space herbs and drugs apart by 3-4 hours.

4) Some KIs will not use herbs at all if the patient is on 4 or more Western medications, but will focus on acupuncture and lifestyle advice as their treatment modalities.

<u>TCM Key Informant:</u> *"For a patient using the full dose of the drug already, what for you have to give herbs? But you can still do something: a few herbs to help the drugs' side effects, but not for the diabetic treatment. I don't want to add herbs treatment for diabetes, but you can use herbs to treat the side effects. Especially with diabetes, the*

body is very sensitive. But you can apply acupuncture at the same time as Western medicine treatment, that's usually ok."

Solutions for combining certain herbs with blood thinner medications

We recommend the following solutions for risk of herb-drug interactions blood thinning medications and Chinese herbs in the category of "move blood stasis":

1) Western physicians who prescribe blood thinning medications to Chinese patients should inform their patients about potential interactions between these drugs and some Chinese herbs.
2) TCM practitioners prescribing "move blood stasis" herbs should ask their patients about use of Coumadin, aspirin, or any other blood thinners, as well as any bleeding conditions the patient may have.
3) A list of the most common Western blood thinning medications and the most common herbs that are contraindicated with these medications should be distributed to providers who work with Chinese patients.

Solutions for lack of TCM provider knowledge

We recommend the following solutions for lack of TCM provider knowledge, and patients' selection of TCM providers:

1) We recommend that Western providers help reduce the risk of patients going to under-qualified TCM providers by asking their Chinese patients whether they use TCM

providers, and helping those patients who do use TCM to choose well-qualified providers.

2) We recommend creating a pamphlet that providers can share with patients regarding safe use of TCM, including selecting qualified TCM providers.

Solutions for lack of Western provider knowledge –

Solutions for lack of Western provider knowledge about integration come from both KI data and from our own recommendations:

1) A few KIs who teach continuing education classes on TCM for MD's urged MD's who are interested to take these classes.

2) We recommend that health care institutions that work with Chinese patients train their personnel in: patient use of TCM; potential benefits and risks of this use; and the role that Western providers can play to reduce risks. Increasing Western providers' awareness of TCM is important not only in terms of understanding and reducing medical risks, but also in terms of bridging the cultural divide to increase provider-patient concordance.

3) We recommend creating a pamphlet to inform providers about TCM and its possible role in their patients' lives, and the role that providers can play to promote safe and effective integration.

TCM Key Informant: *"Right now a lot of continuing education seminars talk about herb-drug interactions. But not many focus on diabetes, I think most focus on heart disease, because heart disease is more urgent. So a lot of people maybe take aspirin, so that's why be careful use the same function category herbs. But diabetes not much, only few seminars. My seminar is one of them that talks about diabetes."*

MODELS OF INTEGRATION – GUIDELINES AND PROTOCOLS

This section discusses the facilitators, barriers, and key strategies for approaching integration of Traditional Chinese and Western medicine.

FACILITATORS FOR INTEGRATION

While the task of combining two very disparate health systems may seem daunting, we do not have to start from scratch. There are precedents that shed light on how such an integration might look. We have already discussed in Chapter 2 how Chinese and Western medicine already formally coexist in China, in Western Europe, and even in the US. Here we discuss what emerged from our study data in terms of precedents and available expertise regarding integration.

Precedents for integrating Traditional Chinese Medicine and Western Medicine

Many of the TCM providers who trained in China confirmed that they have witnessed and taken part in successful integration of Chinese medicine.

One of the KIs who is an MD acupuncturist at Asian Health Services believes that the Traditional Chinese medicine and Western medicine can be combined without contradiction. He

is intimate with the Chinese diabetic population, and feels that integration is highly appropriate to serving the needs of this population. Another KI has worked at Kaiser Permanente for over 10 years, and from her experience she also believes that integration is successful and beneficial for the patients.

> TCM Key Informant: *"Me, I say it's ok [to use TCM and Western drugs concurrently] because in China so many people take both and benefit from the combination. People shouldn't get scared, they and their providers just need to be careful."*

Available expertise regarding integration

One KI who teaches classes in integrative medicine said that while integration is challenging because generally practitioners on both sides lack knowledge about integration, yet there do exist practitioners who possess extensive knowledge about both traditions, and who are already actively involved in facilitating integration, through research, teaching and practice. A few KIs spoke of the need to develop the terminology to translate Chinese medicine concepts and practices into language useful to Westerners. However, two KIs who teach integrative medicine classes say that they are able to explain TCM to Western practitioners in terms that are clear to the Western scientific mind.

> TCM Key Informant: *"If they're interested, they have opportunities for the Traditional Chinese Medicine profession to communicate with them, to educate them, using their language, meaning use their medical terms. For example, like which herbs really can*

help lower blood sugar; not use TCM yin and yang theory, you have to use Western theory to explain how the Chinese medicine is acting to their patients. We can do this."

CHALLENGES TO INTEGRATION

Despite some existing precedents and knowledgeable experts, there still remain many challenges to making the Traditional Chinese health system work smoothly with the dominant Western system. Challenges that emerged from the data include financial barriers, lack of knowledge on the part of both TCM and Western practitioners about integration, and lack of scientific research regarding TCM and integration of TCM with Western medicine.

Financial/insurance

Most KIs and some patients spoke of finances being one barrier to access to TCM. The financial barrier includes health insurance reimbursement policies, which often do not cover TCM treatments, or only cover a limited amount. The KIs who are MD acupuncturists at AHS reported that the acupuncture clinic at AHS does not cover its costs because they spend more time per patient. However one of them said that this seeming profit loss is balanced by savings through prevention of other more costly interventions such as surgery and pharmaceuticals.

TCM Key Informant: "I think it's not difficult you if you have insurance that pays (for TCM), I don't think it difficult. You can see the Western provider and the TCM provider. Otherwise you have difficulty financially to see both sides often."

Chinese diabetic patient: *"You need to pay to see the Chinese doctors and for acupuncture. I don't have money and I ony have a medi-Cal card. I have no income and my economic status isn't good so I didn't use these [TCM].*

Lack of scientific research regarding integration

A few providers spoke of the difficulty of researching TCM, especially herbs, and the even greater difficulty of researching integrated medicine. Data are sorely lacking, as is funding to further the body of knowledge in this area.

TCM Key Informant: *"Several years ago at Stanford, a professor established a research program to do research on herbs. He got big funding. But 3 or 5 years later, the funding was gone, the research was not complete. The research for the herb formulas is hard to work out because it's too complicated."*

TCM Key Informant: *"In China research is for single herbs, but when we use herbs, it's in combination, not single herbs, so it's hard to tell. Last year they started doing research on formulas, that's more practical, because usually we don't give one single herb, always in combination."*

STRATEGIES

KIs made the following recommendations for future steps toward integration. This is by no means a complete or systematic set of recommendations, but is a starting point based on this pilot study.

Communication

There is lack of consensus among KIs as to how much communication is needed between Eastern and Western practitioners in order for integration to be successful. Most TCM providers feel that Western doctors ideally should acquire some understanding of TCM theory, while a few KIs feel that it is too complicated and not necessary for Western doctors to know much about Chinese medicine, but rather that Western doctors should leave it to TCM providers to make decisions regarding herbs and TCM treatment.

> <u>TCM Key Informant:</u> *"When I get patients who don't react the way I expect them to, I have actually looked into, I ask patients for their medications, and I look into it, and what I do is that I point out to them that these are the side effects, and if one of the side effects happens to be one of the things I am treating them for, then I ask them to consider that maybe the problem that you're coming in for isn't that your body is out of balance, it's because you're having a side effect. And then in which case I recommend that they check with their pharmacist or physician about looking into that. But I think that staying in the dark can actually lead you to a lot of confusion, because you expect a patient to react a certain way and they don't, and then you don't know why. That's one of the things you can investigate. In that sense it's helpful to know what's going on with everybody else [i.e., other health care providers involved with the patient] than not know."*

> <u>TCM Key Informant:</u> *"I think it's OK if the two sides [TCM and Western medicine providers] don't know about each other, it's still safe."*

One of the KIs who teaches TCM integration courses to Western health care providers says that it is very helpful for Western providers to learn general principles, for example the theoretical foundation of differential diagnosis, and the principles used to address these diagnoses using acupuncture and herbs; however they do not need to learn in detail about particular herbs and points.

The same KI suggests a conference for both sides to discuss integrative medicine for diabetic patients. He also suggests that for coordination of a particular patient's clinical care, the two sides can dialogue about what is the MD's goal for the patient that the TCM practitioner can focus on supporting, such as lessening leg edema, or promoting blood circulation. He says that dialoguing, versus just providing each other with lists of drugs and herbs, would be more effective in building cross-disciplinary understanding and good medical management for the patient.

Start with acupuncture; approach herb integration carefully

Two KIs with integrative experience suggest that it would be simpler to begin integration with acupuncture rather than herbs, because with acupuncture, interactions with Western treatments aren't nearly as complex, and bring up fewer legal complications as well. Also acupuncture takes less time to learn about and understand than herbs, so it is easier for Westerners to understand acupuncture and therefore accept and integrate it. The suggestion to start with acupuncture rather than herbs for formal integration with Western medicine is corroborated by the literature we reviewed in Chapter 3a, which talks about the extreme complexities of researching herbs and herb formulas.

TCM Key Informant: *"For the other door, drugs and herbal med, I think your organization [AHS] maybe not open this door so fast. This thing you should have very experienced doctor, who have, the MD who has a little herbal theory, and Chinese medicine theory, herbal knowledge, also another the Chinese medicine doctor they have very strong Western medicine knowledge background, and then work together better. Maybe in the future. Not now. Since you said the 2 practitioner at AHS only know acupuncture don't know much herbs, I think you shouldn't open too fast, so anything not acceptable don't happen. Herbal medicine not easier, you need to have a lot of years experience. Not easy to handle that if have no experience."*

However, a KI who is an MD acupuncturist at AHS says that since patients are *already* combining herbs and drugs, there is an existing need for someone who can look at a patient's lists of herbs and medications and know potential interactions.

IMPLICATIONS AND RECOMMENDATIONS

This qualitative study yielded rich and complex findings about integrating TCM with Western medicine for Chinese diabetic patients, and some of this information would be very useful to these patients and to Western health care providers who work with these patients. Yet more research is needed. We make the following recommendations:

1) Share the information from this study with Western providers and with Chinese diabetic patients.

2) Conduct further research on the topic of integrating TCM and Western medicine for Chinese diabetic patients.

CHAPTER 7. CONCLUSIONS

Against the backdrop of soaring diabetes rates and suboptimal medical treatment for the large and growing population of Chinese-speaking diabetic patients, we have an urgent need to improve prevention and treatment of diabetes in this population. Chinese diabetic patients have a high rate of use of Traditional Chinese Medicine – that is, they are informally practicing integration of TCM and Western medicine – but they often do not talk to Western providers about their use of TCM. The culture gap and communication gap cause poor patient-provider concordance in understanding and acceptance of TCM practices. The poor concordance, combined with most Western health care providers' lack of medical knowledge about TCM, contributes to decreased medical benefits and increased safety risks of the integration. Therefore Western providers need to understand more about Chinese cultural health practices and their role in Chinese diabetic patients' lives. Beyond the population of Chinese diabetic patients, many South-East Asian American patients use TCM, as well as increasing numbers of mainstream American patients. Formal integration is overdue. It is no small task to integrate two vastly different systems, but luckily there are precedents to which we can turn for illumination.

This paper has scratched the surface of the subject of how to understand Traditional Chinese Medicine practices in the lives of Chinese diabetic patients, and of how to integrate these practices with their Western medical care. Further research is needed, as well as changes in policy and clinical practice. Below we summarize our recommendations for future steps.

Policy recommendations

1. Increase funding and political support for research and integration of Traditional Chinese Medicine. Currently, new national health care policies are being shaped that are determining how to re-allocate health care funds. We encourage allocating more federal funds for research of TCM, including its current use among Asian-American populations.

2. In institutions of health care education, revise curricula to include "complementary and alternative" approaches like TCM. Recruit and develop faculty who can deliver this special knowledge.

3. Encourage insurance companies to cover Traditional Chinese Medicine therapies. (This change would require showing evidence of effectiveness.)

4. Identify experts in TCM-Western integration to assess existing information and examples of TCM integrative medicine, to inform future policies and practices in integrative medicine.

Research recommendations

1. Improve assessments of traditional medical practice among Chinese diabetic patients. Future national CAM survey methodology needs to oversample Asian ethnic groups to allow for examination of CAM use by separate Asian ethnic subgroups (Mehta & McCarthy, Ellen, 2009). Unlike our study, future studies should sample not only patients who are already under regular Western care, but also patients who are not as familiar with or trusting of Western health and social services.

2. Given the high use of TCM in Asian American communities, clinical trials should include appropriately large samples of Asian American participants. Representatives of Asian American communities should be involved in the design of studies to ensure that community perspectives and needs are incorporated into the research efforts (Mehta & McCarthy, Ellen, 2009).

3. Survey the level of training and experience of typical TCM providers to whom Chinese diabetic patients go, since under-qualification of TCM providers is one of the two safety risks discussed by both patients and TCM providers in this study. This study was not successful in recruiting "typical" providers. Rather, TCM providers in our study had higher than average training and experience both in Chinese medicine and in best practices for integration with Western medicine, and do not give a true reflection of the average practitioners. For future studies of "typical" providers, we suggest working through established local professional TCM organizations and networks in order to gain cooperation of typical local providers. However perhaps even this approach will not successfully reach unlicensed providers.

4. Gather resources for locating qualified TCM practitioners and quality-controlled herbal products, since under-qualified TCM practitioners and contaminated herbal products are the two safety risks discussed by both patients and TCM providers.

5. Develop improved methodology for double-blind randomized placebo controlled studies on acupuncture and herbs for diabetes prevention and treatment.

6. Examine existing TCM-Western integrative programs including programs in China, Europe and the US, to develop best practices for TCM-Western medicine integration at Asian Health Services and other Western medical clinics that serve Chinese-speaking patients.

Clinical recommendations

1. Improve patient-provider communication regarding use of traditional medicines. Teach Western health providers about prevalence of TCM use and culturally appropriate communication with patients regarding TCM use. Communications can include: 1) Encouraging patients to maintain a symptom diary; 2) Having respectful conversations about the patient's expectations and preferences, and reviewing safety and efficacy issues; and 3) Identifying a qualified licensed TCM provider for patients who choose to use TCM (Mehta & McCarthy, Ellen, 2009).

2. Encourage Western providers who work with Chinese diabetic patients to take continuing education classes on TCM-Western integration by disseminating information about existing classes and by organizing classes on this subject. These actions can be taken on many levels – by individual clinics and hospitals, by departments of public health, and on a national level.

3. Create a bi-lingual pamphlet for Western providers who work with Chinese diabetic patients, introducing: basic TCM terminology that Chinese diabetic patients might use; guidelines for communicating with these patients about TCM; benefits and risks for Chinese diabetic

patients using TCM; and references for further information. Distribute this pamphlet to providers at AHS and other health institutions that work with Chinese diabetic patients.

4. Create a bi-lingual pamphlet for Chinese diabetic patients, discussing: benefits and risks of TCM treatments for diabetes; and advice and resources for choosing qualified TCM practitioners and quality-controlled herbal products. Distribute these pamphlets at AHS and other health institutions that work with Chinese diabetic patients.

5. If a Western provider learns that a Chinese diabetic patient is regularly seeing a TCM provider, establish communication with that TCM provider in order to coordinate re-enforcement of patient education messages. Greater communication between Western and TCM providers is a big and difficult step, and requires mutual respect between the TCM and Western practitioners.

6. Submit papers such as this one for publication in major medical journals, in order to promote national awareness of issues of Chinese diabetic patients' use of TCM.

Though the integration of Eastern and Western medicine is already happening, it is in its infancy and must be handled with care. Many of the recommendations above refer to Chinese diabetic patients, but the importance of these improvements in medical care go beyond just Chinese diabetic patients, for several reasons:

1. Many South-East Asian patients, not just Chinese patients, use Traditional Chinese Medicine. In fact use of TCM reaches far beyond the Asian population, and is on the rise in mainstream society.

2. Many of the issues we have discussed pertain not only to diabetic patients who use TCM, but also to patients with other medical conditions. The issue of patient-provider concordance applies to all patients who use TCM for any reason. Most of the safety risks discussed also apply for all users of acupuncture or Chinese herbs.

The topic of Chinese diabetic patients' use of Traditional Chinese Medicine has far-reaching implications in this time when Asian populations are rapidly increasing in the United States, and use of Traditional Chinese Medicine by mainstream society is also climbing. The Western medical care system knows little about Traditional Chinese Medicine, but it is time to address this knowledge gap, and to develop best practices for integrating TCM with Western medicine.

BIBLIOGRAPHY

AARP Public Policy Institute (2004). Sources of income for persons in 2002. Retrieved August 20, 2010, from http://www.aarp.org/research/socialsecurity/benefits/Sources_of_income_for_older_persons_in_2002.html

Agren, H. (1975). Patterns of tradition and modernization in contemporary chinese medicine. (Paper from a conference: *Medicine in Chinese cultures: Comparative studies of health care in Chinese and other societies*. Seattle, Washington: February 1974.)

Astin, J. A., Marie, A., Pelletier, K. R., Hansen, E., & Haskell, W. L. (1998). A review of the incorporation of complementary and alternative medicine by mainstream physicians. *Arch Intern Med*, *158*(21), 2303.

Atlantic Health (n.d.). Whole medical systems. Retrieved August 10, 2010, from http://www.atlantichealth.org/Overlook/Patient+Care+Services/Integrative+Medicine/Complementary+and+Alternative+Medicine/Whole+Medical+Systems

Bensky, D. & Gamble, A. (1986). Chinese herbal medicine materia medica. Seattle, Washington: Eastland Press, Inc.

Bernard (1995). *Research methods in anthropology.* Walnut Creek, CA: AltaMira Press.

Brazier, N. C., & Levine, M. A. (2003). Drug-Herb interaction among commonly used conventional medicines: A compendium for health care professionals. *Am J Ther*, *10*(3), 163-9.

Burke, A., Upchurch, D. M., Dye, C., & Chyu, L. (2006). Acupuncture use in the United States:

Findings from the national health interview survey. *Journal of Alternative & Complementary Medicine*, *12*(7), 639-648.

Chang, But, Yao, Wang, & Yeung (1986). Pharmacology and applications of Chinese materia medica. Singapore: World Scientific Pub Co Inc.

Chen John, PhD, PharmD, OMD, LAc (2006). Recognition and prevention of herb-drug interactions. *Acupuncture Today*, *7*(11).

Chen, Haifeng, & Zhu (2008). Chinese health care. *Modern chinese medicine vol. 3.*

Chen, S., M.D., L.Ac. (2010, June 15). (Personal interview, Oakland, CA).

Cheng, Leung, & Leung (2003). Interactions between modern and chinese medicinal drugs: A general review. *American Journal of Chinese Medicine*, *31*(2), 163-9.

Clinical Manual of Oriental Medicine, An Integrative Approach. (2005). (pp. 223-7). Lotus Institute of Integrative Medicine.

Croizier, R. C. (1968). *Traditional medicine in modern china: Science, nationalism, and the tensions of cultural change.* Harvard University Press.

Crozier R (1973). *Traditional medicine in modern china: Social, political, and cultural aspects.* Springfield, Ill.: Charles C. Thomas.

D'Arcy (1993). Adverse reactions and interactions with herbal medicine. In *Toxicology review.* Oxford University Press.

Dasgupta, A. (2003). Review of abnormal laboratory test results and toxic effects due to use of herbal medicines. *American Journal of Clinical Pathology*, *120*(1), 127.

Dharmananda (n.d.). Checking for possible herb-drug reactions. Retrieved August 20, 2010, from http://www.itmonline.org/arts/herbdrug2.htm

Dharmananda (n.d.). *Chinese medicine in Italy: Integrated into the modern medical system.*

Retrieved August 31, 2010, from http://www.itmonline.org/arts/italy.htm database

Dharmananda (2003). Treatment of diabetes with Chinese herbs and acupuncture. *Internet journal of the institute for traditional medicine and preventative health care*. Retrieved August 31, 2010, from http://www.itmonline.org/journal/arts/diabetes.htm

Diaz, V. A., Mainous, A. G., Baker, R., Carnemolla, M., & Majeed, A. (2007). How does ethnicity affect the association between obesity and diabetes?. *Diabetic Medicine*, *24*(11), 1199-1204.

Dickstein (1987). *The historical development of china's medical system: An integration of medical paradigms.* UC Berkeley Joint Medical Program master's thesis.

Eakin, E. G., Bull, S. S., Glasgow, R. E., & Mason, M. (2002). Reaching those most in need: A review of diabetes self-management interventions in disadvantaged populations. *Diabetes/Metabolism Research and Reviews*, *18*(1), 26-35.

Eisenberg, D.M., Kessler, R.C., Foster, C., Norlock, F.E., Calkins, D.R., & Delbanco, T.L. (1993). Unconventional medicine in the united states. *NEJM*, *328*, 246-252.

Emerson, Fretz, & Shaw (1995). *Writing ethnographic fieldnotes.* Chicago, IL: The University of Chicago Press.

Federal Interagency Forum on Aging Related Statistics (2006). *Older americans update 2005: Key indicators of well-being.* Washington DC: U.S. Government Printing Office.

Freedman, M. D. (1994). Acupuncture: Eastern medicine's solution for restoring order in life. *PhillyFIT,* September-October 2008.

Funk (2003). Chapter 18-disorders of the endocrine pancreas. In McPhee, & Hammer (Eds.), *Pathophysiology of disease* (Fifth ed.). McGraw-Hill.

Gerberding, J. L. (2004). Diabetes: Disabling, deadly, and on the rise. *Atlanta: CDC.*

Grant, S. J., Bensoussan, A., Chang, D., Kiat, H., Klupp, N. L., Liu, J. P., et al. (2009). Chinese herbal medicines for people with impaired glucose tolerance or impaired fasting blood glucose. *Cochrane Database of Systematic Reviews 2009, 4.* Art. No.: CD006690.

Gurley, B. J., Gardner, S. F., Hubbard, M. A., Williams, D. K., Gentry, W. B., Cui, Y., et al. (2005). Clinical assessment of effects of botanical supplementation on cytochrome P450 phenotypes in the elderly: St. John's wort, garlic oil, panax ginseng and ginkgo biloba. *Drugs Aging*, *22*(6), 525-39.

Hammersley (1997). Qualitative data archiving: Some reflections on its prospects and problems. *Sociology*, *31*, 131-42.

Rocky Mountain Herbal Institute (2004). Herb-Herb and Herb-Drug Interactions: Modes of Interaction. Retrieved August 31, 2010, from http://www.rmhiherbal.org/review/2004-3.html

Hui, Tang, & Liang (2009). Hypoglycemic herbs and their action mechanisms. *Chinese Medicine Journal.* Retrieved August 18, 2010, from http://www.cmjournal.org/content/4/1/11

Indian Society of Health Administrators (2009). Why is diabetes more common in asians?. *Health Administrator*, *XXII*(1), 87-88.

Jamison, D. T. (1984). *China, the health sector.* World Bank.

Jia, W., Gao, W. Y., & Xiao, P. G. (2003). Antidiabetic drugs of plant origin used in china: Compositions, pharmacology, and hypoglycemic mechanisms. *Zhongguo Zhong Yao Za Zhi= Zhongguo Zhongyao Zazhi= China Journal of Chinese Materia Medica*, *28*(2), 108.

Kaptchuk, T. J. (2000). *The web that has no weaver: Understanding chinese medicine.* McGraw-

Hill.

Kehoe, K. A., Melkus, G. D., & Newlin, K. (2003). Culture within the context of care: An integrative review. *Ethnicity & Disease*, *13*(3), 344.

Kessler, R. C., Davis, R. B., Foster, D. F., Van Rompay, M. I., Walters, E. E., Wilkey, S. A., et al. (2001). Long-Term trends in the use of complementary and alternative medical therapies in the united states. *Ann Intern Med*, *135*(4), 262-8.

Leslie, C. M. (1998). Introduction. In *Asian medical systems: A comparative study.* Motilal Banarsidass Publisher.

Leslie, C. (1976). Pluralism and integration in the Indian and Chinese medical systems. In Kleinman A, Kunstadter P, Alexander ER, & Gale JL (Eds.), *Medicine in chinese cultures: Comparative studies of health care in chinese and other societies: Papers and discussions from a conference held in seattle, washington, USA, february 1974.* (pp. 401-17). Washington.

Lin, & Fang (1990). *Modern study and application of materia medica. Hong Kong: China Ocan Press*, 323-5.

Liu, J. P., Zhang, M., Wang, W., & Grimsgaard, S. (2002). Chinese herbal medicines for type 2 diabetes mellitus. Cochrane Database of Systematic Reviews 2004, Issue 3. Art. No.: CD003642.

Masharani (n.d.). Chapter 27. Diabetes mellitus & hypoglycemia. In McPhee (Ed.), *CURRENT medical diagnosis & treatment 2011.* Papadakis MA.

Maskarinec, G., Grandinetti, A., Matsuura, G., Sharma, S., Mau, M., Henderson, B. E., et al. (2009). Diabetes prevalence and body mass index differ by ethnicity: The multiethnic cohort. *Ethnicity & Disease*, *19*(1), 49.

Mayfield, J. (1998). Diagnosis and classification of diabetes mellitus: New criteria. *Am Fam Physician*, *58*(6), 1355-62, 1369-70.

McFarland (2005, August 12). *Acupuncture use in the United States: Racial and ethnic trends* (Paper presented at the annual meeting of the American Sociological Association, Marriott Hotel, Loews Philadelphia Hotel, Philadelphia, PA).

Mehta, & McCarthy, Ellen (2009). Complementary and alternative medicines. In Trinh-Shevrin, Chau, Islam, Nadia Shilpi, & Rey, Mariano Jose (Eds.), *Asian american communities and health: Context, research, policy, and action.* (pp. 285-322). San Francisco: Jossey-Bass.

Mehta, D. H., Phillips, R. S., Davis, R. B., & McCarthy, E. P. (2007). Use of complementary and alternative therapies by Asian Americans. Results from the national health interview survey. *Journal of General Internal Medicine*, *22*(6), 762-767.

Melzack, & Wall (1984). Acupuncture and transcutaneous electrical nerve stimulation. *Postgraduate Medical Journal*, 893-896.

Melzack, R, & Wall, P.D. (1965). Pain mechanisms: A new theory. *Science*, *150*(699), 971-979.

Miller, N. N., & Strickler, J. C. (1980). China's revolution in health. *Postgraduate Medical Journal*, *3*, 893-896.

Moy, E., Greenberg, L. G., & Borsky, A. E. (2008). Community variation: Disparities in health care quality between asian and white medicare beneficiaries. *Health Affairs*, *27*(2), 538.

Najm, W., Reinsch, S., Hoehler, F., & Tobis, J. (2003). Use of complementary and alternative medicine among the ethnic elderly. *Alternative Therapies in Health and Medicine*, *9*(3), 50-57.

National Cancer Institute (2010, December 9). Cancer topics: Acupuncture. Retrieved December 20, 2010, from http://www.cancer.gov/cancertopics/pdq/cam/acupuncture/Patient

NIH Budget. (n.d.). NIH budget. Retrieved August 29, 2010, from http://officeofbudget.od.nih.gov/pdfs/FY11/FY%201010%20Enacted%20Appropriations.pdf

NCCAM (2004). CAM Basics: What Is Complementary and Alternative Medicine? Retrieved August 12, 2010, from http://nccam.nih.gov/health/whatiscam/

NCCAM (2010, November). Acupuncture. *NCCAM publication no. D404.* Retrieved on November 15, 2010, from http://nccam.nih.gov/health/acupuncture/

Parish (2004). Reviews of reviews and meta-analyses of acupuncture. *The internet journal of pain, symptom control and palliative care.* Retrieved August 10, 2010, from http://www.ispub.com/ostia/index.php?xmlFilePath=journals/ijpsp/vol3n1/acupuncture.xml

Report of the Expert Committee on the Diagnosis and Classification of Diabetes Mellitus. (1997). *Diabetes Care*, *20*(7), 1183-97.

Shibusawa, T., &Chung, I. (2009). *The Health of the Elderly.* In Asian American Communities and Health: Context, Research, Policy, and Action. Jossey-Bass Inc.

Spence (1975). *Commentary on historical perspectives and ch'ing medical systems.* In Medicine in Chinese cultures. (pp. 77-83). Washington.

Stoner, B. P. (1986). Understanding medical systems: Traditional, modern, and syncretic health care alternatives in medically pluralistic societies. *Medical Anthropology Quarterly*, *17*(2), 44-48.

Suzuki, M. D., L.Ac. (2010, June 10). (Personal interview, Oakland, CA).

Swisher (2002). *Qi: The philosophy of health in the Chinese and Western medical cultures.* Final research paper for the Freeman Fellowship Program projects at Zhejiang University in Hangzhou, and in Nanjing and Beijing, China, Hangzhou, China.

Tang, J. L., Zhan, S. Y., & Ernst, E. (1999). Review of randomised controlled trials of traditional Chinese medicine. *BMJ*, *319*(7203), 160-1.

Thai (2004, September 1). Chinese and Western herbal medicine: A guide to potential risks and drug interactions. *EthnoMed*. Retrieved August 8, 2010, from http://ethnomed.org/clinical/pharmacy/herb-drug-interactions

Trends in Alternative Medicine Use in the United States. (1998). *JAMA 280*(18)1569-1575.

Unschuld (1980). The issue of structured coexistence of scientific and alternative medical systems: A comparison of East and West German legislation. *Social Science and Medicine*, *14*(1B), 15-24.

Unschuld, P. U. (1988). *Medicine in china: A history of ideas.* Univ of California Pr.

US Census Bureau (2002). The asian population: Census 2000 brief. Retrieved April, 2005, from http://www.census.gov/pod/2002pubs/e2kbr01-16.pdf

US Census Bureau (2007). American community survey. Washington, DC: U.S. Government Printing Office.

Wilcox (2001). Scope of practice. *Acupuncture Today*, *02*(05).

World Health Organization (n.d.). Acupuncture: Review and Analysis of Reports on Controlled Clinical Trials. Retrieved August 20, 2010, from http://apps.who.int/medicinedocs/en/d/Js4926e/World Health Organization.

World Health Organlzation (2009, November). Diabetes fact sheet. Retrieved August 31, 2010, from http://www.who.int/mediacentre/factsheets/fs312/en/

Wu, & Fischer (1997). *Practical therapeutics of traditional Chinese medicine.* Brookline, Massachusetts: Paradigm Publications.

Xinnong, C. (1999). Chinese Acupuncture and Moxibustion. Beijing: Foreign Language Press.

Zhou, S., Gao, Y., Jiang, W., Huang, M., Xu, A., & Paxton, J. W. (2003). Interactions of herbs with cytochrome P450. *Drug Metab Rev*, *35*(1), 35-98.

APPENDICES

A. Herb-to-Drug Interactions

B. Physiological mechanisms of 3 popular Chinese herbs for diabetes

C. Commonly used herbs that are hypoglycemic agents

D. Western medical diagnostic criteria for diabetes mellitus

E. Traditional Chinese Medicine Key Informant Screener

F. Traditional Chinese Medicine Key Informant Interview Guide

G. Chinese Diabetic Patient Focus Group Pre-Survey

H. Chinese Diabetic Patient Focus Group Interview Guide

APPENDIX A – HERB TO DRUG INTERACTIONS (D'Arcy, 1993)

The Chinese herbs with highest risk of interaction with Western drugs fall into four categories of actions: 1) antidiabetic, 2) diuretic, 3) anti-coagulant, and 4) sympathomimetic.

Anti-diabetic herbs

Anti-diabetic herbs may interfere with anti-diabetic drugs by the enhancing hypoglycemic effects. The dosage of herbs and drugs must be carefully balanced to effectively control the blood glucose level without causing hyper- or hypoglycemia. Herbs with definite hypoglycemic effects comprise the following pairs of herbs: Anemarrhena Asphodeloidis (Zhi Mu) and Gypsum Fibrosum (Shi Gao), Scrophularia Ningpoensis (Xuan Shen) and Atractylodcs (Cang Zhu), and Dioscorea Oppositae (Shah Yao) and Astragalus Membranacei (Huang Qi).

Sympathomimetic herbs

Herbs with sympathomimetic effects may interfere with anti-hyper-tensive and anti-seizure drugs. The classic example of an herb with sympathomimic effects is Herba Ephedrae (Ma Huang), which contains ephedrine, pseudoephedrine, norephedrine, and other ephedrine alkaloids. Herba Ephedrae may interact wilh many other drugs and disease conditions, and should always be used with caution in patients with hypertension, seizures, diabetes, thyroid conditions, etc.

Diuretic herbs

Concomitant use of diuretic herbs and diuretic drugs may have additive or synergistic effects; hypertension may be more difficult to control and/or hypotensive episodes may result. The dosage of herbs and/or drugs must be adjusted to achieve optimal treatment out-come. Commonly-used diuretic herbs include Poria Cocos (Fu Ling), Polypori Umbellati (Zhu Ling), Semen Plantaginis (Che Qian Zi), and Alismatis Orientalis (Ze Xie).

Anti-coagulant herbs

Herbs with anti-coagulant effects encompass herbs that have blood-activating and blood-stasis-removing functions. Such herbs may interfere with anti-coagulant drugs, such as Coumadin (warfarin), to prolong the bleeding time. Herbs that interfere with Coumadin (warfarin) include: Salviae Miltiorrhizae (Dan Shen), Angelica Sinensis (Dang Gui), Ligustici Chuanxiong (Chuan Xiong), Persicae (Tao Ren), Carthamus Tinctorii (Hong Hua), and Hirudo seu Whitmania (Shut Zhi). The synergistic interaction between herbs and Coumadin (warfarin) may be advantageous for the patient; the dosage of both the herbs and drugs can be reduced without compromising clinical effectiveness. The reduction in dosage will also decrease the frequency and severity of side effects of the drugs. Optimal treatment, however, is directly dependent on careful titration of the herb and drug, cooperation from the patient, aud communication between the physicians who prescribe the herbs and drugs.

APPENDIX B – Physiological mechanisms of 3 popular Chinese herbs for diabetes (Hui, 2009):

Here we present figures illustrating:

- Structure and mechanisms of ginseng
- Structure and mechanisms of berberine
- Mechanisms of bitter melon

Figure 1. Structure of ginseng

Fig. 1.
Structure of ginsenosides (ginseng-specific saponins). **A.** The ginseng saponins of protopanaxadiol include Ra1, Ra_2, Ra_3, Rb_1, Rb_2, Rb_3, Rc, Rd, Rg_2, Rg_3, Rs_1, Rs_2, et al. **B.** The ginseng saponins of protopanaxatriol include Re, Rf, Rg_1, Rg_2, Rh_1, et al.

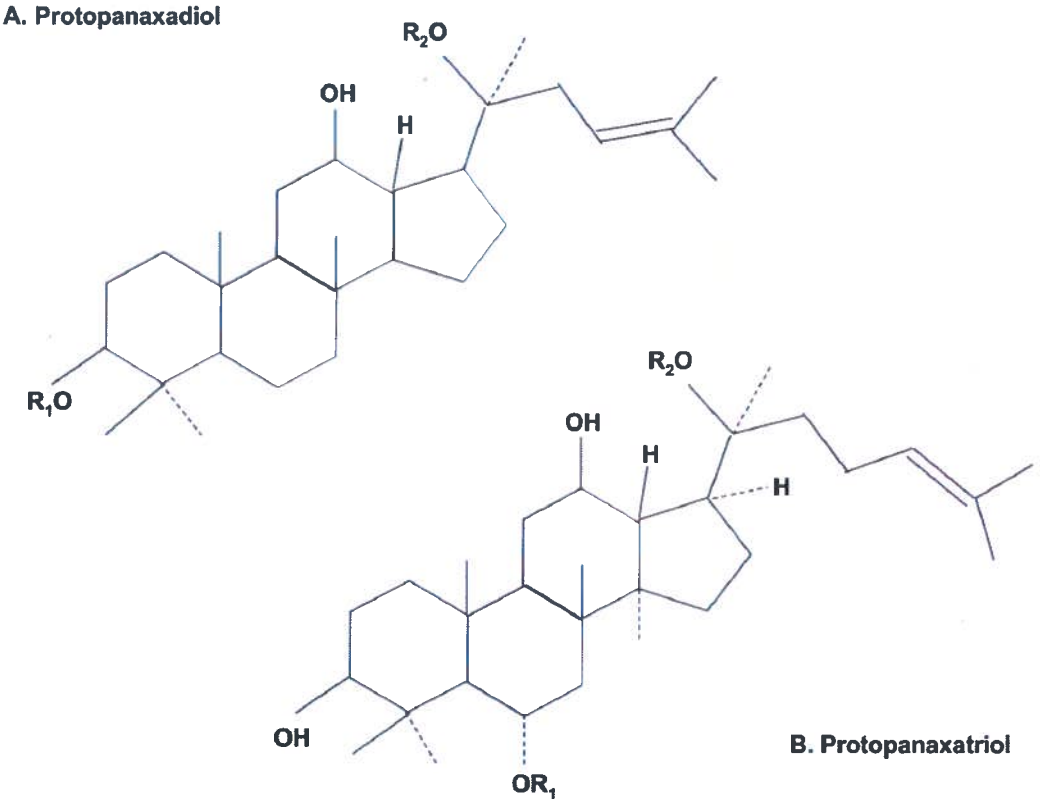
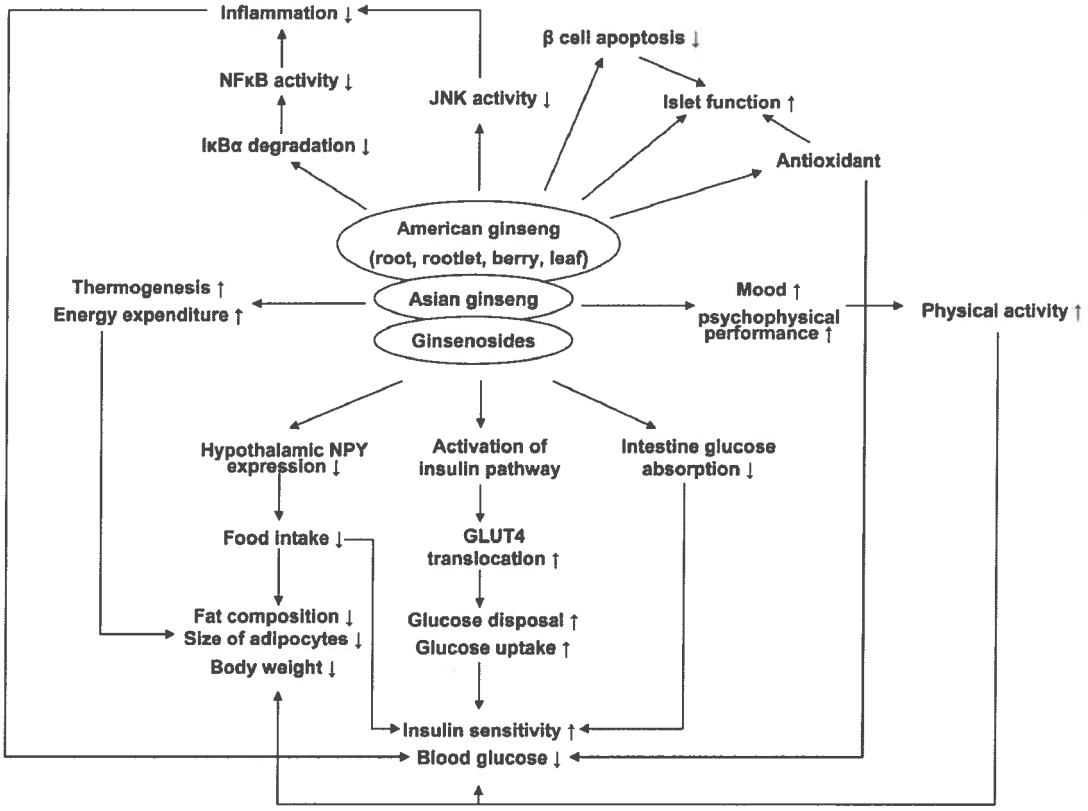


Figure 2. Mechanism of ginseng



Ginseng is able to improve glucose metabolism through multiple pathways: 1) Glucose disposal is increased partially due to activation of insulin signaling pathway and GLUT4 translocation by ginseng; 2) Ginseng is able to suppress food intake through inhibition of NPY expression in hypothalamus; 3) Physical activity is increased with ginseng through improvement of mood and psychophysical performance; 4) Fat composition and body weight are reduced partially related to up-regulation of thermogenesis and energy expenditure; 5) Antioxidant and anti-inflammation of ginseng may be involved in the mechanisms of insulin sensitization; 6) Ginseng protects islet function through antioxidant and inhibition of β cell apoptosis.

Figure 3. Structure of berberine

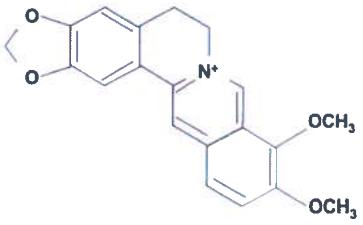


Figure 4. Mechanism of berberine

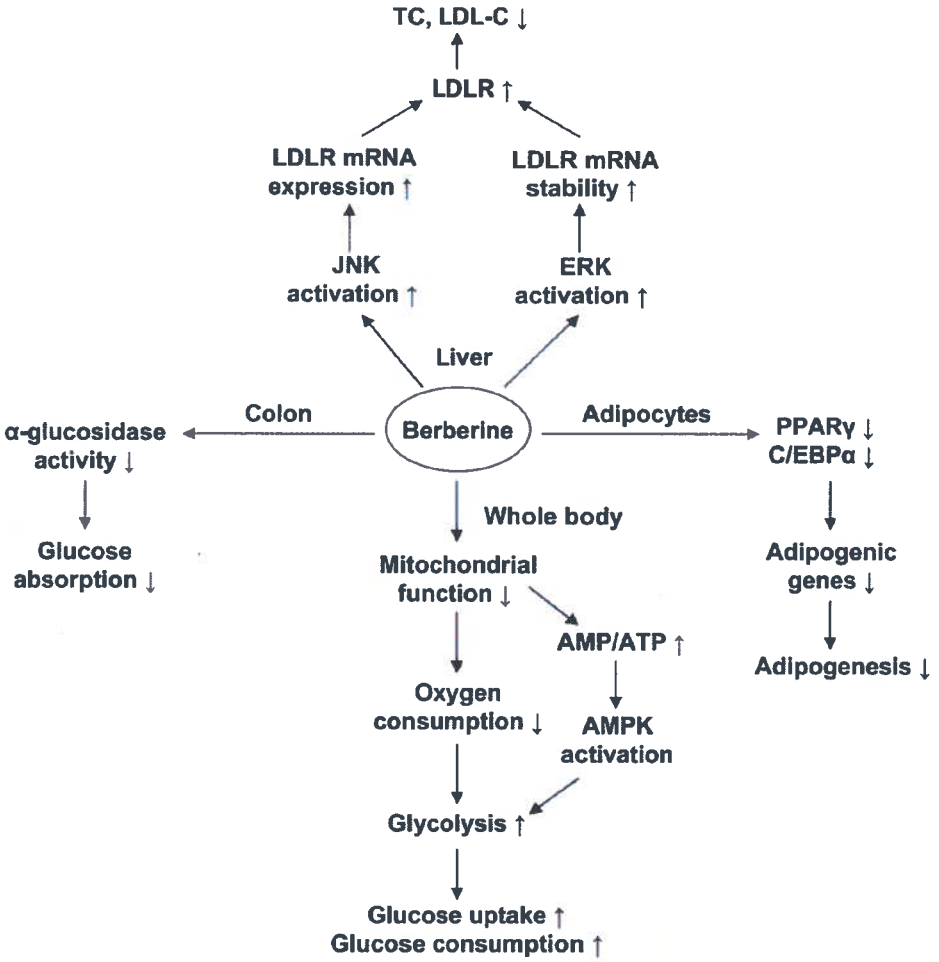


Fig. 4.
Mechanism of berberine in regulation of metabolism: 1) Berberine enhances glucose uptake through induction of glycolysis, which is due to inhibition of aerobic respiratory; 2) AMPK activation stimulated by berberine is a consequence of inhibition of mitochondrial function; 3) Berberine suppresses adipogenesis through inhibition of PPARγ and C/EBPα function; 4) Berberine is able to decrease intestinal glucose absorption by inhibition of α-glucosidase; 5) Berberine up-regulates LDL receptor (LDLR) expression through increasing LDLR mRNA, which is related to inactivation of ERK and activation of JNK pathway.

Figure 5. Mechanism of bitter melon

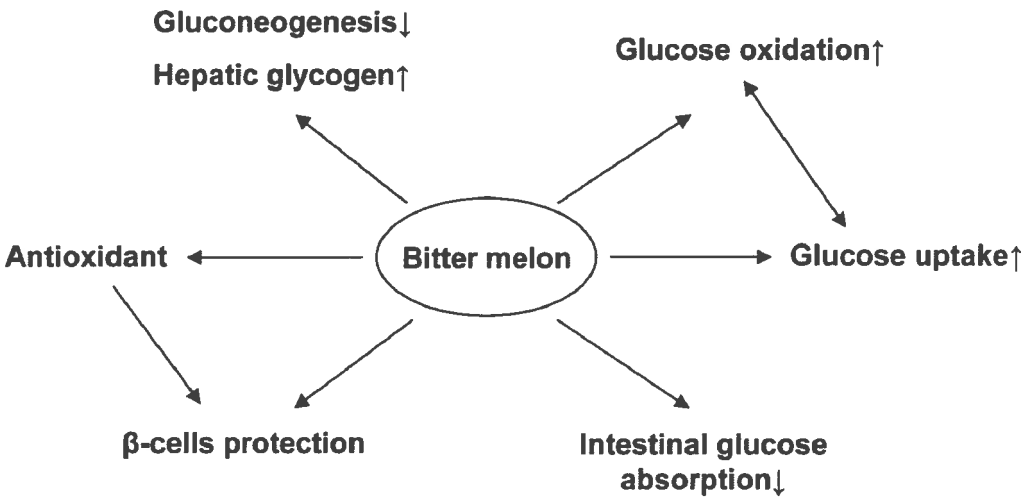


Fig. 5.
Mechanism of bitter melon in reduction of blood glucose. Antioxidant and β-cells protection are considered the major mechanisms of bitter melon action in the treatment of diabetes. Additionally, bitter melon is able to inhibit glucose absorption in intestine, reduce hepatic gluconeogenesis, and increase glucose uptake, glucose oxidation and hepatic glycogen content.

APPENDIX C – Commonly used herbs that are hypoglycemic agents

A summary of mainland Chinese laboratory research on hypoglycemic agents, reported in the books *Modern Study and Application of Materia Medica (Lin & Fang, 1990)* and *Pharmacology and Applications of Chinese Materia Medica (Chang, But, Yao, Wang & Yeung, 1986)* yielded the following listing of commonly used herbs that are hypoglycemic agents.

COMMON NAME	BOTANICAL NAME
Alisma	*Alisma plantago-aquatica*
Anemarrhena	*Anemarrhena asphodeloides*
Astragalus	*Astragalus membranaceus*
Atractylodes	*Atractylodes macrocephala*
Atractylodes (*cangzhu*)	*Atractylodes lancea*
Corn silk	*Zea mays*
Dioscorea	*Dioscorea batatas*
Epimedium	*Epimedium sagittatum*
Ginseng	*Panax ginseng*
Ho-shou-wu	*Polygonum multiflorum*
Hoelen	*Poria cocos*
Lycium bark	*Lycium chinense*
Lycium fruit	*Lycium chinense*
Malt	*Hordeum vulgare*
Platycodon	*Platycodon grandifolium*
Polygonatum	*Polygonatum sibiricum*
Pueraria	*Pueraria lobata*
Rehmannia	*Rehmannia glutinosa*
Salvia	*Salvia miltiorrhiza*
Scrophularia	*Scrophularia ningpoensis*
Trichosanthes	*Trichosanthes kirilowii*
Yu-chu	*Polygonatum officinale*

APPENDIX D – Western medical diagnostic criteria for diabetes mellitus ("Report of the Expert Committee on the Diagnosis and Classification of Diabetes Mellitus," 1997)

Criteria for the Diagnosis of Diabetes Mellitus

Diabetes mellitus--positive findings from any two of the following tests on different days:

Symptoms of diabetes mellitus* plus casual† plasma glucose concentration >=200 mg per dL (11.1 mmol per L)

or

FPG >=126 mg per dL (7.0 mmol per L)

or

2hrPPG >=200 mg per dL (11.1 mmol per L) after a 75-g glucose load

Impaired fasting glucose: FPG from 110 to <126 (6.1 to 7.0 mmol per L)
Impaired glucose tolerance: 2hrPPG from 140 to <200 (7.75 to <11.1 mmol per L)

Normal

FPG <110 mg per dL (6.1 mmol per L)
2hrPPG <140 mg per dL (7.75 mmol per L)

*--Symptoms include polyuria, polydipsia or unexplained weight loss. Impaired glucose homeostasis

†--Casual is defined as any time of day without regard to time since last meal.
FPG=fasting plasma glucose; 2hrPPG=two-hour postprandial glucose

APPENDIX E – TRADITIONAL CHINESE MEDICINE KEY INFORMANT SCREENER

[ELIGIBILITY SCREEN]

(If yes): To make sure you are eligible for the study, can I ask you a few quick questions? This will take less than a minute.

1. How old are you? _____ *(Alternate: What year were you born?)*
   (If under 18, or born after 1992, skip to [IF INELIGIBLE] to terminate contact.)

2. Do you work in *(circle):* ACUPUNCTURE, CHINESE HERBOLOGY, or BOTH?
   (If none, skip to [IF INELIGIBLE] to terminate contact.)

3. How long have you been practicing? *(Alternate: What year did you start practicing?)*
   _____
   (If >5 years, or later than 2005, skip to [IF INELIGIBLE] to terminate contact.)

   Do you practice in the Bay Area? Y / N
   (If no, skip to [IF INELIGIBLE] to terminate contact.)

4. Are some of your patients diabetic? Y / N
   (If no, skip to [IF INELIGIBLE] to terminate contact.)

   *5a. How many years have you been working with diabetic patients?*_____
   (If <2, skip to [IF INELIGIBLE] to terminate contact.)

   5b. Are any of these patients Chinese-American or speak a Chinese language?
   _____
   (If no, skip to [IF INELIGIBLE] to terminate contact.

[ELIGIBILITY STATUS SCRIPTS]:

[IF INELIGIBLE]: I'm sorry, this makes it not possible to include you in the study. We really appreciate your time and interest. Do you have any questions?.....
Thank you, Good-bye! [END]

[IF ELIGIBLE]:
OK, you are eligible to take part in the study. Can we set up an interview date now?

APPENDIX F – TRADITIONAL CHINESE MEDICINE KEY INFORMANT INTERVIEW GUIDE

KI ID#: _____

Asian Diabetes Project
Traditional Chinese Medicine Key Informant **INTERVIEW GUIDE**

Date of interview: _____

Start time: _____ End time: _____

Interview ID: _____

CIRCLE ONE: In-person interview Phone interview

KI Job Title: _____

INTRODUCTION AND INFORMED CONSENT

Thank you for agreeing to take part in this study about diabetic patients' use of traditional Chinese medicines. This study is conducted by UC Berkeley School of Public Health in partnership with Asian Health Services in Oakland. We are researching models of health care for diabetic patients, in order to design a culturally appropriate diabetes care and prevention program for Chinese-American patients. Your participation will help to build bridges of understanding and cooperation between Western and Chinese medicine. We are very interested in your views and experiences, as they will help us to better understand some of the cultural health practices of Chinese-American diabetic patients.

Here is a consent form. I will go over the main points with you:

- I will be audio recording the session. I don't want to miss any of your comments. I will also take notes on my laptop. Only members of the research team will have access to the tapes and notes. If you are uncomfortable with being tape recorded, please say so.
- You are free to refuse to answer any questions and can stop the interview at any time.
- The recordings will be typed up and transcribed without any names or other identifying information, and will be kept in a locked cabinet. Once the recordings have been transcribed they will be destroyed. They typed versions will also be kept in a locked cabinet. In any reports of the findings, we will not use anyone's name. Your name will not appear on the interview document or any written reports.

Do you have any questions? Do you agree to participate in this interview? Please sign the consent form (or use verbal consent if over the phone) We will provide one copy of the consent form for your records. Should you have a question at any time following the interview, you can contact the personnel listed on the consent form.

Now I would like to start the interview. In the following discussion, I will use "TCM" for "Traditional Chinese Medicine".

IDENTIFICATION

1. *What is your job title?*

2. *How long have you had this title?*

3. *What is the location of your work?*

PATIENTS

4. *How many patients do you see a day? A week?*

5. *About what percentage of your clients are Chinese diabetic patients?*

6. *How frequently do you see Chinese diabetic patients?*

7. *Can you describe what usual services you provide to Chinese diabetic patients?*

8. *What are some barriers to providing care to Chinese diabetic patients?*

UNDERSTANDING AND DIAGNOSIS OF DIABETES

8. *According to Traditional Chinese Medicine, what are the causes of diabetes?*

9. *Can you explain the process of how you diagnose diabetes?*

[PROMPT]: *If they say they base it on Western diagnosis, ask the following question*: What about from a TCM approach?

[PROMPT]: What's the differential diagnosis of diabetes?

TREATMENT / PATIENT EDUCATION

10. *What is involved in TCM treatment for diabetes?*

[PROMPT]: What are specific herbs that you use? What effect do these herbs have? (*Explain if needed:* How are the herbs used – singly, in combination? Raw, cooked, extracted in boiling water, in pill or powder form?)

[PROMPT]: Can you please describe what role food (or nutrition) has, if any, in the prevention of diabetes?

[PROMPT]: Can you please describe what role food (or nutrition) has, if any, in the treatment of diabetes?

[PROMPT]: Do you give dietary advice to patients who have diabetes?
If yes: What advice do you usually give to your diabetic patients?

11. *Do you give any other instructions and health information to the diabetic patient?*

12. *How do you monitor the effectiveness of the treatment?*

RISKS

13. *Do herbs or other treatments have risks associated with them? What are the risks?*

AWARENESS OF WESTERN TREATMENTS AND POTENTIAL INTERACTIONS

14. *Do you know about what Western medical treatments your diabetes patients are involved in?*

15. *Do you know about potential interactions between TCM and Western treatments?*

16. *Are there potential benefits or risks to integrating TCM and Western treatments?*

UNDERSTANDING BETWEEN TCM AND WESTERN

17. *If you were were to work in a team with Western medical providers to better serve Chinese diabetic patients, what do you think the Western providers would have to know about TCM?*

17a. *At the same time, what would you as a TCM provider like to know about as part of such an integrative medicine team?*

APPENDIX G – CHINESE DIABETIC PATIENT FOCUS GROUP PRE-SURVEY

Asian Diabetes Project: Patient Focus Group Pre-survey

We would like to ask you some questions about your medical care before we start the focus group.

1. During the past 6 months, you have been getting more care from a health care team including the medical assistant when you visit the doctor for your diabetes. For example, you may have talked with the medical assistant before or after you saw the doctor about your medications. How satisfied or dissatisfied are you with the care you received from the medical assistant during your doctor's visits over the last 6 months?

   ☐ Very dissatisfied
   ☐ Dissatisfied
   ☐ Neither satisfied nor dissatisfied
   ☐ Satisfied
   ☐ Very satisfied
   ☐ I don't know

2. How important is it to you for the medical assistant to speak your language fluently?

   ☐ Extremely Important
   ☐ Somewhat Important
   ☐ Not very important
   ☐ Not at all important
   ☐ I don't know

3. How helpful is it to you for the medical assistant to be able to provide you information about managing your diabetes?

   ☐ Very helpful
   ☐ Somewhat helpful
   ☐ A little helpful
   ☐ Not at all helpful
   ☐ I don't know

4. How satisfied or dissatisfied were you with the amount of time spent with the medical assistant during a doctor visit?

- ☐ Very dissatisfied
- ☐ Dissatisfied
- ☐ Neither satisfied nor dissatisfied
- ☐ Satisfied
- ☐ Very satisfied
- ☐ I don't know

5. In the past 6 months, have you received a phone call from someone at Asian Health Services such as a medical assistant or unit clerk after your doctor visits to see how you were managing your diabetes?

- ☐ Yes

  Number of calls in the past 6 months _____
- ☐ No
- ☐ I don't know

If you DID receive a phone call:

6. How helpful was it to have someone call you to follow up after your doctor visits?

- ☐ Very helpful
- ☐ Somewhat helpful
- ☐ A little helpful
- ☐ Not at all helpful
- ☐ I don't know

If you DID NOT receive a phone call:

7. How helpful do you think it would be to have someone call you after doctor visits to follow-up?

   ☐ Very helpful
   ☐ Somewhat helpful
   ☐ A little helpful
   ☐ Not at all helpful
   ☐ I don't know

8. Have you had a one-on-one visit with the Asian Health Services dietitian in the past 6 months?

   ☐ Yes

   Number of dietitian visits in the past 6 months _____

   ☐ No
   ☐ I don't know

If you DID see the dietitian:

9. How helpful was seeing the dietitian?

   ☐ Very helpful
   ☐ Somewhat helpful
   ☐ A little helpful
   ☐ Not at all helpful
   ☐ I don't know

10. How important is it to you for the dietician to speak your language fluently?

    ☐ Extremely Important
    ☐ Somewhat Important
    ☐ Not very important
    ☐ Not at all important
    ☐ I don't know

If you DID NOT see the dietitian:

11. Can you tell me why you did not go to see the dietitian? (You may choose more than one answer.)

- ☐ No one referred me to the dietitian or suggested that I go
- ☐ It was too difficult to schedule an appointment with the dietitian
- ☐ I had no time.
- ☐ I was not interested in visiting the dietitian
- ☐ Other reason: _____
- ☐ I don't know

12. How helpful do you think it would be to visit the dietician about your diabetes?

- ☐ Very helpful
- ☐ Somewhat helpful
- ☐ A little helpful
- ☐ Not at all helpful
- ☐ I don't know

13. Thinking about caring for yourself in everyday life, how often do you use Traditional Chinese Medicine (including herbs and acupuncture) to help with your diabetes?

- ☐ **Never**
- ☐ **Rarely (less than 2 times a year)**
- ☐ **Sometimes (2-5 times a year)**
- ☐ **Regularly (6 or more times a year)**
- ☐ **I don't know**

14. How helpful would you find it to get diabetes health information materials from Traditional Chinese Medicine providers (acupuncturist, herbalist)?

- ☐ **Very helpful**
- ☐ **Somewhat helpful**
- ☐ **A little helpful**
- ☐ **Not at all helpful**
- ☐ **I don't know**

Asian Diabetes Project
Patient Focus Group
Interview Guide

Site:
Date:
Language:

Introduction and Informed Consent (15 minutes) As participants arrive, greet them and invite them to sit at the table. After an initial welcome, the moderator will briefly describe the purpose of the focus group.	*All of you were invited to come to this focus group because during the past 6 months, you have been participating in a study for Chinese diabetic patients at Asian Health Services. As part of the study, you received more care from a health care team including the medical assistant when you visit the doctor. For example, you may have talked with the medical assistant before or after you saw the doctor about your medications. You also may have seen the dietitian. We invite you to share your personal views and experiences, as they will help us improve these services for Chinese diabetic patients.*
Next, informed consent will be obtained.	

Distribute one copy of the consent form to each participant to be reviewed and signed. The participant's extra copy of the consent form will be given with the gift card (or cash) at the end of the session. **Ask the participants to follow along as you read the form out loud.** [The preceding instruction is site-specific, depending on reading levels anticipated for the group members.]	
After reading the form, emphasize the following points:	*We will be tape recording the session. We don't want to miss any of your comments. Only members of the research team will have access to the tapes. If anyone is uncomfortable with being tape recorded, please say so. You are free to leave if you would prefer. Also, during the discussion, you may refuse to answer any question or leave the focus group at any time. The tapes will be typed-up (transcribed) without any names or other identifying information, and will be kept in a locked cabinet. Once the tapes have been typed-up they will be destroyed. The typed versions will also be kept in a locked cabinet. In any reports of the findings, we will not use anyone's name. We also ask that each of you keep what others say in this group confidential. Also, please do not identify any of our participants outside of this group. What is said here should stay here.*
At this point, ask participants if they have any questions. Once all questions have been answered, ask the participants to sign the copy of the consent form and either return them to you or the recorder/ assistant. Remind the participants that a copy of the consent form for their	

records will be given to them at the end of the focus group. Point out that should they have a question at any time following the focus group, they may contact the persons listed on the consent form. After obtaining informed consent, give each participant a name-tag (or a table tent card) and a participant survey to complete (Have pencils and pens available). Depending on the focus group participants' characteristics, it may be desirable to have each participant complete the questionnaire as you read it aloud.	
Ground Rules Following the introductions, the moderator will describe what is expected of participants in terms of the group discussions (e.g., the ground rules): **Introduction** Welcome & Thanks for coming General information about focus groups Housekeeping - bathrooms, food, drinks, break Time - 1 to 1.5 hours Turn off cell phones (or set to vibrate) **Honest opinion** No right or wrong answers You do not have to answer a question if you don't want to All opinions welcome Anonymity - your first name or an alias Confidentiality Audio recording	

Moderator role - make sure everyone gets heard Can talk to others in the room, not only me Speak clearly and loudly enough - hands up signal Speak one at a time Time out signal - give floor to person who first had floor and work around room Questions?	*Before we get into our discussion, let me make a few requests of you. First, speak up so that everyone can hear you and let's try to have just one person speak at a time. Please say exactly what you think. Don't worry about what I think or others in the group might think. There are no right or wrong answers. Everyone's ideas and experiences are important. Everyone does not have to agree; we are interested in hearing all opinions. Any questions before we begin?* *Finally, this discussion group focuses on diabetes care for the Chinese community. We are interested in your perspectives about how to best provide diabetes care to you and others in the Chinese community. Please keep this in mind during our discussion.*
Introductions To facilitate group interaction, the moderator will ask each participant to introduce him or herself using a name he or she prefers to be called. The moderator will also emphasize that they can use any name they choose (e.g., nickname, alias, initials, etc.).	*1. Please tell us your last name or the name you prefer to use. Please also tell us how long it has been since a doctor first told you that you have diabetes.*
Focus Group Questions	
DOCTOR VISIT	*2. Can you share with us about one of your doctor visits at Asian Health Services during*

	the past 6 months and how it went for you? PROMPT: *What do you remember about this doctor visit?* PROMPT: *What was great about the visit for you (e.g., language communication, addressing patient concerns, treatment plans, amount of time spent, waiting time, transportation)?* PROMPT: *What could be improved for your next doctor visit?* *3. Do you have any suggestions for strengthening the communication between Chinese diabetic patients and the medical doctor?* PROMPT: *What language skills should your doctor have to be able to communicate more effectively with Chinese patients?* PROMPT: *What Chinese health practices should your doctor be aware of to be able to communicate more effectively with Chinese patients?*
ROLE OF MEDICAL ASSISTANTS, FOLLOW-UP CALLS AND DIETITIAN VISITS	*4. In the past 6 months, during your doctor visits, what did your medical assistant do for you?* PROMPT: *How did they try to help you?* PROMPT: *Can you tell me something that was helpful or that you learned from the medical assistant?*

	5. Was there anything about seeing the medical assistant that you were dissatisfied with or could be improved upon? *PROMPT: Was there something you would have liked the medical assistant to help you with that didn't happen?* *PROMPT: How could the services from the medical assistant be changed to make it better?* 6. *Do you trust the advice that you received from the medical assistants? Why or why not?* *7. You may have received a phone call in the last 6 months from someone at Asian Health Services like a medical assistant or a unit clerk just to see how you were doing. If you got a phone call like this, what did you talk about with the person who called?* PROMPT: *How did they try to help you?* PROMPT: *Can you tell me something that was helpful or that you learned from the phone call?* *8. In addition to seeing the medical assistant, you may have had the opportunity to see the Asian Health Services dietitian. If you had a one-on-one dietitian visit during the past 6 months, what did the dietitian do for you?* PROMPT: *How did they try to help you?* PROMPT: *Can you tell me something that was helpful or that you learned from the dietitian?*

	9. Was there anything about seeing the dietitian that you were dissatisfied with or could be improved upon? *PROMPT: Was there something you would have liked the dietitian to help you with that didn't happen?* *PROMPT: How could the dietitian visit be changed to make it better?* *10. Do you trust the advice that you received from the dietitian? Why or why not?*
USE OF TRADITIONAL CHINESE MEDICINE	***Now I'm going to ask you to talk about your experience with Traditional Chinese Medicine (including herbs and acupuncture).*** ***11. What types of Chinese medical practices do you use for diabetes and other chronic conditions?*** ***PROMPT: Do you use acupuncture? Herbs?*** ***PROMPT: Where do you go for these medical traditional treatments? How often?*** ***PROMPT: Are there any food items you usually get from the grocery store to help lower your blood sugar?*** ***PROMPT: Do you get medicinal herbs from the herbalist?*** ***PROMPT: Do you get medicinal herbs from another place like a family member or friend?***

	PROMPT: If you take herbs home to cook, how often do you cook and drink them? ***12. If you have seen a traditional Chinese provider, what health advice has your provider given you about your diabetes?*** ***PROMPT: What did they say?*** ***PROMPT: Do you trust the advice that you received from the Chinese medicine provider?*** ***PROMPT: Does what they say have an effect on your beliefs or actions?*** ***PROMPT: Do you go back to the same provider?***
HEALTH INFORMATION MATERIALS FROM TRADITIONAL CHINESE MEDICINE PROVIDERS	***13. What type of diabetes health information materials have you received from an acupuncturist or herbalist to help with managing your diabetes?*** **PROMPT:** ***Have you received a pamphlet about what diabetes is or instructions on diet changes to help you manage your diabetes?*** **PROMPT:** ***What information or resources should an acupuncturist or herbalist offer to help you with managing your diabetes?***
Wrap-Up	*14. Before we end our group discussion, I'd like to know if there is anything else you would like to add. Are there things that we didn't discuss that you think are important for us to know about diabetes care and getting the*

	information about diabetes out to the community? *Thank you very much for taking the time to talk with us. Your input will be very helpful. Again, if you have questions at any time about this project, please feel free to contact the persons listed on your consent form.*
Distribute Stipend Form and Incentives	
Debriefing	*Debriefing section, to be completed immediately after the focus group is complete, after the researchers have left the focus group, e.g., in another room, in the car.* *Describe the general demeanor of the participants, e.g., highly engaged in the interview, tired, and so forth.* *Describe the general environment in which the focus group took place, e.g., private office, conference room, any interruptions, phone calls.* *Describe how you think the focus group went, e.g., great, fine, okay, could have been better, and explain.* *Note anything unusual, e.g., the participants declined to address some questions, participants were called away because of work responsibilities, etc.* *Some groups may be drawn from convenience*

	samples where some group participants know each other before participating in the focus group. Describe whether it appeared as though group participants knew each other before the group met, and whether that seemed to influence their responses. How did it influence their responses? *Note any revisions to the focus group guidelines or questions that are suggested by the way this session went.*