TCM Diagnostics Applied to Parasite-Related Disease

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Abstract

Complex, chronic disease affects millions in the United States, imposing a significant cost to the affected individuals and the productivity and economic realities those individuals and their families, workplaces and communities face. There is increasing evidence leading towards the probability that overlooked and undiagnosed parasitic disease is a causal, contributing, or co-existent factor for many of those afflicted by chronic disease. Yet, frustratingly, inadequate diagnostic methods and clever adaptive mechanisms in parasitic organisms mean that even when physicians are looking for parasites, they may not find what is there to be found. Examining the practice of medicine in the United States just over a century ago reveals that fully a third of diagnostic and treatment concerns for leading doctors of the time revolved around parasitic organisms and related disease, and that the population they served was largely located in rural areas. By the year 2000, more than four-fifths of the population had migrated to cities, enjoying the benefits of municipal services, water treatment systems, grocery stores and restaurants. On the surface of things, it might be easy to think that a largely city-based population, separated from some exposures and supported at presumably higher levels of hygienic protection, would be less prone to parasitic illness. The century also saw a shift in attention and training in the medical profession, not only in the U.S. arena of allopathic medicine, but also in contemporary Traditional Chinese Medicine (TCM), such that the majority of practitioners may have little or no training and skills in recognizing the presence of parasitic infection. Ancient classical texts in TCM included an inherited wealth of wisdom in observation and treatment of parasitic disease, but current entry-level TCM education in the U.S., although excellent in many respects, significantly overlooks addressing this public health issue. Unless and until public and professional education catches up on this topic, and more extensive and successful diagnostic
methods are commonly used, there is a gap in health care training on, attention to, and perception of parasite-involved disease. One of the goals for this study was to develop some sense of whether the traditional, natural, diagnostic methods of TCM might bridge this gap by reliably identifying pathognomonic signs of parasitic involvement in disease patterns. A lesser, but still useful, goal, is to establish a historical context for and to shed light on the current patterns of practitioner skills and awareness, as well as education and training given, on parasitic illness. To pursue this information, components of literature review and survey of health care professionals on training and experience in the area have been employed. A retrospective case review of nine individuals affected by parasitic infection provided the opportunity to delve deeply into the information gleaned by TCM diagnostic approaches of health history, questioning, and pulse assessment. Significant obstacles to TCM research processes also became clear through this project, resulting in suggestions for future improvements.
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Chapter 1: Introduction

Complex, chronic disease in the United States takes a tremendous toll on the health of millions of people. This burden also costs greatly to and through those individuals in productivity and economic factors. Our general health care system does a reasonably good job of dealing with acute illness and injury. It excels in addressing conditions requiring surgery, or managing basic chronic conditions by medication. However, for those who have complicated illness, the reality can be more struggle with health care providers than receiving precise, curative, answers. All too often, individuals suffering multiple, persistent, symptoms that do not fit common disease templates run into more trouble: they hear from their physicians pronouncements that translate perilously close to 'it's all in your head', or, 'you must be doing something wrong.'

There are factors in complex chronic disease in the United States that have, for quite some time, either been overlooked or misinterpreted. Among them are a wide array of symptoms and disease patterns that arise from two broad categories:

- the presence of undiagnosed sub-acute and/or chronic parasitic infection
- the role of any stage of parasitic infection in silently complicating co-existing or pre-existing disease.

This diagnostic gap exists in part because of low levels of awareness, among contemporary health-care professionals, of the incidence and manifestations of parasite infection in the U.S. population.

Attention to and education about parasitic infection in contemporary U.S. medical schools is limited, whether institutions representing the medicines of west or east. This lack of
education, perception and visibility has led to inadequate levels of identification and care. The consequence for the infected population is prolonged, and often unnecessary, illness and debility, often loss of career, personal, and financial opportunities, and sometimes escalating injury and illness, or even death from complications of the infection.

**Allopathic Perspectives**

The Centers for Disease Control, responsible for protecting public health and improving health care outcomes, tracks and reports on disease in the United States. Ironically, although the agency started in 1946 as a malaria-control organization for the U.S. \(^1\)(http://www.cdc.gov/mmwr/preview/mmwrhtml/su5502a1.htm), the CDC at first glance today takes an apparent view of parasite infection as something primarily affecting developing countries. Or, so the first page on parasites on the CDC website seems to suggest (http://www.cdc.gov/parasites/about.html). On that page, an initial description of the large categories of parasites, including protozoa, helminthes, and ectoparasites, focuses on the global impact of parasitic illness. At the bottom of the web page, this closing statement finally mentions a limited sample of parasites found in the U.S., as follows:

- *Trichomoniasis* is the most common parasitic infection in the U.S., accounting for an estimated 7.4 million cases per year.
- *Giardia* and *Cryptosporidium* are estimated to cause 2 million and 300,000 infections annually in the U.S., respectively.
- *Cryptosporidiosis* is the most frequent cause of recreational water-related disease outbreaks in the U.S., causing multiple outbreaks each year.
- There are an estimated 1.5 million new *Toxoplasma* infections and 400–4,000 cases of congenital toxoplasmosis in the U.S. each year; 1.26 million persons in this country have
ocular involvement due to toxoplasmosis. Toxoplasmosis is the third leading cause of death due to foodborne illnesses (375+ deaths).

Additional pages elsewhere within the CDC website list further information on a broad array of parasitic illnesses. (See appendix E)

**Factors and Vectors**

The larger background story on parasites in the United States, however, not obvious on the quoted web page, involves multiple factors:

1) The incidence and prevalence of regional parasites within the U.S. often receive little attention, whether from the medical community, or in general public education. These regional pathogens may potentially affect smaller portions of the population, but are still serious, with sometimes severe consequences for the health and wellbeing of the infected individuals.

2) Not all states in the U.S. participate in surveillance for incidence of any one parasite-related disease. In the example of *babesiosis*, the tick-borne parasite invades human red blood cells (Cahill, 1995), causes disease that ranges from asymptomatic to fatal, but is only reportable in 22 states at this time. ("CDC - Parasites," 2014) An individual traveling in one of the states where the tick-borne parasite is common, may have contact with a carrier tick, whether aware of it or not. They then return to their home state and develop the illness. If outside of the area where the disease is reportable, (Tyler M. Sharp, 2014) the infected individual may not receive appropriate diagnosis and care, or be counted in the epidemiologic reporting or alerts (Cahill, 1995).

3) Travel brings individuals into contact with many vectors for communication of parasites, whether in a nearby state or a foreign country, and brings traveler 'hosts' for parasites to the U.S. from all over the world. (Amorosa et al., 2005) Having successfully used their hosts for transport, the parasites settle into patterns of reproduction and spread within their new home's
opportunities for proliferation. (Amorosa et al., 2005) A recent example of such mobility is the appearance of Dengue Fever, formerly endemic to Africa, Central and South America, and Asia, in the American Southwest (Tyler M. Sharp, 2014).

4) Individuals with no apparent exposure risks are nonetheless vulnerable to potential parasitic infection through the simple act of eating food carrying parasites or prepared by someone infected with parasites. (Yoshida, Tyler, & Llewellyn, 2011) Or, these individuals may be at risk without ever leaving home if they have an accident, illness, injury or surgery that leads to a blood transfusion. ("Infectious Disease Testing," 2014) Blood donors are subject to only a few screening factors, and tests of the blood supply currently include only a limited number of parasitic organisms.

5) Infected individuals may inadvertently share the pathogen with intimate partners, family or house mates. Depending on the preferred routes of the microbe, this might happen through the simplest sharing of beverages, utensils and other household interactions, via food preparation, or through intimate contact with sexual partners.

6) The family pet(s) come into play in zoonotic exchange: a parasite from one species (family cat, dog, bird, reptile) transfers to a new host in Mom, Dad, Suzie or Johnny. (Paul, King, & Carlin, 2010) Much attention is given to the most high-profile new zoonotic disease, such as various manifestations of 'bird flu.' However, it is unclear the degree to which the average family is educated on or warned of the pathogens their adorable new pet may bring to their household.

7) Changing environmental conditions, such as pollution of fields, streams, or water supplies, severe drought, flooding, or significant change in temperature range, can lead to loss of protective systems, or overgrowth of pathogens that then endanger the food or water supply.
(Newell et al., 2010), or provide vectors for parasites to access human hosts. (Cahill & Shevchuk, 1996) An example at the time of this writing is the drought in California: dwindling groundwater and parched soils give the fungus *Coccidioides* opportunity to float, drift, be blown into the air and infect humans with *Coccidioidomycosis*, otherwise known as 'Valley Fever.' (Goodyear, 2014) [Note: find LAT reference to work of Los Angeles epidemiologist Guevara/CDC 'silent epidemic']

8) Use and overuse of antibiotics, steroids and other potent pharmaceuticals is increasingly known to disrupt the normal internal balances of the human biome. (Eisen, 2012) This not only disturbs the normal balance of power between neighboring microbial populations, but in some cases allows formerly harmless or beneficial organisms to leave their commensal or mutual roles and become dominant to cause injury in place or by traveling to other areas of the body where they become parasitic in influence.

9) Increasingly, researchers are discovering links between seemingly-unrelated disease and microbial free-loaders, such as the frequent presence of the painful condition interstitial cystitis with accompanying *H-Pylori* invasion of the bladder. (Atug, Turkeri, Atug, & Cal, 2004) It may be that many infections previously thought to be well-defined on their own will turn out to be the consequence of parasitic pathogens.

10) Not least, even when a particular pathogen achieves notoriety, that does not insure that medical professionals across the country are equally alerted to its prevalence. If they live outside the endemic area, these professionals may not be educated and motivated by updated information to perceive a parasite when it presents in their patients. Thus, even the most sincere, skilled and conscientious physician may not provide accurate care. Similarly, despite well-written and clear fact sheets on various parasites on the CDC website (for example), there may
be a kind of Catch-22 for the general public: unless an individual knows what pathogen has attacked them, their ability to discover and access available public education remains limited.

**Examples of these dynamics.**

- Significant populations affected: the spirochete *Borrelia borgdorferi*, a tick-borne illness associated with the pattern of symptoms known as Lyme Disease, caused 17,730 reported cases of illness in the United States in the year 2000, according to the CDC and others. (Paddock, 2013) For at least twenty years prior to the 2000 report, illness associated with this infection had been attributed to hypochondria, or lumped in with 'chronic fatigue' or other poorly-understood syndromes that many in the medical profession were skeptical about considering 'disease.' The treatment recommended was often 'rest', or psychiatric care, or a barrage of antibiotics, and there was for a significant period of time no useful level of information or education on cause or prevention of Lyme disease. It is difficult to overstate the consequence for infected individuals who suffered for years, or are still suffering, as a consequence of little or ineffective care.

- Medical community awareness: At a 2013 medical conference on Lyme disease, the CDC detailed massive under-reporting of this illness (Paddock, 2013). Thus, even one of the parasitic epidemics that has received more news attention than most others of the past twenty years in the U.S., is far more prevalent than previously understood. This is consistent with both an uptick in attention to this disease (focused professional conferences devoted to understandings of the disease and approaches to treatment), and (the under-reporting) an historic trend away from traditional focus on parasites of all kinds in western medical attention.
and training.

- Public community awareness: A fact sheet on *Coccidiodes* from the CDC states that in 2011, twice as many cases of Valley Fever were reported than of tuberculosis. (CDC) In the southwest and western regions where *Coccidiodes* lives in the soil, an estimated 150,000 cases of *Coccidioidomycosis* go undiagnosed every year. (CDC.gov/fungal/) Even so, this is hardly a topic of daily public education or conversation for most in Los Angeles. A few committed public servants striving to raise the profile of the potentially deadly disease are bare whispers among the general roar of other news.

- Perceptual Filters: Many parasitic illnesses go undiagnosed because physicians are looking for the acute symptoms of new infection, or for a parasite to go into a predictable area of the body. The less-defined symptoms of evolving infection (as the parasite goes through its life cycle and pursues of appropriate environments for each phase), or the unpredictable choices of the microorganism for migration, hibernation, and so on, go unnoticed.

  o If a person is not vomiting or experiencing abdominal cramping and extreme diarrhea, the default conclusion is often, and mistakenly, that they could not have 'parasites.'

  o This factor overlooks, for example, adults who cannot sleep because of an unexpected chronic infection with *Enterobius*, commonly recognized as pinworm, and expected by many physicians to affect primarily children. (CDC).

  o *Schistomiasis* is well known for damaging the human liver and
lymphatic system, but only recently have researchers connected the presence of *schistomiasis* with the incidence of bladder cancer in men (de Martel & Franceschi, 2009).

- *H. Pylori* bacteria is well accepted as both an appropriate part of some regions of the human microbiome, and as a trouble-maker when it travels beyond its natural home. However, more attention is now being given to this bacteria as a possible instigator or co-factor in chronic urinary tract infections in women. (Atug et al., 2004)

- Someone with chronic exhaustion and occasional or frequent sieges of breathlessness may have multiple expensive and/or invasive exams for cardiovascular or pulmonary disease, without ever being tested for the presence of *Babesiosis*, which dwells in red blood cells, not in the lumen of the intestines.

What factors contribute to this gap in clinical experience and perception?

**1910-2014: Parasites Losing Visibility in the Western Clinic**

Western clinical understandings of exposure to parasites (and of the symptomatology of stages of parasitic infection) formed largely in the context of both the European influence on medical education, and the practice of medicine in the 19th century in the United States and Canada (Osler, 1912). British and European imperialism, via sending troops and envoys around the world and eventually having them return to their homeland, brought experience of parasitic illness from all over the world to the shores of the dominant nations. This meant that they developed a degree of awareness and expertise in diagnosis and treatment. To the degree that
American physicians studied in the highly influential British or European medical schools, or under the teaching of those educators here, they gained awareness to apply, in turn, to their patients in American environments.

Doctors in the U.S. and Canada dealt not only with communities in which nearly all of their patients lived far closer to nature than those in the 21st century, but also with the consequences of wars in which soldiers, living rough while pursuing war, contracted the illnesses endemic to the soil, water, food, and animal company of nature. The population of around 75 million people in 1900 (Hobbs, 2014) rose to over 281 million in 2000, the largest increase in U.S. history. Population density more than tripled, from 26 people per square mile in 1900, to more than 79 people per square mile in 2000 (Hobbs & Stoops, 2002). In 1910, nearly 66 million, or well over two-thirds, of the 92 million people in the U.S. lived in rural or 'nonmetropolitan' settings. By 1950, the population was predominantly located in metropolitan settings (Hobbs & Stoops, 2002), and by 2000, only 55 million (less than one-fifth) of the 281 million population lived in rural, or non-metropolitan areas. (Hobbs & Stoops, 2002).

In the 20th century, while the population expanded massively and migrated from rural to metropolitan settings, things changed within the medical community, as well. In 1900, a highly-diverse array of healthcare practitioners and professions permeated the U.S.; at that time, only about 8,000 of the nation's doctors were associated with the new American Medical Association; within ten years, 70,000, or about half of the doctors in the U.S., were AMA members. ("PBS-Healthcare Crisis: Healthcare Timeline," 2014), and that number grew to over 75% of U.S. doctors by the 1950's. From the estimated 140,000 physicians in 1910, the total number of primary care and specialist physicians grew to over 834,000 by 2012. ("Total Professionally Active Physicians," 2014)
How the shift towards organization and affiliation influenced the profession is a much larger subject than this study can undertake. The influence of the 1910 Flexner Report, exerting stringent pressure for 'scientific' medicine and eradicating presumed quackery, almost certainly played a role in eliminating nearly half of the medical schools and a wealth of diverse perspectives on healthcare in the United States. Alternative approaches such as homeopathy, chiropractic, naturopathy and others were shoved out of mainstream practice in the aftermath of the Flexner Report, along with their resources of diagnostic insight and approaches.

It is reasonably clear that, for these and other reasons, attention of medical doctors turned from nature and natural healing to the chemistry laboratory and pharmaceutics, from naturally addressing parasites as nearly one-third of general medical practice in 1906 (as reflected in Osler's text), to often being oblivious to and/or uninformed about the presence or role of parasites in disease. Physicians in many instances shifted from choosing to be a 'general practitioner,' to treating specific populations: women's health, pediatrics, men's health, sports medicine, etc. Others zeroed in on efforts to refine surgical approaches to health correction, on endocrinological and neurological understandings of disease, for example, and seeking pharmaceutical answers to those challenges.

It is an interesting question whether the increasing tendency to pursue specialist focus in healthcare diminishes overall attention to public health issues and exposures.

As city, county, and rural services and infrastructure of the U.S. grew, along with advancing levels of housing codes, public health agencies and utilities, it may well have been easy for the public and for health care professionals alike to assume that well-housed individuals would not be vulnerable to parasitic illness. Additionally, awareness of the life cycles and phases of parasitic organism development and influence in human hosts has declined, as less focus and
expectation has been placed on this type of illness. Thus, practitioner perception of non-acute stages of infection has also diminished, outside the circles of gastrointestinal or tropical disease specialists.

The increasing contrast between western living conditions and the poverty and disease of the 'third' (lesser-developed or -prosperous in housing, systems, technology and industry) world may have added to misimpression of risk levels. The assumption that poorer living conditions equal significantly greater exposure risk, and more affluent and attractive surroundings reduce risk, is unfortunately incorrect. In any event, a dwindling minority of western health practitioners seems equipped or prepared to recognize and focus on disease caused by parasites.

A quick, informal telephone survey of local 'travel medicine' specialists in Los Angeles in 2012 revealed that their focus was largely on preventive inoculations against select, high-profile infections, to prepare American travelers for visiting new countries.

At least one of those specialists scoffed when I asked if she routinely did endoscopic exams of the bowel or used microscopy in examining blood or other physiologic samples, if 'lab tests' came up inconclusive. She implied that I was naive to think that those approaches would reveal disease if the lab tests were negative.

Through many such informal conversations, it became clear that many health care practitioners with whom I have spoken considering parasitic disease tend to reliance on laboratory tests that may or may not be efficacious in discovering the full range of parasitic disease staging. There seems, from my encounters, to be a preoccupation with the overt symptomatology of either:

☐ An acute, freshly-acquired gastrointestinal parasitic infection, with cramping, diarrhea, vomiting, and more, or
Manifestations of unopposed parasitic infection such as found in impoverished populations of tropical regions, Africa, and Asia. This might mean the massively bloated belly of a malnourished child with worms, or emaciation, or other such obvious signs.

Meanwhile, medical doctors in general have seemingly become increasingly oblivious to the ongoing presence of parasitic exposure, infection, co-infection and chronic infection in 'developed' countries.

Attention to Parasites by TCM Professionals in the West

As acupuncture and traditional Chinese medicine have taken root in the U.S. since the 1970s, much of the focus of training and practice has been shaped by the need to develop and master communication in English of the most basic theory and principles of the medicine. This has, in part, meant speaking about the medicine in ways consistent with the linear thinking of American students, and adapting to the organizational environment of education in the U.S.

But, what is taught has also perhaps been shaped by the drive to gain acceptance for the medicine, and to standardize training programs in the regulatory environment of the States.

Additionally, content has been expanded or restricted by reliance on the gradual evolution of availability of textbooks and translated resources. In 1994, the average TCM/AOM ‘bookstore’ would have held author Giovanni Macciocia’s first book, Principles and Theory, an herbs text and formulas text by Bensky, the first or second edition of Chinese Acupuncture and Moxibustion, Dr. Maoshing Ni’s Tao of Nutrition, and very little else. By contrast, today’s professional bookshelf comes from university bookstores and/or internet resources with abundant titles in theory, acupuncture, herbs, moxibustion, nutrition, specialty topics, and more.

Entry-level TCM education by definition cannot provide in-depth training in specialty
areas, but is also somewhat shaped by expectation and focus, as described earlier for allopathic medicine, above. It would not be surprising to find that TCM practitioners, like their western counterparts, assume that identification and treatment of parasitic disease is most likely to be relevant in rural areas of third-world countries.

Although TCM relies not on the fixed disease labels of Western medicine so much as on symptom/pattern/phase differentiation, it has won a foothold in the west, in part, by doing what western health professionals accept and somewhat understand.

One example of this natural effort to find common ground is promoting the effectiveness of acupuncture for pain management.

Another example of seeking to interface with the west is the on-going effort to fit the inherited wealth of traditional observational medicine into conventional 20th-century approaches to ‘scientific’ research.

At times, it seems that these strategies may have resulted in at several unintended consequences:

1. Gaining the agreement of the allopathic community to 'allow' our participation as, essentially, subcontractors, in areas such as pain management and reproductive infertility. This might seem a good thing, unless one looks at the continuing implicit assumption that TCM is an inferior or suspect medicine that can only be 'employed' in a few circumscribed applications with the permission and/or invitation of medical doctors.

2. Confusing the public, students and the western medical community alike by applying (especially in the early days) standards and approaches of clinical or academic research that were ill-suited to explore the workings and efficacy of the medicine. Initial clumsy efforts to apply double-blind standards to acupuncture trials, for example, led to dubious
research and misleading conclusions. The results from such chaos were, of course, eagerly used by those who sought to oppose the growth of acupuncture in the West, and by modern-day Flexners crusading to ‘protect the public’ from perceived quackery.

3. Inadvertently directing the motivational focus of education and training in schools of TCM to the most readily-apprehended disease labels, to bolster new-practitioner acceptance and success.

Earning an audience for and gaining respect and credence for the potency and authority of the whole array of diagnostic wisdom, therapeutic understandings and treatment modalities of the Chinese medical tradition, is an ongoing task of increasing urgency, as the medical community and general public seize upon half-formed understandings of the medicine for regulatory and ‘integrative’ definition.

**Recovering the Whole**

Largely in the background have been the significant tasks of re-gathering the depth and breadth of the practice of the ancient medicine, following the political and situational shocks that narrowed, truncated and sometimes uprooted the focus and practice of traditional medicine in China in the 19th and 20th centuries. Classicists such as Heiner Fruehauf, PhD, LAc, continue not only to explore historical trends, but also to search for and translate materials passed down through the millennia. Seeking to discover the full extent of the applications and expertise of the medicine prior to advent of 'modern' medicine in China, Fruehauf and others reach into the metaphors and language of the past and bring to light clues to how our ancestors addressed healing and public health. However, this process of restoration and revival of the full inheritance of the tradition may continue to be an uphill battle for some time to come.

Fruehauf, one of the primary voices among the very few in the U.S. discussing parasitism
today in traditional medicine, acknowledges the challenge of bringing wisdom forward from historic manuscripts. In the classics, concepts of the effect of a parasite on its human host may be described in terms of notions such as 'possession' or the parasites described as 'demons.'

Fruehauf describes the challenge as follows:

On one side, we have the sinologists working with the primary literature to illuminate the record, but most of these people would never want to be caught dead promoting the actual use of these healing methods; and on the other side we have practitioners who work hands-on with the medicine but know very little about its history. (H. Fruehauf, 1998)

**Bilateral Obliviousness to Parasitism**

Neither east nor west have yet come fully to terms with first, the vectors, and second, the signs, symptoms and patterns of parasitic disease in well-fed, well-housed individuals in the context of extensive municipal services such as water treatment and waste removal, and a degree of attention to hygienic food handling, delivery, and preparation in grocery stores and restaurants. As a consequence, diagnostic understandings of the incidence, manifestations and influence of parasitic disease as a "first world' pattern continue to require updating, in both professions.

**First-hand experience and interest**

My interest in this topic, which has only grown as a result of my research to date, stems from not only this fascinating and neglected area of medicine, but also from personal understanding.

I experienced significant periods of illness, exhaustion, or malaise that were not successfully diagnosed by standard medical/laboratory tests. On multiple occasions I pursued answers via the conventional approach of stool analyses for 'parasites.' Several times over a span
of 20 years, viewing negative or inconclusive test results, different medical doctors suggested that, instead of having an illness, I was 'too sensitive.'

Among similar dismissive comments were suggestions that I was suffering from loneliness, poor social life, depression, or, to explain my continuing reduced vitality and productivity, describing me as 'simply not a high-energy person.' I found it puzzling that I had quite good recall of previous years of high energy and of significant productivity, but that medical professionals were telling me that this was wishful thinking on my part.

Prolonged care through TCM, careful diet, and practice of qigong helped me to at least remain functional, but even that significantly powerful care and my determined lifestyle choices would have been made far more effective by clear diagnosis of and targeted treatment for the parasites that sapped my health. My years of sub-par health and/or chronic illness and pursuit of treatment would have been reduced in length (and thus, expense) and treatment would have been enhanced in effect, by collaboration in care between East and West practitioners. Were more effective diagnostic and testing methods available or employed, the parasites that were consuming my health and energy could have been addressed, and my energy and vitality (and, one might imagine, personal life, productivity, accomplishment and financial well-being) could have been vastly different.

In fact, I had a long-term, chronic infection by *Entamoeba histolytica*, in which the clever and deadly parasite had found ways to make a comfortable and nearly-invisible home in my organs for decades (and opened the door, by immune suppression, for other parasites to invade) while draining my energy. For those affected as I was by such infection, it is the energetic equivalent of putting money in the bank and having it mysteriously evaporate upon deposit, leaving one chronically puzzled and depleted.
Appropriate treatment, at long last, for the multiple parastic infections quite literally 'turned the lights on' for me in ways that no previous care had fully done.

In clinical practice of TCM, I have seen patients who have diligently pursued prolonged care for a chronic health problem, with frustratingly little improvement, because undiagnosed co-existing parasitic infection was blocking the natural healing abilities of their body. Their experience and my own have led to my passion for research and education in the field.

In my estimation, the contemporary practice of Traditional Chinese Medicine has great, and as yet not fully recognized, potential to provide low-tech diagnostic accuracy in identifying the presence of parasitic factors in disease patterns. Taking up this skill and knowledge can lead to more effective integrative collaboration on diagnosis and greatly improved treatment of affected individuals. Hence, this study.

**Research goals of the current study**

The focus of this study is on the question, 'Are there Traditional Chinese Medicine (TCM) diagnostic criteria that can be reliable identifiers of pathognomonic (that is, diagnostic for a specific disease) signs of parasite involvement in disease patterns?' A subtext of this question is the overall level of attention paid to, and education given on, the presence, incidence, and effect of parasites in contemporary health in the U.S., from both allopathic and TCM perspectives. Complementing the understanding of these topics through setting a context for the history and culture of medicine in the U.S. in the past century is a useful adjunct to the research.

**Terms pertinent to this study**

For convenience of readers from multiple fields, I include here a brief glossary of terms most prominent in this study.

- Biome: a term increasingly common in usage in environmental circles in the past 50
years, to describe "a complex biotic community characterized by distinctive plant and animal species and maintained under the climatic conditions of the region, especially such a community that has developed to climax." ("definition," 2014)

- Human microbiome: Baylor College of Medicine in Houston, Texas, participating in a large national project commenced in 2007, examining the presence and effect of the microbial world within the human body, defines the human microbiome as follows: "the collection of microbes - bacteria, viruses, and single-cell eukaryotes - that inhabits the human body. Microbes in a healthy human adult are estimated to outnumber human cells by a ratio of ten to one, and the total number of genes in the microbiome exceeds the number of genes in the human genome by a factor of at least 200." (https://www.bcm.edu/departments/molecular-virology-and-microbiology/microbiome)

- Commensalism: A form of symbiosis between two organisms of different species in which one of them benefits from the association whereas the other is largely unaffected or not significantly harmed or benefiting from the relationship. ("Biology-Online.org," 2014)

- Mutualism: A symbiotic relationship between individuals of different species in which both individuals benefit from the association."Biology-Online.org," 2014)

- Parasitism: A form of symbiosis in which one organism (called parasite) benefits at the expense of another organism, usually of different species (called host). The association may also lead to the injury of the host. ("Biology-Online.org," 2014)

- Chemotaxis: oriented movement toward or away from a chemical stimulus."the definition of chemotaxis," 2014) In microbiology, and in particular in explorations of
Lyme disease, later in this document, study of this response to stimuli is an important part of current research towards developing effective therapies.

- **Parasites:** A parasite is an organism that lives on or in a host and gets its food from or at the expense of its host. (CDC) This broad term refers to living organisms, whether aerobic or anaerobic, that rely on a host organism to supply environment and resources for survival. This may be in a benign dependence (see commensalism), or a mutually-supportive relationship (see 'mutualism'), such as probiotics in the intestines, or, may be a relationship in which the dependent organism (see 'parasitism') makes a demand or drain on the host, or poses an active threat of injury, illness, and potential complication or injury that may threaten the life of the host.

- **Diagnostics/TCM Diagnostics:** the common traditional diagnostic approaches of acupuncture and Chinese medicine, specifically including observation of tongue, pulse, patient reporting, and physical assessment including palpation, facial diagnosis, and more. (Deng, 1999) Observation of the tongue for a variety of factors and characteristic signs (Deng, 1999) palpation of the pulse at at least three depths in each of three locations on each wrist, for multiple states and characteristics of pulse strength, location, depth and quality. (Deng, 1999)

- **Listening to and questioning the individual closely regarding symptoms and signs.** (Deng, 1999) Sometimes called ‘the ten askings’. (Kaptchuk, 1983)

- In addition, there is a long tradition of physical observation relating to tone, shape, color and texture of face and body, including structure and symmetry, abdominal palpation and other physical assessment that informs a TCM practitioner of functional states of organ systems and tissue regions. (McCarthy, 2007)
Pulse: In TCM, the pulse reflects not just the rate and intensity at which the heart is working, but also information discerned and shared by practitioners throughout the history of TCM. (Kaptchuk, 1983) Careful inspection finds the pulse revealing levels of organ function or dysfunction, areas of pain or inflammation, evidence of 'excess' or 'deficit' in various natural attributes defined in TCM, and overall levels of energy, or lack thereof. (Deng, 1999) There are today several large schools of opinion and influence regarding the interpretation of pulse signs, including teachers such as Dr. Leon Hammer, Dr. Jimmy Wei-Yen Chang, and others. There is sufficient internal consistency and diagnostic accuracy and reliability found in each system to provide clinical confidence, even though the means of arriving at the conclusions, and the labels given the conclusions, may be quite different from one system to the next.
Chapter 2: Review of Literature

Statement of Research Question/Research Objective

My assertion is that there are reliable patterns of pulse and tongue signs, and identifiable symptoms associated with many instances of parasitic disease, including the potentially novel manifestations of chronic parasitic disease in today's well-nourished, well-housed Americans. Identifying these patterns and/or renewing the teaching of them in the profession could be a significant contribution to health care today. The objective of this study is to look at evidence from traditional diagnostic routes TCM practitioners can employ to identify likely parasite infection.

Development of TCM Approaches to Diagnosis of Disease

TCM diagnostic methods have been well-defined through centuries of development, in a culture that valued and documented observational practice and careful transmission of acquired knowledge. Innovation augmented the tradition, rather than replacing past approaches. The inherited wealth of health care wisdom (and effective linkage of complex diagnosis with precise treatment) is impressive.

Identifying the specific patterns of disease vectors, onset, symptoms, progression and prognosis in many cases matured in the courts of emperors and warlords of China, where unhindered vitality and longevity were essential. Even the most wealthy and indulgent leader had to be resilient and ready for action, not hobbled by chronic illness. Equally, though, the medicine endured in and adapted to the environments of rural villages of China. During many centuries, this was a population more likely to be affected by scarcity, limited dietary resource, and poverty, than by the consequences of abundance and indulgence.

The depth of natural diagnostic methods and corresponding treatments and approaches of
historic TCM developed strong reliability and integrity in the context of concise and well-documented observational reporting over millennia. This took place in the absence of modern double-blind studies and technology-enhanced laboratories. These historic methods are precise, reliable, and effective in modern-day care. Most significantly, for the purposes of this study, the diagnostic strengths of the medicine lend themselves to pattern definition and identification in any number of contemporary health imbalances as well as they did to those of rural Chinese communities a century or two ago.

**History, East and West, Electronic Abundance and Diplomacy**

Seeking information and resources to discover what exists around the topic of TCM and parasites, and what resources in general might provide some light on symptomology related to parasitic illness, I pursued research in the professional literature in multiple areas:

- The context and evolution of healthcare in the U.S. in the past century
- TCM education and training on parasites
- TCM approaches to diagnosis and treatment of parasitic illness
- Science and Western Medicine approaches to parasites
- CDC information, NIH studies on parasites
- Informal sources of information through the internet, including TED talks in the field of medicine, blog postings, internet news sites, newsletters, and so on
- Relevance of this topic domestically and in international relations/diplomacy
Overview of Literature Review Process

To discover relevant published materials on the above topics for this study, I made use of the resources of the library and online database access of Yo San University of TCM, of UCLA's Biomedical Library, and of online literature searches through Google Scholar. In addition, the Thomson Reuters Endnote X7 software program made it possible to do further searches of Lista/EBSCO, PubMed, and the U.S. National Institutes of Health resources, among others. On an individual level, Dr. Heiner Freuhauf, Dr. Kevin Cahill, and Dr. Nyles W. Charon, in particular, were kind enough to provide access to their own research or direct me to their published research. Also helpful were textbooks and specialty books in my own resource collection.

Evolving Health Care Practice in the U.S., 1900-2000:

The context and evolution of healthcare in the U.S. in the past century pressed its way into my research as I explored and pondered why it is that we in health care are, together and separately, doing a poor job of recognizing and addressing parasitic disease in the U.S. today. A powerful resource in setting some questions towards this topic is a textbook from 1906 (various editions published through 1910 and beyond) that was a prominent textbook of medicine for doctors in training a century ago (Osler, 1912). Osler’s diligent, far-reaching and revealing text, thanks to Google’s project of digitizing mass quantities of books, is available to us today, with its evidence of fully 30% of medical attention addressing parasitic disease in the late 19th, early 20th centuries.

From there, it was a short step to resources from the U.S. Bureau of the Census (Hobbs & Stoops, 2002) and some investigative reporting ("PBS- Healthcare Crisis: Healthcare Timeline,"
2014) from Public Broadcasting, to begin to paint the broad strokes of the picture of change in population, environment, and medical practice over the past 100 years.

**TCM education and training regarding parasitic illness:**

Review of mainstream educational texts used in TCM schools in the United States reveals little or no focus on diagnosis and treatment of parasitic disease. Almost no mention is made of parasites in general or in specific in a general overview of TCM by the eminent Ted Kaptchuk, (Kaptchuk, 1983) the basic theory texts, such as ones by Giovanni Macciocia, and acupuncture texts, such as those by Deadman and Zheng. As a consequence, little or no classroom time and training is spent on the subject. Although excellent herbal pharmacopeia and formula texts and resource websites include discussion of the category and action of herbs and formulas to address roundworms or pinworms or "parasites", such as Chen, J. K., and Chen, T. T., (2003), the sheer volume of material covered in masters' level herbal studies means that, again, little or no classroom time and attention is given to effectively educating, training and equipping the practitioner to diagnose the presence of a wide array of parasites. A widely-used general TCM diagnostics text, Deng (Deng, 1999) does not mention the subject of parasitic illness. Few guidelines, if any, are provided in texts or in the U.S. classroom regarding appropriate grasp of symptoms signaling the need for referral, testing or co-treatment with western professionals when parasites are suspected.

**Below the Radar in TCM**

At this time, few or no contemporary schools of acupuncture and TCM or Oriental Medicine in the U.S. offer any degree of focus on or specialty training in this area, beyond a rare, generalized, 'microbiology' course. An informal survey of leading authorities in TCM education
who are frequently involved in activities such as accreditation evaluation for schools and programs of instruction in acupuncture and oriental medicine, resulted in the answer that 'no, no formal courses are offered in parasitology.' (personal communications, January 2013, J. Chambers, J. Chen, P. Diamond, T. Chen, P. Walton, R. Sokolsky).

One Chinese-language textbook, Zheng, Higher Medical School Textbook--Microbiology and Parasitology (for traditional Chinese medicine, acupuncture, massage and professional use) is available in China, but my understanding is that this has not been translated for use by English-speaking professionals. Contemporary published research focuses on individual herbal substance efficacy against single parasite pathogens, such as reported by Hossain and associates (Hossain et al., 1999) and others (Slusarczyk, 2011)

Although discovering individual herb efficacy against particular parasites is valuable research, it does not fill the gap of discerning which patients are infected by the pathogen in question, and what level of infection has occurred.

**TCM approaches to diagnosis and treatment of parasitic illness**

Having formed a strong subjective opinion that we in the Chinese medicine world have been falling down on the job of identifying parasitic factors in disease in developed countries, and of educating and training our practitioners in these skills, I actually approached researching this subject area with apprehension. What if I were just on a personal crusade, and discovered that the lack of attention, lack of information, plain ignorance, was all mine? What if hundreds of peer-reviewed articles leapt out from the screen of every computer terminal I accessed in searching professional journals, archives and websites?

As it turned out, even my most diligent and prolonged searches turned up very little information in English on this topic, from writers on acupuncture and Asian medicine. I found
an article in *Acupuncture Today*, which was not peer-reviewed. Although the article offered generous encouragement to practitioners to be confident in treating individuals affected by parasites, my perception is that a great deal more remains to be done in that regard.

I formed multiple search strings in dozens of iterations around this topic, including many variations on TCM, AOM, Asian Medicine, Acupuncture, Chinese Herbal Medicine, and various terms for diagnosis (identify, discover, find, etc.), pulse diagnosis, syndrome(s) and treatment, and multiple iterations on the term parasite, parasitic illness, parasitism, parasite-caused disease, classical names and concepts around parasitic disease (‘gu syndrome’) and so on and so on. No joy. No articles or books came to light.

Further searching with ever more specific terms, such as the Latin names of specific parasitic organisms, eventually led to journal articles focusing deep within the laboratory, such as one exploring the activity of a single herb extract against a fungal infection in chickens (Zhang, Sun, Yue, Zhou, & Du, 2012). Another (Slusarczyk, 2011) pointed up the laboratory research into the effects of particular chemical components of a commonly-used herb, Salvia, against malaria and Chagas disease. Glaringly absent: focus on how a TCM/AOM practitioner would know through traditional means to identify signs and symptoms of parasitism in their patient. Absent. Not to be found.

Correction: I found in a 1998 article (H. Fruehauf, 1998) on *Gu Syndrome*, and a 2008 in-depth interview with Fruehauf about the 1998 article. On his *Classical Pearls* website (Heiner Fruehauf, 2014), Fruehauf and other classicists contribute the wealth of their research and translation on many issues, including his work on *Gu syndrome*, the traditional name given to parasitic illness, which has, unfortunately for modern scientific prejudices, the meaning,
‘possession syndrome’—indicating that the individual has been possessed by organisms: worms, in fact.

The evidence of peer-reviewed journals in the field seems to indicate that the diligent work of researcher Heiner Fruehauf is largely overlooked in general TCM circles, or, at the least, it does not seem that anyone has publically picked up to research beyond where Fruehauf’s published work stops. Whether this is due to low visibility of Fruehauf and his colleagues, or to naivete of entry-level practitioners, or contemporary aversion to study of materials including persistent use of classical terms such as 'demons' and 'possession' to describe parasites and parasite-related disease, is unclear.

Having found this resource and made the above observation, I proceeded to, for a time, ignore Fruehauf’s work. Not to disrespect his wisdom and undeniable translation and elucidation skills, but to pursue the question I had now set for myself on identification through investigation of ways by which today’s practitioner might recognize the presence/influence of parasites in their chronically ill patients. Happily, Fruehauf’s excellent work patiently awaits inclusion in the next task: developing informative educational tools for contemporary practitioners on this ancient skill.

Science and Western Medicine approaches to parasites

A few western medical schools offer optional training in or specialist degrees in 'travel medicine' or tropical disease, such as the University of California at Irvine, the University of South Carolina, and Stanford, Tulane, and Yale universities. This may not, perhaps translate into the general medical community having a broad understanding of parasite risks/exposures in public health in the United States, just as the provision of surgical training for a few does not equip every M.D. to perform brain surgery. With the rising and falling of levels of disease on
the medical 'radar screen', most MD's rightly do not expect to see a case of disease from pathogens declining in incidence, such as polio, or typhoid fever, or even measles, in their professional lifetime. This tendency may apply also, but inaccurately, to expectations related to parasites that are not, in fact, declining in population or incidence.

**Science and Western Medicine approaches to identifying and treating parasites**

A promising study in 2013, published in the journal *Nature*, shed light on how the microbiome responds and is changed post-antibiotic care to allow the expansion of pathogens in the enteric systems (Ng et al., 2013).

At least one contemporary MD is periodically seeking to call the attention of his colleagues in gastroenterology to the presence of parasites in frequently-seen conditions, such as by publishing summaries of his practice experience and findings regarding *Cryptosporidium* and *Giardia* in everyday gastric illness. (W. P. Stuppy, MD, FACG, 2012; W. P. Stuppy, MD, FACG and Garcia, Theodore T., MSC, MBA, 2013) Dr. Stuppy is also speculating in interesting directions regarding the association of celiac disease with antibodies to parasites. (W. P. M. Stuppy, FACG 2012)

Researchers are paying attention to the continuing emergence of food-borne threats around the world (Newell et al., 2010) and (Yoshida et al., 2011). Still others are examining the activity of parasites and the immune system, such as a study of cytomegalovirus in mice (Salem & Hossain, 2000). However, in the western clinical field, the profile of research on parasitic disease in laboratory settings is less evident in the general field of public health or chronic disease, than when moving into the very precise and detailed drilling down into topics like how the pathogenic parasites called 'spirochetes' travel.

Researchers like Charon and associates (Charon, Cockburn, Li, Liu, Miller, K, Miller, M.,
Moraleb, & Wolgemuth, 2012) have devoted years, sometimes decades, to exploration of the structure, movement, habits and function of specific parasites. In particular, Charon and his colleagues have looked at the morphology of spirochetes’ movement systems (Charon, Goldstein, et al., 1992), at chemotaxis and motility in Lyme spirochetes (Charon, Greenberg, Koopman, & Limberger, 1992), (Ge & Charon, 1997), at biosynthesis in spirochetes (Charon, Johnson, & Peterson, 1974), and more.

Similarly, a team lead by Li is pursuing ever more detailed investigations into the finest details of structure and function of parasitic entities.(C. Li, Corum, et al., 2000; C. Li, Motaleb, Sal, Goldstein, & Charon, 2000; C. Li, Wolgemuth, Marko, Morgan, & Charon, 2008; J. M. Li, Darlak, et al., 2013; J. M. Li, Hossain, Southerland, & Waller, 2013)

Reading the steady flow of research from Charon, Li, and others in the field, one is impressed by the degree of inventiveness and creativity invested in examining these minute creatures in phenomenal detail, such as using photography in analysis (Goldstein & Charon, 1990), examining the effects of environmental temperature (Ruby & Charon, 1998), or coating latex beads with antibodies and attaching them to the organisms to further study movement/motility patterns (Charon, Lawrence, & O'Brien, 1981).

In the world of environment and ecology, researchers are looking at natural patterns of parasite growth and movement, such as the exploration by Duffy and colleagues of the factors of lake zooplankton in epidemic development and patterns (Duffy, Caceres, Hall, Tessier, & Ives, 2010). Attention is given to parasites in the world of zoology and veterinary exploration, as represented by studies of cytomegalovirus influence in the immune systems of mice (Hossain et al., 2000).

Remarkably, there are studies of parasites controlling other parasites to influence their
behavior and expression within hosts (Ives et al., 2011). Examining how ‘viruses infect parasites that infect us’ (Schafer, 2011) takes us with researchers through the rabbit hole into a world in the human microbiome where organisms, compared by the authors to the classic Russian nesting dolls, pile on and control one another and influence our health at multiple levels as they do so. (Salem & Hossain, 2000; Schafer, 2011)

**CDC and NIH Resources**

The Centers for Disease Control researchers have dug deep into an extensive profiling of pathogens of all kinds, including parasites, at [www.cdc.gov](http://www.cdc.gov) online. As mentioned in the introduction to this study, it is not immediately obvious that the conventional medical community is paying attention to parasitism.

However, upon some dexterous digging, the CDC website, a massive and clearly-written electronic warehouse of disease information, turns out to have a considerable wealth of information on parasitic disease around the world and in the U.S. ("CDC - Parasites," 2014) Among the resources that are there to be found is an A-to-Z listing of parasitic microorganisms, with links leading to often quite reasonable depth of information about the organism and related illness (Appendix E).

It took a fair amount more research shovel work to discover the ongoing work through the National Institutes of Health around identification and treatment of parasitic disease. But, the National Institutes of Health established Partnerships for Development of Therapeutics and Diagnostics for Drug-Resistant Bacteria and Eukaryotic Parasites (SBIR [R43/R44]) in 2009, but the discoverable projects started in 2009 and 2010, and are most likely still in process. On initial, brief searching for reports or results from entities involved in the NIH partnerships, no materials seem yet to be available.
The Internet, TED, TEDMED, blogs, electronic news sites, newsletters, and more.

**Blog City.**

Interestingly, the informal self-help community so powerfully present in the electronic world of the internet is full of boundless attention to the topic of parasites: much of it posted and pontificated on by non-medical lay individuals in blogs and community bulletin boards. Type ‘anti-parasite diet’ or, ‘how do I get rid of my parasites?’ into a Bing or Google search engine, and hundreds or thousands of ‘hits’ will show up. Lots of bloggers and DIY (do it yourself) hackers are eager to convince you of the value of particular foods or fasts or self-selected treatments for ‘parasites’.

There is a tendency in some of these sites towards one-size-fits-all approaches, with various authors waging valiant battles to convince the reader that the answer to their ‘parasite’ problems is raw coconut, or fresh papaya seeds or other such choices. The challenge here is that, like with pharmaceuticals and herbal medicines, no one substance is pan-effective. A parasite sensitive to the influence of black walnut lives in a different place and way than other parasites that may blissfully enjoy the ‘anti-parasite diet.’

It most likely will not injure someone seriously to eat pineapple daily for three two-week cycles, but there’s no guarantee that this strategy will sweep the *Babesia* from their blood stream.

**TedMed Inspiration.**

Looking for opinions and advice from trained professionals or actual experts, I conducted searches on sites such as www.TedMed.com, to see what researchers or health care professionals are saying about parasites among themselves and in the public arena. Searching for the following terms: parasite(s), worms, flukes, amoeba(ae), and spirochete(s) turned up no results. Only the term 'microbes' resulted in identifying one presentation, by Eisen, J., on the recently hot
topic of the 'human biome,' entitled "Who are 'Me, Myself and Us?'" Even in that presentation, though, there was no mention of parasites, per se, but more of a focus on what is missing from the biome or has been killed by antibiotics.

**Individual Pursuits.**

There are individual voices pursuing research through their practices and publishing their findings. Seeking new means of assisting their patients to recovery, practitioners such as Dr. William Stuppy range far and wide, from the role of probiotics in addressing *C-dificile colitis*, (W. P. Stuppy, F.A.C.G., 2006) to approaching use of a more mild-action antibiotic in successful treatment of *H-Pylori* infection.

Popular writer of non-fiction on food, food supply, and related environmental issues, Michael Pollan, recently delved into the emerging understandings of the human microbiome, in a long, well-researched New York Times piece both engaging and informative to general readers and health professionals alike.(Pollan, 2013)

Author C.J. Robinson and colleagues are delving into the integrally linked meanings of the presence and role of microbes in the human body, related not only to the functioning and functions of said agents, but to accompanying structural realities.(Robinson, Bohannan, & Young, 2010) It may be that we are heavily dependent on at least some of our internal populations to be and do who and what we are.

**Implications for International Relations and Diplomacy.**

Interestingly, authors in the field point not just to their areas of primary expertise, but also to the relevance of this topic domestically and in economics, international relations and diplomacy.

Veterinary parasitology is outpacing the attention the general medical community is
giving light to the subject, with writers such as Torgerson and Macpherson (Torgerson & Macpherson, 2011) addressing socioeconomic costs of global trends in protozoa on the move.

Researchers and theorists are beginning to contribute not just to tracking the vectors and movements of parasites, but also to contribute to some new theories of health care and global health concepts (Torgerson, 2013).

One researcher who has traveled far and wide in doing research and exploring resources in diagnosis and care for those afflicted by parasites literally around the world, Cahill, urges an understanding that health care can have an important influence and impact on foreign policy (Cahill, 1997).

**Literature Review Integration**

To the degree that I was successful in searching, I found there was very little literature that directly 'answered' my key question: much more the case was that the literature, or absence thereof, has shown what I believe to be the gaps between the chronically-ill patient, successful diagnosis, health care professionals, the worlds of allopathic and TCM care, and additional gaps between the laboratory and the clinic.

On conclusion of these preliminary studies of the available literature in English, it seems apparent to me that there is a significant gap in writing, teaching, and clinical understandings of parasitic illness in the TCM profession.

One of the most visible areas of scientific attention to parasitic disease is that a significant amount of laboratory research is underway on the nature, structure, habitats and habits of specific microbes such as the spirochete(s) related to Lyme disease. (Charon, Goldstein, et al., 1992; Charon, Greenberg, et al., 1992; Charon et al., 1974; Charon et al., 1981) This research will contribute to the search for pharmaceutical answers to some disease.
Clever students of research and of TCM might bring from this wealth of laboratory observations and information new insights for practical application in techniques of not only diagnosis, but also acupuncture and herbal approaches to treatment for those affected by Lyme disease, for example.

This potential applies also, of course, to the close-up research for many microbial life forms: the inextricable links between man and nature offer wisdom at any degree of magnification. A great deal remains to be done to bring the subject of parasite-involved illness to current, full, usefulness in the field of Chinese medicine. Acupuncturists, herbalists, and TCM researchers need to generally come up to date on the importance of this area in contemporary health care in the United States. They must write more widely and publish more effectively for both professional and popular education. In particular, greater depth and clarity of information is needed for teaching and training on TCM diagnosis of the presence of parasites in contemporary disease patterns.
Chapter 3: Method

Focus of Investigation

As stated in introductory chapters, the research question posed in this study is, "Are there Traditional Chinese Medicine (TCM) diagnostic criteria that can be reliable identifiers of pathognomonic (that is, diagnostic for a specific disease) signs of parasite involvement in disease patterns?" A subtext of this question, as described earlier, is the overall level of attention paid to, and education given healthcare providers on, the presence and effect of parasites in contemporary health in the U.S., from both allopathic and TCM perspectives.

Methods of Approach

Approaching a subject with questions that are as broad as 'diagnostic criteria?' and as specific as 'what education is given?' necessitates the methods of qualitative research. This approach is, by its nature, taking paths of inquiry and exploration as well as fact-hunting, and as much a first-steps pilot study as anything else. Some of the material, such as pre-existing literature, speaks for itself, and literature review is, in this effort, exploratory: not to amass data in 'proof' of anything; more so a case of 'here is the literature found on this, so far.' Drawing in the heritage of an ancient traditional medicine alongside the opinions and answers of contemporary practitioners, the fine-focused study of laboratory scientists, and first-study
conclusions from a small-population case review, all into one bowl of answers, is an inherently messy process. Thus, the relative freedom of qualitative methods will allow for basic reporting, some survey-based sampling, retrospective case review, and some analytic musing, to synthesize factual material and observational insights, and provide some initial conclusions and recommendations.

**Areas and Populations of Inquiry**

The answers that are sought arise from the following basic areas or populations:

1. From epidemiologic, educational or economic fields, briefly: is the question of incidence of parasitic disease, and the degree to which that incidence is met with appropriate diagnosis and health care, really a question of significance today?

2. From contemporary health care practitioners: considering their responses to brief surveys, is modern allopathic or oriental medical training adequately covering education and training in diagnosis and care for the manifestations of parasite-related disease in the west?

3. From patient case files: are there naturally-observable factors that can be clearly identified and reliably recommended to contemporary practitioners of TCM for assessment of the potential of parasitic involvement in patient health patterns?

4. From senior practitioners, what guidance does long or broad experience offer for using classical diagnostics in this area?

**Inclusion/Selection Criteria**

For the contemporary health care professionals survey (number 2, above), participants were both selected from within the circle of TCM practitioners, and from other health-care practitioners known to me and/or in the local area geographically, and recruited as volunteers.
through social media contacts.

From a prospective group of 22 identified professionals, nine chose to complete and return the survey. These nine included:

5 Licensed Acupuncturists, 2 MD’s, 1 DO, and 1 Homeopathic Doctor

Of the 5 acupuncturists, one also is a chiropractor, and one practices homeopathy.

Although years of practice was not a selection issue, the fewest years of practice was 5, while most reported 18 to 40 years of practice in their chosen field.

Regarding area #3, patient case files: the method by which files were selected for retrospective review was as follows. I requested from Dr. Robert Doane, LAc., access to patient files in his office for the following:

- adult individuals for whom available evidence from TCM assessment suggested potential parasitic involvement;
- further, those patients' symptoms and response to care were such that they were referred to an MD for evaluation,
- and found to indeed have one or more parasitic infection(s) contributing to their complaints and symptoms.

Combining Standard Measures and Analyses

Gathering the epidemiological/statistical information is straightforward, drawing on existing case files. In the office of a large TCM practice, the lead practitioner and administrative personnel selected case files of individuals who had been observed to show indicators of parasitic-related disease and who were referred for allopathic diagnosis and treatment of same. Although a fairly large sample of 30 to 50 case files was envisaged and discussed, the actual number produced and reviewed was nine cases. Review of those files encompassed two routes:
gathering diagnostic data via a log format of TCM standards such as observation of pulse, tongue, signs and symptoms, health history, and

via development of additional information matrix or narrative, based on accumulation of indicators, clues and trends across the case-file sample.

Pursuing data collection from the case files involved looking for key information that is available to the diagnostic methods of a TCM practitioner in daily practice: at first pass, looking for what from each of the nine cases was similar and a clue to a pattern.

Establishing significance for those clues is a different issue: nine of the nine individuals reported fatigue as their chief complaint or as one of their chief complaints.

However, to know whether that is a fluke or a pattern involves further exploration: what other patterns or indicators combined with fatigue might begin to build a case for standard pattern differentiation from TCM that would or could underline that fatigue is an important indicator in complex, chronic cases that may point to parasitic disease?

Thus, after gathering the highlights on all nine of the cases, finding the most predictable or obvious clues, returning to tabulate all reported signs and symptoms documented in the case file for each patient in the study, no matter how minor, was an important way to dredge out any less-obvious clues and patterns.

**Tabulation and statistical analysis:**

Recording and assessing the survey results allows for at least preliminary hunches regarding the training/incidence/experience questions that were posed. With so small a sample size, doing statistical analysis of the responses would be an affectation, when simple reporting carries the details.

Similarly, with so small a sample size in the case reviews, the most transparent form of
reporting was simple statement: if all 9 individuals complained of fatigue, this author did not find it necessary to turn that statement into ‘100%’, when the basic report would carry the information just fine. Thus, all tables and verbal reports are presented in a straightforward manner.

An initial intention of this study that did not come to pass was the conducting of extensive interviews with senior practitioners in TCM and western medicine regarding their experience, insights and perspectives on identifying parasitic disease in their patients. The collected materials would then have been examined for themes and categories of information to be considered, categorized and organized for optimal presentation and discussion.

However, that will have to take place in a future study. I only interviewed two such practitioners at any length, and both of those interviews were relatively spontaneous, not systematized nor organized in such a way as to be readily compared. Neither interview took place in a formal manner; recordings and notes were incomplete and sketchy in nature, as befits brainstorming or comparing notes. No effort has been made to include that material here.
Chapter 4: Results

Survey Results

The survey regarding schools and educational focus was small and informal. It would be misleading to make a reach of tabulating precise numbers from conversations or e-mail exchanges that were so casual in tone.

The health care practitioner survey on training and experience elicited answers from only a small number of practitioners. There was a reasonable array of professional licensures represented, with five acupuncturists (L.Ac.’s and D.A.O.M.’s), a Doctor of Osteopathy, a Doctor of Homeopathy, two MD’s, and a couple of hybrids (acupuncturist/homeopath, acupuncturist/chiropractor) represented among the five acupuncturists.

The survey form and a simple tally of results can be found in the appendices. In brief, the results indicated the following:

- A significant difference in the level of laboratory science training between east and west: the MD’s, DO, and Homeopath/chiropractor all reported having training in microbiology, microscopy and related areas, while the acupuncturists reported none.
- All acupuncturists indicated an absence of strong training in diagnosis and treatment of parasite-involved syndromes in TCM school.
- Acupuncturists indicated a perceived absence of training in herbal treatment for parasites.
- The MD’s, DO, and Homeopath all reported having had training in pharmaceutical (or homeopathic) treatment for parasites.
• Interestingly to this researcher, the MD’s and Homeopath gave the strongest numbers for reporting frequency of incidence of parasites in their patients, with one MD much higher than the rest, while the acupuncturists reported little or no incidence. When equipped with a treatment tool (antibiotics, homeopathics), does one see parasites more often, in the same way a surgeon with instruments available sees potential curative value in surgery? Does the absence of strong confidence in training and tools for diagnosis and treatment of parasites for acupuncturists mean that they look less often for the microbiotic causes of illness?

• For questions about intake forms, questioning, etc., there seemed to be overall low ‘seeking’ behavior regarding parasite presence, except for one MD and the Homeopathic Doctor, who include verbal questions to elicit information possibly indicating parasite involvement.

• There was overall low priority placed on testing for parasites. Whether this reflects low confidence in available testing methods, or low perception of the necessity for testing, is not clear.

• There were only moderate levels of collaborative/integrative care efforts reported, for those patients identified as having parasites.

• However, seven of the nine practitioners expressed conviction of the presence of parasitic disease among their patients.

In retrospect, rather than attaching the survey to an e-mail and sending to a broad array of healthcare contacts and acquaintances (many of whom did not reply), it would have been perhaps more effective to send the survey through a service such as Survey Monkey, and to obtain access to a sizable list of practitioners to query for the survey.
Case Reviews

Demographics

The case reviews included nine individuals between the ages of 21 and 74 years. Whether it is epidemiologically significant that seven were women and two were men is not something that I can readily conclude: I believe a larger scale study would be necessary to establish whether it is in fact a ‘risk’ being a woman instead of a man, when parasites are involved.

Complexity of Illness

These individuals presented with from one to eight complaints each at their first visit. In subsequent consultation with an acupuncturist in the intake process, the physician and patient together identified anywhere from two to thirty-two physical complaints. So each patient acknowledged at least one additional complaint to their presenting one, and some, or even most, discovered many more complaints in discussion with their acupuncture physician. (See ‘Health Complexity’ table, Appendix H)

Key Indicators Survey

Running a specific focus on key indicators across all cases at the outset was revealing. Some of the results were reasonably predictable, such as digestive problems. But, some of the similarities of complaint between individuals of very different ages, exposure risks, lifestyle differences, and other symptoms, were notable. Of the nine cases, the most immediate and prominent similarities were as follows:

- 9 of 9 patients had a chief complaint of fatigue
- 8 of 9 had an additional complaint of cold hands and feet
- 7 of 9 described persistent insomnia
• 7 of 9 complained of joint pain
• 7 of 9 included stiff and sore neck and shoulders as part of their joint pain
• 7 of 9 indicated that they had digestive problems

Had I been asked in advance whether I would expect to see cold hands and feet, sore neck and shoulders, and persistent insomnia, as signs accompanying parasitic disease, I would most likely have said no.

What I did not find, that I had naively expected would be prominent in the profiles, was mention of ‘blood sugar issues’, such as swings in energy and blood sugar, or drops in blood sugar at key points each day. It is not clear whether this is an issue of framing (how best would one question and/or search through symptomology for signs of fragile or changeable blood sugar? Is the term ‘blood sugar’ an effective term?), or simply not a part of the picture of parasitic disease patterns, remains to be seen.

**Pulse Factors**

Although I was fairly certain that pulse analysis would be a valuable part of any research on TCM diagnostic methods in this project, I was also concerned that weeding through the sheer complexity of pulse diagnosis (searching through a wide array of possible signs at nine different locations, minimum, on each wrist, with an equally large array of interpretive options, was not for the faint of heart) might take years longer than was available for this study.

Thanks to the systematic and uniformly trained practitioner staff in Dr. Doane’s clinic, a very clear pattern of pulse factors emerged rather rapidly upon examination. Each individual had at least one and some had many instances in which their practitioner noted pulse qualities, through the course of their assessment and treatment.
In examining the images of the pulse patterns drawn by Dr. Doane and his colleagues (see Appendix I of sample pulse images), it becomes clear that at least one pattern of pulse energy is quite clearly present in all of these cases: that is the tendency for the pulse to be expanded and superficial for part of the disease phase pattern, seemingly pointing to excess or internal disease, and then to ground out and collapse for another phase of the disease pattern, indicating depletion and deficiency.

Further, rather than the pulse changing slowly, gradually with improvement in one position or another over time, the pulses of individuals later diagnosed with parasites tended to reflect the relapsing and remitting nature of the disease: like a revolving door, going between holding out against the world, and collapsing into emptiness.

The ‘fight’ between organs for scarce resources in the presence of energy-greedy parasites would seem to dictate that the energy be brought to the surface by exhaustion, pain, and the stress of chronic illness, or simply empty out and leave the pulse figuratively lying on the ground, spent. In most cases the pulse was not a ‘wiry’ pulse or necessarily ‘slippery’, but the different levels of energy from the ‘holding out, holding on, coping’ phase of illness to the ‘I’m sick, tired, and unable to get relief’ phase, are quite clear in the patterns that Dr. Doane and his colleagues drew.

From the nine cases, I obtained dozens of sketched images of pulse patterns throughout each individual’s course of treatment at Dr. Doane’s center. However, a thorough curation, analysis and discussion of these patterns would, to provide any degree of clarity for the practitioner, take much more time and many more pages than are available in this study at the moment, and such a study will have to take place at a later date.
Refractory to Care, or Paradoxical Response to Care

Another bonus factor was the degree to which each of the individuals showed a refractory response to one aspect or another of care or lifestyle. Among the responses observed were the following:

- Unrefreshed by acupuncture, or unresponsive to acupuncture, or flattened by a session with needles instead of fortified, all point to something amiss.
- Taking herbs designed to astringe and consolidate one’s energy, and instead responding with increased exhaustion and diarrhea, certainly is not the expected outcome.
- Setting out for restorative exercise and feeling good for a little while following that exercise might seem to be a good sign, except that in individuals with blood-borne pathogens such as *babesia*, the response to exercise might be to feel good until the pathogens got wind of the increased red blood cell activity, and tucked in for a feast. So, the individual whose response to exercise is initially feeling better, but not being able to get out of bed or cope with one’s work the following morning, speaks to a mystery to delve into, that might spell parasites.

Multiplicity of disease and chronic disease factors

Having only nine cases made it possible to go through an almost granular level of examination of the complaints and health history of each individual. It became clear that none of these individuals had only a simple one-note complaint such as digestive problems. Each complaint came in a package of others: as noted, at least seven of the 9 cases studied showed not just insomnia, not just cold hands and feet, not just joint pain, etc., but ‘all of the above’ in many categories.

It may or may not be significant that six of the nine individuals indicated a problem with
either stubborn weight (wanted to gain or lose but could not), or undesired weight gain or weight loss. Only two reported increase in food cravings as complaints during their course of treatment.

**Health history and risk factors**

Of great interest to me was noting that ancillary medical factors were prominent in many cases (see appendix G, Ancillary Medical):

- 7 of 9 reported prior antibiotic use
- 6 of 9 had history of surgery
- 5 of 9 had history of hospitalization unrelated to their current complaints
- 6 of 9 reported having traveled internationally
- Each of 9 responded affirmatively to at least one risk factor (and some had as many as five positive risk factors) such as exposure to environmental toxins, or immersion in natural environments such as mountain streams, working on a farm, etc.
- One individual disclaimed any risk factors but environmental toxins in the workplace, but was given a clear diagnosis of giardia infection.

**Mood and Resilience**

There were a wide array of reports of mood factors, from anger, anxiety, depression, through irritability, mental fogginess, memory problems or mental confusion, stress, and worry.

Some intriguing patterns showed up:

- 7 of 9 complained of anxiety, irritability and mental fogginess
- 6 of 9 reported depression, memory problems, and mental confusion
- 5 of 9 acknowledged being easily vulnerable to stress, worry and overthinking.
Two individuals reported fourteen mood factors, while none of the nine described themselves as having consistently happy, balanced, carefree moods. The one who reported the fewest mood factors had only two: depression and social avoidance.
Chapter 5: Discussion

Summary of Findings

The findings reported in Chapter 4 offer a very optimistic picture of the potential for developing a set of risk factors, and symptom profiles that might allow a practitioner to more rapidly and effectively separate potential parasitic infection from someone with a relatively less complex case of chronic illness. Combined with training and observation in pulse diagnosis, and appropriate questionnaires to establish the presence of exposure factors and something akin to ‘having x of these points to parasites’ lists of factors, could strengthen the hand of acupuncture practitioners significantly.

Additionally, whether in a state where scope of practice allowed direct testing and diagnosis or mandated referral to an MD for such, an acupuncturist equipped with this information and able to make reasoned inferences of the potential presence of parasitic disease could be a powerful ally to a general practitioner or medical specialists for whom conventional laboratory tests were not providing clear answers. Integrative care for individuals with complex, chronic disease complicated by parasitic involvement could soar to real effectiveness, greatly reducing the load of suffering and the costs, emotional, physical, familial, economic and in productivity, for affected individuals.

The contemporary practice of Traditional Chinese Medicine has great, and as yet not fully-employed, capacity and potential to provide low-tech diagnostic accuracy in identifying the presence of parasitic factors in disease patterns in countries of abundance, in addition to its clear traditional relevance in settings of poverty and malnutrition. Clarifying the theory and knowledge base and educating TCM practitioners on parasite-related disease signs and symptoms available to traditional diagnostic methods will lead to more effective TCM care and
to far greater effectiveness in integrative collaboration on diagnosis and treatment of affected individuals.

**Implications for Theory**

The theoretical base of TCM is broad and deep. The flexibility and resilience of the diagnostic models of eight principles, five elements, six phases, and so on, are profound, and adequate to changing cultural, geographic, and global conditions and populations going forward indefinitely. If anything, I would hope this study would lend light and interest to practitioners faced with very complex cases of individuals affected by chronic disease. The theoretical contributions from this study are not so much innovative or even evolving of classical theory as they are, in my opinion, militating for restoration of the full endowment of traditional knowledge, skill and art in this disease arena.

The historic importance of careful questioning and thorough observation has, to my mind, only been underlined and strengthened as a consequence of my research.

**Implications for Practice**

A great deal of expense and suffering could be avoided by teaching practitioners indicators such as the pulse patterns, key signs that add up to suspicion/probability of parasite involvement, and alertness for the signals of relapsing and remitting disease refractory to or with paradoxical response to care. Rather than continuing to struggle with complex TCM patterns and the mysteries of why a patient improves and relapses or does not respond to treatment in predictable ways, the practitioner could launch into helpful action:

- Do a full assessment for parasitic pathogenic factors
- test for or refer out for testing for parasitic involvement,
and counsel the patient on the integrative routes for most effective care and return to health.

Limitations of this study

Diagnostic accuracy and specificity

Much remains to be learned in this area. There is a potentially convincing case for linking the pulse patterns mentioned earlier in this work with other factors to serve as indicators of probable parasitic involvement. There is, as yet, no clarity that these patterns will be present for all of the parasitic organisms affecting human wellbeing. It may be that the patterns reported here apply only in cases where the infection is of long-standing duration, or of multiple pathogenic organisms simultaneously affecting an individual who has been chronically ill.

Differing levels of infection, phases of illness, or areas of injury from parasitic infection will quite likely differ for protozoa, helminthes, ectoparasites, and according to the organs or systems affected by their presence.

Similarly, even though one of the common indicators among the cases reviewed was fatigue, at least two further courses of refinement will be essential to diagnostic effectiveness:

• learning when and how to associate fatigue with other particular indicators related to parasitic effects in the body, as opposed to fatigue from other, non-parasitic disease processes;

• discovering the pairing of fatigue with specific indicators such as breathlessness or headache (etc.) in order to point towards an appropriate set of laboratory tests or treatment strategies for a class or type of parasites. For example, breathlessness might indicate injury to the lungs, or it might indicate occupation of the red blood cells by a parasite such as Babesia. Only clear differentiation will determine clear identification.
Perhaps most importantly, there remains the task of alerting and educating both TCM physicians and western medical doctors to the importance of co-treating for parasites where one treatment or medical approach or another is insufficient (or potentially damaging) on its own.

- When a powerful anti-parasitic, antibiotic substance is required, the M.D., by simultaneously involving a qualified acupuncturist/herbalist in care, may join in preventing the side effects or injury from the pharmaceutical, and/or make the necessary course of treatment tolerable for the infected individual.

- Or, when a particular parasite has invaded a patient too deeply or extensively for traditional approaches of TCM to have rapid or complete effect in eliminating the parasite(s) without extended periods of care, the decision by an acupuncturist/herbalist to recruit the cooperation and co-treatment strategies of an M.D. on behalf of the patient may save the individual untold expense and time in providing an effective course of treatment within weeks or months, rather than years.

- By nature, anti-parasitic substances, whether herbal or pharmaceutical, have some degree of toxicity for the microbiome and/or the host human. Although it is more common to point a finger at unwanted side-effects of pharmaceutical agents, in this case, it is important also to recognize the potential harm of taking herbal anti-parasitics for prolonged periods of time without supporting the yin, blood, qi of the individual. Likewise, a powerful pharmaceutical may effectively destroy parasitic populations, but the repeated course sometimes necessary to completely address the life cycle of the invaders can be harmful to the individual, sometimes affecting kidneys, adrenals, digestion, and so on. These factors make for a strong argument for co-treating, to shorten both the length of care and lessen unwanted side effects.
This study can be a springboard towards multiple avenues of further exploration. It only begins the process of shedding light on issues around the degree to which complex, chronic disease in the United States is complicated by or caused by parasites.

Preliminary evidence, mentioned from the small survey sample of health care professionals, suggests an observable gap in the U.S. in health care education, and thus in expertise, in the recognition and treatment of parasite presence, beyond a select range of viruses and a few high-profile, usually acute, parasites. It does not yet address the goals of educating, training, and equipping health care practitioners to successfully understand and incorporate this field in their general practice.

Education: conclusions drawn from the reports of a small cohort of various health care professionals may infer, or may not be accurately representative of, the broader status of education on parasitism and related microbiology in the field. A formal study of the curriculi of a large sampling of medical schools in both allopathic and Asian traditions could reveal more thoroughly the focus and degree of education and training of contemporary health care personnel regarding parasitism, levels of infection, and approaches to care. Once concluded, such a study would provide a beginning point for further assessment, recommendation and development of appropriate educational and training modules; as well as guidelines for instructional and motivational updates for already-licensed practitioners.

At the time of this writing, the fields of TCM and of clinical parasitology are, at best, on separate 'campuses' within the worlds of health care and related sciences. The majority of TCM practitioners are concerned primarily with direct delivery of preventative and/or balancing health care, focused on clinical practice for assisting individuals to regain and maintain health. Research is currently a priority for only a small segment of TCM/AOM institutions and
practitioners. Many, understandably immersed in the language and metaphor of TCM, remain oblivious to the value of epidemiological reporting and tracking in the realm of fixed 'disease' names.

Innovative and creative collaborations such as TEDMED conferences are still largely or exclusively the province of MD's, with little visibility of input or perspectives of professionals in Asian medicine. Although a four-day international conference in 2013 (see overview at http://iclb2013.com/overview.htm) focused the attention of medical doctors, laboratory scientists, zoologists, veterinarians and others on current research on Lyme Borreliosis, there is no indication that any of the faculty or attendees were from acupuncture/oriental medicine backgrounds.

It is clear that considerable imagination, creativity, communication and determination are needed for the ancient traditional medicine of Asia to begin to gain attention and access for collaborating in such work.

While it would appear that the general habit of many MD's may be inadvertently overlooking the potential for parasitic infection, this can be attributed in part to the less-than-optimum available laboratory testing methods to identify the presence of parasites. The focus of the laboratory scientists and research community seems to be on the microscopic level of exploring creatures in nature or looking at microsystems such as movement or DNA. These explorations may, indeed, eventually provide useful information about potential avenues of testing and treatment. But, for now, the gap between clinic and lab remains wide.

**Scope of Practice Hindrances**

Perception of the scope and strengths of Traditional Chinese Medicine in the west is significantly limited. The degree to which TCM physicians are authorized to 'diagnose' illness,
effectively engaged to contribute to public health information systems and epidemiology reporting, and to make use of the full range of traditional and contemporary diagnostic and treatment options, varies widely from one state to the next within the U.S., and is often significantly more limited than it is in China.

In some respects, as demonstrated in this study, pursuing research from the existing case records of acupuncturists is limited by 'scope of practice' issues. Although it was, as described, possible to review case files for 'suspected' parasite infection in Dr. Doane's practice, the State of Washington scope of practice for acupuncturists/herbalists, like similar legislation or regulation in other states, does not include the diagnosis or treatment of parasites. Thus, although patients could be referred to MD's for evaluation, testing, and treatment of parasites, there was no legal imperative or authorization for the office to track the epidemiology of their cases. Dr. Doane could record an index of suspicion as he referred patients; but in most cases, once referred, the firm diagnosis was not recorded in the case files, as HIPPA Protected Health Information laws' influence militating against the recording of information not strictly within the scope of practice of the acupuncturists. (Given e-mail appendix)

If acupuncturists/herbalists are going to take full part in health care in the United States, it is urgent for issues of scope of practice to be addressed and resolved. Additionally, attention must be given to the value of the contributions made by TCM practitioners empowered to do thorough epidemiological recording and reporting, at the least.

Communication and investigation in clinic and laboratory between western and eastern practitioners and scientists have boundless opportunity for growth, expansion and development of investigative approaches.
Big Arenas of Application.

This study provides an initial glimpse of the potential for TCM professionals to identify and employ natural diagnostic methods by which to identify the likely presence of parasites in chronic disease in affected patients in the U.S. However, matters of treatment, and efficacy of treatment, whether through acupuncture, herbal medicine therapies, nutrition or other modalities, are reserved for separate research attention.

Recommendations for Future Research

There are so many avenues for research around the topic of parasites in Chinese medicine, a creative and determined individual could readily fill a long career with a steadily varied array of projects. Among them might be:

- Building a more comprehensive and extensive survey of educational institutions in healthcare regarding the availability and prevalence of microbiological training in focus on parasites.

- Developing a profession-wide survey of practitioners and educational institutions and programs in TCM/AOM to determine opportunities and needs for courses and modules in training related to means of identifying parasitic presence and appropriately referring for diagnosis and treatment (or, regulatory and scope of practice permitting, diagnosing and administering treatment) of parasitic disease.

- Delving into the classics regarding acupuncture and parasitic infection, and researching contemporary understandings and applications of acupuncture points against those protocols and standards.
Taking classical herbal decoctions into the laboratory setting and clinic to do in vivo and in vitro studies of the effects of those decoctions on specific parasitic organisms/infections

Assessing whether classical herbal formulas that address ‘worms’ may also have effectiveness against other parasitic microbes

Determining the mechanism of action of classical anti-parasitic formulas and doing laboratory comparisons of effectiveness as compared to antibiotics aimed at the same organisms

Testing on an integrative basis in the laboratory the beneficial aspects of combined herb/drug therapies and approaches

Collaborating with physician scientists in the laboratory setting in microbiology research, ideally pairing TCM/AOM doctoral candidates with PhD candidates in the western lab in ways that would implement the strengths of each towards understanding of parasites and/or diagnosis and treatment of parasitic infection.

Assessing individual herbs from categories of action known to act with anti-viral, anti-bacterial or anti-fungal effectiveness to discover whether they may also hold benefit against specific parasitic microbes.

Conducting multi-layer trials of care for individuals diagnosed with specific parasitic infection, comparing integrative care vs. allopathic care alone vs. TCM care alone vs. placebo.

Conducting trials of care for individuals diagnosed with specific parasitic infection, comparing the outcomes of treatment with acupuncture alone, with herbal medicines alone, or with combined acupuncture and herbal medicines.
Conclusion

The purpose of this mixed-methods qualitative study was to search for and/or identify Traditional Chinese Medicine diagnostic methods that can serve as reliable indicators of pathognomonic signs of parasite involvement in disease patterns. Additionally, given the currently inadequate attention to parasite-caused disease from the health care community in the United States, I chose to take a preliminary look at the historical context of contemporary care and the status of educational and training systems for both western and eastern medicine on these topics. Based on the evidence of the small retrospective case study, it is my belief that careful attention to the co-incidence of two or more sets of key factors as below, may be valuable tools to suggest referring the patient for testing (in states where TCM scope of practice permits) or referral to allopathic physicians when appropriate, for diagnosis and treatment for parasitic disease.

- pulse patterns as described here
- one or more risk/exposure factors (Appendix H)
- key symptom sets, per identified patterns from case review (appendix H), such as fatigue plus headache plus insomnia plus neck and shoulder stiffness and pain
- relapsing and remitting disease
- chronic, complex illness refractory to standard treatment (appendix H)
- individuals with paradoxical response to acupuncture or herbs (appendix H)

Additionally, although the informal assessment and small survey sample regarding contemporary education for health care professionals (as relates to parasite-involved disease) is not comprehensive in scope or absolutely conclusive, it is my opinion that, at the least, greater attention is needed in both TCM and western medical circles, to the incidence and
symptomatology of parasitic illness, particularly in chronic, complex disease. Effective teaching and training tools for practitioners, as well as improved public education and visibility campaigns, are urgently needed in order to address and reduce the multiple levels of suffering and cost from parasitic disease in the United States.

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Appendix A: Transcript of private e-mail communication
Transcript of private e-mail communication

From: Steve Given, DAOM, LAc
To: Laraine Crampton, LAc
February 17, 2014 4:46 PM

Hi Laraine,

It is always okay to note a diagnosis in a patient file under the following circumstances:

1. If the patient reports that her or his doctor told her or him a diagnosis, that can be noted in quotes as a subjective finding. Patient reports that her/his physician told them they had "lyme's disease."

2. If the acupuncturist is a colleague in the same office and is informed under a limited right to know because they are co-managing the case, this can again be noted in the chart lyme disease per physician report.

3. If the acupuncturist gets written permission from the patient to request records from the medical provider, or the patient brings in a copy of her medical records to the acupuncturist, these can be placed in the acupuncturist's file and becomes part of the health record.

Under all three situations, a differential diagnosis based [on] the work of a medical provider becomes part of the acupuncture record without the acupuncturist making a differential diagnosis outside of her/his scope pursuant to law in most states.
Appendix B: Sample Patient Exposure Survey
Sample Patient Exposure Survey

**Life Experience and Exposure Information:** add to relevant areas as needed

<table>
<thead>
<tr>
<th>International Travel: I've been to the following countries other than the United States:</th>
<th>Wilderness hiking, camping, exploration, including mountain/shore/dessert/plains: please indicate (approximately) when and where:</th>
<th>Ocean, Lake and River sports, swimming, boating, paddling: please indicate (approximately) when and where:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fishing Please indicate approximately when, and where:</td>
<td>Hunting (when/where)</td>
<td>Wilderness Skills courses (when/where)</td>
</tr>
<tr>
<td>Childhood lifestyle: Barefoot outdoors? Playing in local grass/dirt/stream/creek? Where?</td>
<td>Exotic pets (yours, or exposure to others')</td>
<td>Cats (domestic and wild) in your environment (past or present), cat or dog scratches or bites:</td>
</tr>
<tr>
<td>Sushi or other raw flesh foods or raw dairy: whether you have had it once or many times, please indicate your exposure/habits</td>
<td>Food Poisoning episodes:</td>
<td>Tick, flea, leech or other infectious insect bites: describe when and in what geographic region</td>
</tr>
<tr>
<td>Spider bites or other unusual bites, injuries or skin infections/lesions, whether currently visible or not:</td>
<td>Spouse or sexual partner with extensive international travel or outdoor experience:</td>
<td>Mystery symptoms that come and go, or experience of prolonged illness that arrived mysteriously and was difficult to diagnose, or came and went without diagnosis?</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Unusual occupation: exposure to laboratory animals or pathogens; exposure to blood or body fluids through occupation or surgery (such as blood transfusion)</td>
<td>Water sources: whether recently or in the past, have you drank or bathed in well water? Polluted water? Tap water or bottled water from communities other than your own, or uncertain origin?</td>
<td>Exposure to environmental mold/fungi and/or fire or wildfire smoke:</td>
</tr>
<tr>
<td>Persistent food sensitivities or allergies or digestive difficulties, with or without any other risk factors on this page:</td>
<td>Periodic unexplained fevers or other persistent symptoms not explained by current health?</td>
<td>Other:</td>
</tr>
</tbody>
</table>
Appendix C: Extended Questions for Senior Practitioner Interviews
Extended Questions for Senior Practitioner Interviews

For TCM practitioner interviews:

If not during your primary TCM studies, when did you receive education/training about use of herbal medicine (or acupuncture) in tx of parasitic infection?

Do you feel that having trained in China strengthened your understanding of parasites and your approach to treating them in the clinical setting?

When a patient is taking a particular anti-parasitic pharmaceutical, does this change your approach in treating with herbs or acupuncture?

Are you familiar with Heiner Fruehauf's work in the classical understandings of parasites and their influence on mental and emotional health? Do you feel that this is reasonably brought into the light of contemporary TCM education in the U.S., given its association with superstitious and/or spiritual traditions that do not receive ready acceptance in the scientific atmosphere of contemporary medicine?

For both TCM and WCM practitioner interviews:

What is your impression of the role parasitic infection plays in contemporary medicine in the west, vs. what you've observed or experienced in developing countries elsewhere?

Is there a 'typical' profile of a new patient coming to your practice that you identify as likely having parasitic causes underlying or intermingled with their constitutional or conventional syndrome patterns?

At what point in the treatment process with a patient (who has not previously shown overt signs of parasitic involvement) would you begin to consider/look for the presence of hidden parasites?
What is your impression of the routes by which individuals become infected by parasites?

(Traditionally, environmental exposure, food, drink, unsanitary conditions, polluted water sources, insect bites . . . .)

Do you subscribe to an annual or seasonal approach to examining and treating for parasites, or some other time interval or rationale?

If lab tests show no parasites or inconclusive results, do you consider this to be ruled out?

When do you know that a patient is 'done' with treatment for parasites and is free of parasites?

What sort of follow-up do you recommend for patients whom you've treated for parasites in the past?

Do you have any universal dietary instructions for patients who have currently or have had in the past an infection such as *entamoeba hystolitica*?

When treating a patient with a known parasitic infection, do you offer instructions about hygiene or other issues to guard against autogenous re-infection? (Please specify, if so.)

If there are multiple parasites present, what protocols must be observed to protect the patient against exacerbation of their discomfort and imbalance of protozoa as a particular population is reduced or killed off?

Are there risks that practitioners should be aware of in approaching cases with multiple pathogens, such as amoebae concurrent with spirochete concurrent with one or more viruses?

Are there cases in which you would reject treatment to remove or reduce parasitic populations, for any reason (patient health, balance, concurrent condition or health state such as pregnancy, post-surgical care, etc.)?

Have you defined for your practice the intervals at which re-checking, re-testing and
recurrent care must be employed for conditions such as malaria, persistent amoebiasis, and similar cases?

Please volunteer any further advice, insights or topics that you feel are relevant, necessary or may provide insight for contemporary practitioners.
Appendix D: Alphabetical Index of Parasitic Diseases
Alphabetical Index of Parasitic Diseases

From CDC Website: Each entry is an active link to a disease fact sheet.

A
Acanthamoeba Infection
Acanthamoeba Keratitis Infection
African Sleeping Sickness (African trypanosomiasis)
Alveolar Echinococcosis (Echinococcosis, Hydatid Disease)
Amebiasis (Entamoeba histolytica Infection)
American Trypanosomiasis (Chagas Disease)
Ancylostomiasis (Hookworm)
Angiostrongylia (Angiostrongylus Infection)
Anisakiasis (Anisakis Infection, Pseudoterranova Infection)
Ascariasis (Ascaris Infection, Intestinal Roundworms)
Back To Top

B
Babesiosis (Babesia Infection)
Balantidiasis (Balantidium Infection)
Balamuthia
Baylisascariasis (Baylisascaris Infection, Raccoon Roundworm)
Bed Bugs
Bilharzia (Schistosomiasis)
Blastocystis hominis Infection
Body Lice Infestation (Pediculosis)
Back To Top

C
Capillariasis (Capillaria Infection)
Cercarial Dermatitis (Swimmer's Itch)
Chagas Disease (American Trypanosomiasis)
Chilomastix mesnili Infection (Nonpathogenic [Harmless] Intestinal Protozoa)
Clonorchiasis (Clonorchis Infection)
CLM (Cutaneous Larva Migrants, Ancylostomiasis, Hookworm)
"Crabs" (Pubic Lice)
Cryptosporidiosis (Cryptosporidium Infection)
Cutaneous Larva Migrants (CLM, Ancylostomiasis, Hookworm)
Cyclosporiasis (Cyclospora Infection)
Cysticercosis (Neurocysticercosis)
Cystoisospora Infection (Cystoisosporiasis) formerly Isospora Infection
Back To Top

D
Dientamoeba fragilis Infection
Diphyllobothriasis (Diphyllobothrium Infection)
Dipylidium caninum Infection (dog or cat tapeworm infection)
Dirofilariasis (Dirofilaria Infection)
Dracunculiasis (Guinea Worm Disease)
Drinking Water
Dog tapeworm (Dipylidium caninum Infection)

E
Echinococcosis (Cystic, Alveolar Hydatid Disease)
Elephantiasis (Filaria, Lymphatic Filariasis)
Endolimax nana Infection (Nonpathogenic [Harmless] Intestinal Protozoa)
Entamoeba coli Infection (Nonpathogenic [Harmless] Intestinal Protozoa)
Entamoeba dispar Infection (Nonpathogenic [Harmless] Intestinal Protozoa)
Entamoeba hartmanni Infection (Nonpathogenic [Harmless] Intestinal Protozoa)
Entamoeba histolytica Infection (Amebiasis)
Entamoeba polecki
Enterobiasis (Pinworm Infection)
Back To Top

F
Fascioliasis (Fasciola Infection)
Fasciolopsiasis (Fasciolopsis Infection)
Filariasis (Lymphatic Filariasis, Elephantiasis)
Foodborne Diseases

G
Giardiasis (Giardia Infection)
Gnathostomiasis (Gnathostoma Infection)
Guinea Worm Disease (Dracunculiasis)

H
Head Lice Infestation (Pediculosis)
Heterophyiasis (Heterophyes Infection)
Hydatid Disease (Cystic, Alveolar Echinococcosis)
Hymenolepiasis (Hymenolepis Infection)
Hookworm Infection, Human
Hookworm Infection, Zoonotic (Ancylostomiasis, Cutaneous Larva Migrans [CLM])

I
Intestinal Roundworms (Ascariasis, Ascaris Infection)
Iodamoeba buetschlii Infection (Nonpathogenic [Harmless] Intestinal Protozoa)
Isospora Infection (see Cystoisospora Infection)

K
Kala-azar (Leishmaniasis, Leishmania Infection)
Keratitis (Acanthamoeba Infection)

L
Leishmaniasis (Kala-azar, Leishmania Infection)
Lice Infestation (Body, Head, or Pubic Lice, Pediculosis, Pthiriasis)
Loiasis (Loa loa Infection)
Lymphatic filariasis (Filariasis, Elephantiasis)

M
Malaria (Plasmodium Infection)
Microsporidiosis (Microsporidia Infection)
Mite Infestation (Scabies)
Myiasis

N
Naegleria Infection
Neurocysticercosis (Cysticercosis)
Neglected Parasitic Infections in the U.S.
Neglected Tropical Diseases
Nonpathogenic (Harmless) Intestinal Protozoa

O
Ocular Larva Migrans (Toxocariasis, Toxocara Infection, Visceral Larva Migrans)
Onchocerciasis (River Blindness)
Opisthorchiasis (Opisthorchis Infection)

P
Paragonimiasis (Paragonimus Infection)
Pediculosis (Head or Body Lice Infestation)
Pthiriasis (Pubic Lice Infestation)
Pinworm Infection (Enterobiasis)
Plasmodium Infection (Malaria)
Pneumocystis jirovecii Pneumonia
Pseudoterranova Infection (Anisakiasis, Anisakis Infection)
Pubic Lice Infestation ("Crabs," Pthiriasis)

R
Raccoon Roundworm Infection (Baylisascariasis, Baylisascaris Infection)
Recreational Water
River Blindness (Onchocerciasis)
S
Sappinia
Scabies
Schistosomiasis (Bilharzia)
Sleeping Sickness (Trypanosomiasis, African; African Sleeping Sickness)
Soil-transmitted Helminths
Strongyloidiasis (Strongyloides Infection)
Swimmer's Itch (Cercarial Dermatitis)
Swimming Pools

T
Taeniasis (Taenia Infection, Tapeworm Infection)
Tapeworm Infection (Taeniasis, Taenia Infection)
Toxocariasis (Toxocara Infection, Ocular Larva Migrans, Visceral Larva Migrans)
Toxoplasmosis (Toxoplasma Infection)
Trichinellosis (Trichinosis)
Trichinosis (Trichinellosis)
Trichomoniasis (Trichomonas Infection)
Trichuriasis (Whipworm Infection, Trichuris Infection)
Trypanosomiasis, African (African Sleeping Sickness, Sleeping Sickness)
Trypanosomiasis, American (Chagas Disease)

V
Visceral Larva Migrans (Toxocariasis, Toxocara Infection, Ocular Larva Migrans)

W
Waterborne Diseases
Whipworm Infection (Trichuriasis, Trichuris Infection)

Z
Zoonotic Diseases (Diseases spread from animals to people)
Zoonotic Hookworm Infection (Ancylostomiasis, Cutaneous Larva Migrans [CLM])
Appendix E

Neglected Parasitic Infections in the United States
Parasitic infections are typically associated with poor and often marginalized communities in low-income countries. However, these infections are also present in the United States. The major Neglected Parasitic Infections identified at this time for further action include the agents that cause Chagas disease, *cysticercosis*, *toxocariasis*, toxoplasmosis, and trichomoniasis. Neglected Parasitic Infections are a group of five parasitic diseases that have been targeted by CDC as priorities for public health action, based on the:

- Number of people infected
- Severity of the illnesses
- Ability to prevent and treat them

Playing in soil contaminated with feces of infected dogs and cats can expose children to the roundworm *Toxocara*.

Neglected Parasitic Infections include:

- Chagas Disease
- *Cysticercosis*
- *Toxocariasis*
- Toxoplasmosis
- Trichomoniasis

These infections are considered neglected because relatively little attention has been devoted to their surveillance, prevention, and/or treatment. Anyone, regardless of race or
economic status, can become infected although minorities, immigrants, and people living in poor or disadvantaged communities appear to be most at risk.

For more information about Neglected Parasitic Infections:

Fact Sheets

- Neglected Parasitic Infections in the United States  [PDF, 2 Pages, 1.24 MB]
- Chagas  [PDF, 1.42 MB, 2 pages]
- Neurocysticercosis  [PDF, 892 KB, 2 pages]
- Toxocariasis  [PDF, 1.51 MB, 2 pages]
- Trichomoniasis  [PDF, 691 KB, 2 pages]

Podcast: Neglected Parasitic Infections: Toxocariasis

CDC is working to protect people from these health threats by:

- Increasing awareness among physicians and the public
- Synthesizing the existing data to help better understand these infections
- Improving diagnostic testing
- Advising on treatment, including distributing otherwise unavailable drugs for certain infections (Chagas disease)
Appendix F: Pulse Factors Images
**Pulse Factor Images**

Multiple images of practitioner drawings of pulse factors were obtained for this study; however, the degree of curation, description, explanation and practitioner education required to thoroughly incorporate these images into this study exceeds the available time and resources. This will be a complete study in itself, at another time. However, a few images are included here, to illustrate the relapsing and remitting nature of symptoms as shown via a pulse that appears large, excess or significantly imbalanced (kidney energy stronger than heart energy, for example) at one visit and may then appear small, deficit, and weak at a subsequent visit, in a repeating pattern.

[technical problem: the two software programs won’t talk to each other]
Appendix G: Practitioner Survey
SURVEY FOR EXPERT CONSULTANTS

Instructions: Please indicate by marking your response to each applicable question below, noting that a ‘10’ indicates maximum agreement. After completing this survey, please go to page 2 to provide your response to brief demographic and training information. MANY THANKS!

<table>
<thead>
<tr>
<th>#</th>
<th>Responses: 1 = not at all 10 = maximum agreement</th>
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<th>2</th>
<th>3</th>
<th>4</th>
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<th>10</th>
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<tbody>
<tr>
<td>1</td>
<td>I received training regarding the identification of and treatment for parasitic infection during my primary degree in medicine, TCM/AOM or homeopathy.</td>
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<td>2</td>
<td>I received training in the use of herbal medicines in treatment of parasitic infection during my primary degree in TCM/AOM.</td>
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<td>3</td>
<td>I received training in the use of pharmaceuticals [homeopathy] in treatment of parasitic infection during my medical school [homeopathy] education.</td>
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<td>4</td>
<td>I encounter many cases of outright parasite infection in my daily practice.</td>
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<td>5</td>
<td>Parasites play a role in the syndromes I see in daily practice.</td>
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<td>6</td>
<td>The intake forms used in my clinical practice include questions specifically chosen to reveal the potential presence of parasites.</td>
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<td>7</td>
<td>My questioning process with patients always includes questions to reveal the potential presence of parasites.</td>
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<td>8</td>
<td>I recommend to all of my patients that they have an annual test panel to identify the presence of parasites.</td>
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<td>9</td>
<td>The approximate percentage of my patients affected by parasites is: (1 = few, 10 = 100%)?</td>
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<td>10</td>
<td>I rely exclusively on lab tests for diagnosis of the presence of parasitic infection in my patients.</td>
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<td>11</td>
<td>I always co-treat with MDs/homeopaths/travel medicine specialists/acupuncturists/herbalists for parasites.</td>
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<td>12</td>
<td>I never encounter parasite infection in my practice.</td>
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<td>Profession</td>
<td>Primary Training</td>
<td>Advanced Degree/Study</td>
<td>Group Practice</td>
<td>Private Practice</td>
<td>Research</td>
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Other Demographic Info

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<tr>
<th>Profession</th>
<th>Formal Laboratory Training/Experience</th>
<th>Published on Parasites*</th>
<th>Other</th>
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<tbody>
<tr>
<td>Acupuncturist</td>
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<td>Herbalist</td>
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<td>Homeopath</td>
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<td>MD</td>
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*As in: are you trained in the identification of microorganisms via microscopy, etc.?

*If you wish to include publication information on your work, please do so here, or attach list.

When did main education in parasitology take place?

<table>
<thead>
<tr>
<th>Profession</th>
<th>Primary Degree</th>
<th>Additional Degree(s)</th>
<th>Apprentice</th>
<th>Post-degree study</th>
<th>Specialty Course of 16 hours or less</th>
<th>Self-Taught</th>
<th>Study in China</th>
<th>Study/work in Other Nation</th>
<th>Other</th>
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<td>Acupuncturist</td>
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Please briefly give details here for the box(es) you’ve checked above, if needed.

PLEASE RETURN TO Laraine Crampton, LAc, at lcrampton@verizon.net or rainlarc@gmail.com by JANUARY 15, 2014. Many thanks for your participation!
Practitioner Survey and Assessment Notes

See ‘Survey for Expert Consultants’ template, above, for blank edition that was sent to survey participants.

An initial list of 22 professionals was selected and given the survey. Not all replied to the survey. Responding participants included nine healthcare professionals, as follows:

5 Licensed Acupuncturists (who are also herbalists)

1 is also a homeopath

1 is also a chiropractor

1 Doctor of Homeopathy with additional background in chiropractic

2 Medical Doctors

1 Doctor of Osteopathy who serves in the military

All replied to a series of 12 questions, ranked by the degree of their agreement with statements about their training, experience and clinical practice around topics of parasitic disease. A summary and discussion of their replies is provided at the end of this section.

All also completed three additional reporting segments on their years of experience, formal laboratory training, and where in their training or experience they learned parasitology. These three areas are summarized here:

Years of Experience as a Healthcare Practitioner

Reports varied from the least, at 5 years for the military D.O., to an acupuncturist with 40 years of herbal experience, an acupuncturist with 28 years of acupuncture experience but 35
years of chiropractic practice. Not all practitioners answered this question specifically, so a true overview of years of practice for each profession among the nine is not reportable.

Formal Laboratory Training/Experience

Three individuals reported having formal laboratory training (as in, microscopy and identification of microorganisms in laboratory processes) in their primary field of practice:

- The Doctor of Osteopathy
- One of the MD’s
- The Doctor of Homeopathy

Main Education in Parasitology

No practitioners replied to having studied parasitology in China.

The Homeopathic doctor reported having had such education in chiropractic school, in homeopathic schooling, in an apprenticeship, and pursuing further education post-degree, as well as in specialty training of less than 16 hours and specialty training of more than 16 hours.

Three acupuncturists reported as ‘self-taught’ in this; four reported post-degree studies or continuing education courses of less than 16 hours. One had a course in parasitology while pursuing chiropractic studies prior to becoming an acupuncturist.

Two medical doctors indicated their training came in post-degree studies; while the DO stated his training was during medical school and in an “annual 2-week course the military provides in travel medicine for providers and public health officers.”

The acupuncturist who is also a chiropractor made this additional statement: “Some anti-parasitic herbs were discussed in acupuncture college, but no real diagnostic workups or solid research about toxicity, dosing, specificity, etc. was presented, so I haven’t used them.”
[Author note: in countless informal conversations with acupuncturists and herbalists, this statement, or one very similar to it, has been made. Anecdotal evidence would seem to indicate that this is largely true across the profession.]

Responses to 12 Survey Questions

Responses were requested according to a 10-point scale, as follows:

“Please indicate by marking your response to each applicable question, noting that a ’10’ indicates maximum agreement.” The grid was further labeled with a heading, as follows:

Responses: 1 = not at all   10 = maximum agreement

Each of the statements is listed and the responses summarized under the degree of agreement, below. In italics following each summary is an interpretive statement that is the author’s perspective on the responses.

Statement 1: I received training regarding the identification of and treatment for parasitic infection during my primary degree in medicine, TCM/AOM or homeopathy.
Reply 1 3 4 6 8 10
3 acu acu MD acu DO MD, homeopath

Strongest agreement on training received: DO, MD, homeopath.

Statement 2: I received training in the use of herbal medicines in treatment of parasitic infection during my primary degree in TCM/AOM.
Reply 1 2 3
1 acu 3 acu 1 acu

Low agreement on training received in anti-parasitic herbal medicines by acupuncturists.
Statement 3: I received training in the use of pharmaceuticals [homeopathy] in
treatment of parasitic infection during my medical school [homeopathy] education.

Reply 1 4 9 10
acu/homeopath MD DO MD, homeopath

*Strongest agreement on pharmaceutical/homeopathic anti-parasitic training by DO, MD,
homeopath.*

Statement 4: I encounter many cases of outright parasite infection in my daily practice.

Reply 1 2 3 4 7
acu 2 acu acu, DO acu, MD MD, homeopath

*Acupuncturists, DO, and one MD below 5 in agreement, MD and homeopath strongest at
7.*

Statement 5: Parasites play a role in the syndromes I see in daily practice.

Reply 1 2 3 4 5 6 7
acu acu, DO acu acu MD MD homeopath

*Four acupuncturists and DO replied low agreement, while two MD’s and
homeopath replied 5 and above, indicating somewhat more frequent cases of parasitic
involvement.*

Statement 6: The intake forms used in my clinical practice include questions specifically
chosen to reveal the potential presence of parasites.

Reply 1 2 3 5
DO, MD, homeopath, acu 3 acu acu MD
No practitioners replied high agreement. Most indicated little or no focus on intake questions related to parasitic presence.

Statement 7: My questioning process with patients always includes questions to reveal the potential presence of parasites.

```
Reply 1 2 3 5 7 10
acu 2 acu, DO MD, acu acu MD homeopath
```

Most respondents were in low agreement, while an MD and the homeopath indicated high priority for questioning process including parasite indicators.

Statement 8: I recommend to all of my patients that they have an annual test panel to identify the presence of parasites.

```
Reply 1 2 3
5 acu, DO, homeopath MD MD
```

All respondents place low priority on annual testing for parasites.

Statement 9: The approximate percentage of my patients affected by parasites is: (1 = few, 10 = 100%)

```
Reply 1 2 3 4 7
MD, acu DO, acu acu, homeopath acu MD
```

The range of reported estimates of percentage of affected patients is from few to 70%, with an MD reporting the highest percentage. One acupuncturist answered with a question mark.
Statement 10: I rely exclusively on lab tests for diagnosis of the presence of parasitic infection in my patients.

Reply: 1 2 4 6 7 9 10
2 acu acu DO, MD MD acu homeopath acu

Respondents do not show a strong pattern on this.

Statement 11: I always co-treat with MDs/homeopaths/travel medicine specialists/acupuncturists/herbalists for parasites.

Reply: 1 2 3 4 5 7 10
homeopath acu acu DO, acu MD MD, acu acu

Acupuncture respondents vary in habits, homeopath lowest agreement, MD’s and DO cluster in middle level of agreement.

Statement 12: I never encounter parasitic infection in my practice.

Reply: 1 3 6 10
Homeopath, DO, MD, 3 acu MD acu acu

Two acupuncturists indicated mild to strong agreement with this statement, while most others indicated no or minor agreement, indicating that they do encounter parasitic infections in practice.
Appendix H: Case Review

Specific Patient Data
Appetite and Weight