Complementary and alternative medicines (CAM) are being increasingly used in the United States. This is particularly true for patients with chronic diseases in which conventional treatments are either ineffective or fraught with problems of treatment intolerance. A recent survey indicates that 40% of Americans use CAM for chronic conditions, especially for the indication of pain control. Nearly 50% reported using CAM because prescribed medications were ineffective. More than half of these patients used dietary supplements or herbal therapies, and almost two-thirds of the patients found CAM helpful. Between 30% to 70% of cancer patients who are inadequately treated by their physicians turn to CAM in the hope of a cure or alleviation of their pain. Many of these patients perceive benefits from CAM therapy.

Over the last few years, there has been an increase in utilization of herbal medicine by 380% and massage therapy by 130%. However, there are some herbal supplements in which we are seeing a declining trend in usage. For example, Ephedra (Chinese name: Mahuang) was widely promoted and popular as a weight loss aid and appetite suppressant in the US. Ephedra acts to increase heart rate and to constrict blood vessels. Because of its link to sudden illnesses or even deaths, the US Food and Drug Administration is now banning the use of this product.

In the US, many patients do not inform their physician that they are using these alternative therapies. This can be a significant problem, especially in light of our expanded understanding that several dietary supplements can interfere with the metabolism of some medications. This is seen with medications like St. John’s Wort, which is used to treat mild depression. St. John’s Wort has been found to interfere with effectiveness of HIV medications. According to an article in The Lancet (2000; 355:547), St. John’s Wort reduces the effectiveness of indavir, a protease inhibitor often used to treat human immunodeficiency virus (HIV). Blood levels of Indavir in patients taking St. John’s Wort were reduced significantly (49%–99%).

"Complementary and alternative medicine (CAM) are those health care practices not currently considered an integral part of conventional medicine. It covers a broad range of healing therapies, approaches and systems. Some examples of CAM include acupuncture, herbs, homeopathy, chiropractic, hypnosis and traditional Oriental medicine."

— National Center for Complementary and Alternative Medicine (http://www.nccam.nih.gov/nccam/background)
Complementary Medicine is a group of diverse medical practices and products that are used together with conventional medicine. Alternative Medicine involves practices or therapies that are used in place of conventional medicine. Conventional Medicine is defined as medicine practiced by medical doctors (MD) or doctors of osteopathy (DO) and by allied health professionals, such as psychologists, registered nurses and physical therapists.

National Center for Complementary and Alternative Medicine (NCCAM) classifies CAM therapies into five categories: 1—Alternative Medical Systems, 2—Mind-Body Interventions, 3—Biologically Based Therapies, 4—Manipulative and Body-Based Methods, and 5—Energy Therapies.

<table>
<thead>
<tr>
<th>Therapies</th>
<th>Alternative Medical Systems</th>
<th>Mind-Body Interventions</th>
<th>Biologically Based Therapies</th>
<th>Manipulative and Body-Based Methods</th>
<th>Energy Therapies</th>
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<tbody>
<tr>
<td></td>
<td>Medical practices used to replace conventional medicine. Based on systems of theory and practice. Developed earlier than conventional approach.</td>
<td>Variety of techniques designed to enhance the mind’s capacity to affect bodily function and symptoms.</td>
<td>Use substances found in nature: herbs, foods, vitamins, dietary supplements.</td>
<td>Movement or manipulation of one or more body parts.</td>
<td>Use of energy fields that affect energy fields that surround and penetrate the body.</td>
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<td></td>
<td>Homeopathic and naturopathic medicine.</td>
<td>Meditation, prayer, mental healing, creative outlets (music, art, dance).</td>
<td>Shark cartilage in cancer treatment.</td>
<td>Chiropractics, Osteopathy, Massage</td>
<td>Reiki, therapeutic touch, qigong.</td>
</tr>
</tbody>
</table>

NCCAM is the Federal Government agency under the auspices of the National Institutes of Health (NIH), which is responsible for scientific research on complementary and alternative medicine. NCCAM’s mandate is to explore complementary and alternative healing practices in the context of rigorous science. NCCAM also trains researchers and informs the public, as well as health care professionals about the results of CAM studies and new innovations in CAM research.

The Johns Hopkins CAM Center was established in the Fall of 2000 with a US$7.8 million grant from NCCAM. Our goal is to enhance research and education in the area of CAM using high quality research techniques and cutting-edge methodology. We are particularly interested in cancers and are attempting not only to document a benefit of CAM treatments, but also to understand its mechanism. We have active laboratories to characterize the neuroendocrine-mediated immune and oxidative stress mechanisms underlying and linked to various aspects of cancer genesis. Our website provides detailed information on the research projects in place (http://www.johns-hopkins-cam.org).
Research programs in CAM at Johns Hopkins focus on oncology. Both the prevalence of cancer in the US as well as the high use of CAM by these patients demonstrates that allopathic care is not sufficient either for prevention or treatment of these diseases, and that promising CAM modalities must be studied. Ongoing studies at Hopkins includes: effects of CAM interventions on oxidative DNA damage in cancer cells, complementary therapies in cancer pain using an animal model, prayer in African American women with breast cancer, and fish oils in the treatment of cachexia.

Pilot funds are available for the development of studies in the clinical and basic sciences investigating the use of CAM therapies for primary or adjuvant use in cancer or cancer-related conditions. The primary purpose of this development funding initiative is to identify innovative CAM projects that have the potential to lead to externally funded research capable of assessing the efficacy of CAM therapies or of understanding the mechanism of action of such therapy. Its ultimate objective is to identify CAM approaches capable of improving the treatment of cancer, or of relieving the pain and disability due to malignant diseases. Any research (e.g. basic science studies and animal models) that may eventually lead to this goal are welcomed. This program is unique in that it will consider unusual projects that might be very difficult to fund through other mechanisms.

We appreciate that health professionals brought up in the conventional Western-style medical institutions have little knowledge of access to CAM. Part of our center is to provide training and educational programs to teach trainees about the various CAM options and to discuss the unique research issues that face CAM.

There are unique challenges in designing studies of the safety and efficacy of any CAM interventions. For example, the study of any botanical product or dietary supplement requires standardization and good manufacturing procedures. Research on mind-body interventions can be particularly difficult when designing any control group. In order to maintain traditional ideas of patient care, academic medicine must understand and embrace the research possibilities offered by CAM, even those that do not easily fit within the “official” venues of Western scientific philosophy.

CAM at Johns Hopkins has a strong mandate for research. We have begun to establish international partnerships in CAM to provide a unique opportunity to collaborate and foster dual research programs. We are particularly looking for collaborators in Asia, whether from academic medical centers or the private sector. We have just received a grant to establish a CAM collaboration with the National University of Singapore and from Kyung Hee University in Seoul, Korea. By pursuing such goals, we think we can get the appropriate balance between the innovation of Asia and the research approach of the US.
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Professor Dobs is presently an active investigator in the field of male gonadal function. She is particularly interested in new forms of male hormone replacement therapy and has published extensively in the area of hormonal changes with aging. As Director of the Clinical Trials Unit, she oversees a team of individuals dedicated to facilitating clinical research within an academic medical center environment. She was recently awarded an US$8 million grant from the National Institutes of Health to direct the Johns Hopkins Complementary and Alternative Cancer Center.