

## Complementary and Alternative Medicine (CAM)

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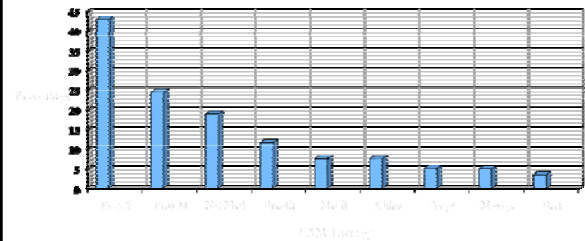
## A Brief History of Medicine

- 2000 B.C. "Here, eat this root."
- 1000 A.D. "That root is heathen. Say a prayer."
- 1850 A.D. "That prayer is superstition. Drink this potion."
- 1940 A.D. "That potion is snake oil. Swallow this pill."
- 1985 A.D. "That pill is ineffective. Take this antibiotic."
- 2000 A.D. "That antibiotic is artificial. Here, take this root."

"Like last week I had a not-so-good day, and I was doing a cleanse. I was doing a coffee enema and cleaning the liver. And they say that certain times when you're feeling something bad, your body cells hold emotions. And with the enema you can bring out the sad cells..."

Janet Jackson in *Newsweek*

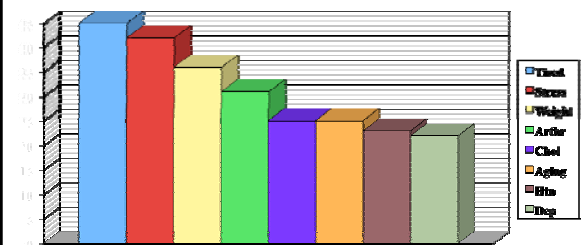
## U.S. CAM Usage, 2002 n=31,044



## Complementary and Alternative Medicine Usage

- Health supplements are a \$20 billion/yr business.
- 18.6% of Americans are taking herbal medicines, mostly for fatigue, insomnia, anxiety, depression, and headaches. 54% use them for their children. This number is growing at a rate of 1%/year. Patients make more visits to CAM practitioners and spend more out of pocket money on CAM remedies than on traditional medicine. 74% of Americans believe vitamins and minerals work to treat illness and improve health.
- Most take them for increased energy (Only 16% of Americans are satisfied with their energy level!) Weight control is #2.
- Only 38% of CAM users will tell their MD that they are taking CAM's.

## Reasons for CAM Use



## CAM Usage

- The average CAM practitioner spends 30-50 minutes with each patient during an appointment. The average primary care physician spends 7 minutes. The average “med check” appointment with a mental health professional is 15 minutes.
- The highest rate of CAM use is among females, 40-64, annual income of >\$65,000. Most users are well educated, express a commitment to personal growth and spirituality, are satisfied with their conventional medical care, and use both traditional and alternative medicine.
- CAM usage is significantly higher in those with mental health diagnoses than in the general population. They rate their nonconventional treatments as as effective as their traditional treatment.

## Some Definitions

- Folk medicine: information is usually transmitted orally and there is seldom a systemic or formalized medical practice.
- Conventional treatment (Western): biomedical modalities in mainstream use in North America and western Europe, including psychotherapy and hypnosis (although many of these treatments lack a good “evidence base”)
- CAM modalities are outside of mainstream medicine and are either based on familiar mechanisms of action (complementary, e.g. herbs) or on a completely different conceptual framework (alternative, e.g. acupuncture)

## CAM Usage: The Evidence

- The actual benefits of these medications are not clear because of limited research. There is little guidance for optimal doses, contraindications, drug-drug interactions, or potential toxicity.
- This lack of research is the result of a number of factors:
  - Lack of academic support
  - Lack of funding for clinical trials
  - Difficulty reconciling different worldviews
  - Competition among providers
  - Lack of training in research methodology in most CAM practitioners
  - Few subjects in CAM trials

## Sources of Good Information

- National Center for Complementary and Alternative Medicine  
[www.nlm.nih.gov/nccam/camonpubmed.html](http://www.nlm.nih.gov/nccam/camonpubmed.html)
- Cochrane reviews <http://www.cochrane.org/index.htm>
- Complementary and Alternative Treatments in Mental Health Care. Lake J and Spiegel D eds. 2007 American Psychiatric Publishing, Arlington VA.
- Natural Medications for Psychiatric Disorders: Considering the Alternatives. Mishoulon D, Rosenbaum J eds. 2002 Lippincott & Wilkins, Philadelphia.

## Safety

- Just because a medication is “natural” doesn’t mean it is safe. Although the majority of Americans believe the government oversees the safety of CAM’s, in fact the maker’s only requirement is to send the FDA a copy of the language on the label. The FDA must prove a supplement is not safe. There are no regulations concerning purity and no reporting requirements of bad outcomes. The FDA is working to improve the situation. Even with stricter standards, it is unlikely that the FDA will have the resources to enforce them.

## Risks

- Many treatments are apparently safe by virtue of their use over centuries or longer, but there is limited reliable information available from research studies.
- Identifying competent alternative practitioners also may pose a risk, since there are few to no standards for credentialing or licensing. Most individuals get their information from self-help books, television talk shows, “infomercials,” or the Internet. Information is contradictory and the “evidence” is usually of poor quality, or fabricated.

## Safety

- ConsumerLab.com reports that 40% of herbal medicines fail to have as much active ingredient as claimed.
- In 1998, a product called Sleeping Buddha was found to contain a benzodiazepine.
- In 1994, 50 Ginseng preparations were analyzed - 6 had no active ingredient, the others varied in content from 2-9%.
- In 1998, The California Dept of Health Services found heavy metal contamination, ephedrine, testosterone, digitalis, etc. in various preparations.

## Safety

- Nonetheless, serious adverse effects or toxicities are relatively uncommon, especially compared with conventional medications. Concern over their efficacy should probably be more of a concern than safety.
- Side effects can be divided into two areas: toxicities due to the CAM treatment and herb-drug interactions.

## Toxicities

- Contamination – Stick to higher quality brands
  - [www.consumerlab.com](http://www.consumerlab.com)
  - [www.usp.org/USPVerified/dietarySupplements](http://www.usp.org/USPVerified/dietarySupplements)
  - [www.nsf.org](http://www.nsf.org)
- Ginkgo: increased risk of bleeding, seeds may be lethal
- Kava: severe hepatotoxicity – not available in Germany, Switzerland, Great Britain
- St. John's Wort: GI effects, rash, possible mania

## Drug-Herb Interactions

- Try to avoid concomitant use of herbals and conventional medications.
- Avoid herbal diuretics (green tea) and lithium.
- Evening primrose oil may unmask temporal lobe epilepsy
- Avoid MAOI's and herbals with sympathomimetic activity (ephedra, coffee, black tea, etc)
- Avoid St. John's Wort and MOAI's.
- Avoid ginseng and caffeine or other stimulants, warfarin.
- Avoid kava and other sedatives.
- Chinese herbal medications have not been well-studied – avoid with conventional medications.

## Plants and Herbs

## St. John's Wort

- Named after John the Baptist and supposedly has its greatest potency on June 26.
- Indication: depression (one Internet site has it as effective for colds, syphilis, tuberculosis, dysentery, whooping cough, worms, fear, anxiety, irritability, mania, hypochondria, rheumatic pain, fatigue, hysteria, insomnia, neuralgia, tension, fibrosis, sciatica, healing wounds, varicose veins, mild burns, PMS, headache, alcoholism, SAD, and sinusitis.)

## St. John's Wort

- Evidence:
  - Although there have been more claims for efficacy for SJW in depression, recent analyses have failed to demonstrate significant efficacy. It may or may not work for mild to moderate depression. Trials are ongoing. There are pilot studies for use in children and adolescents. It appears safe in this population.
- Side Effects:
  - No deaths in 2400 years. Dry mouth, dizziness, constipation, GI problems. It does interfere with the action of some other drugs, including warfarin, digoxin, cyclosporin. Use with antidepressants may cause the serotonin syndrome (confusion, hallucinations, hypertension, fever, nausea, tremor, etc)
  - There are case reports of mania and psychosis.

## Kava Kava

- Medication is derived from the root of this pacific island plant. It has traditionally been prepared by virgins into a tea-like drink. It is used socially and ceremonially. Users include Queen Elizabeth, Pope John Paul II, Lyndon and Lady Bird Johnson, and Hillary Clinton.
- Indication: anxiety
- Evidence: Very potent anti-anxiety agent. 6 DB studies in Europe indicate improvement in 4 weeks - 6 months. It doesn't treat panic or acute anxiety.

## Kava Kava

- Side effects:
  - The drug has been taken off the market in Canada and Europe due to hepatotoxicity and drug interactions. It should not be taken for more than a month. This is a problem given that it does not exert its effect for 2-4 weeks.
  - Side effects with moderate doses are rare and include GI problems, skin reactions, headache and dizziness.
  - It can potentiate with alcohol and other sedatives.

## Valerian

- Heliotrope was the 19th Century Valium. It was used for the Black Plague and for shell shock in WWI. There are 100 over-the-counter preparations and it is usually drunk as a tea. It has a distinctive and unpleasant taste and aftertaste, and it stinks.
- Indication: sleep
- Evidence: Valerian is one of the best studied botanical products, but there are few large, well-designed studies. Clinical evidence and sleep recordings are mixed. It seemed to shorten sleep latency in 3 placebo controlled studies.

## Valerian

- Most studies have used valerian root extract at 300-600 mg, taken an hour before bedtime.
- Side effects:
  - Virtually no side effects and benign in overdose.
  - It does not potentiate alcohol.
  - Not sure if it loses efficacy over time

## Ginkgo Biloba

- The Maidenhair Tree is the oldest tree in the world. They were abundant 200 million years ago. They live to 1000 years and grow to 122 feet. It is the only tree to survive Hiroshima.
- Indication: dementia
- Evidence: A review of the research indicated that only 4 of 50 studies met careful scientific criteria. They indicated that 3-6 months of therapy resulted in a 3% improvement in cognitive function over no treatment. A 2008 large (3,000) 6yr DBPC study failed to find any effect.
- Side effects: increases bleeding, seeds are toxic, possible serotonin syndrome when combined with and SSRI.

## Natural Hormones

## Melatonin

- Melatonin is a primitive molecule found in unicellular organisms, and produced by the pineal gland in humans. It regulates the sleep/wake cycle in conjunction with ambient light.
- Indication: sleep (ramelteon/Rozerem)
- Evidence: Studies in normal people show that melatonin can increase fatigue and sleep efficacy. It does not effect sleep architecture. It may help with some sleep disorders and jet lag.
- Side effects: disruption of circadian rhythms, lower body temperature, change in energy levels

## Dehydroepiandrosterone (DHEA)

- DHEA and DHEA-S are among the most plentiful adrenal corticosteroids in humans, but their physiologic role is unclear. DHEA-S is made in the brain, so there is some CNS function. DHEA is a precursor to testosterone and estrogen. Concentrations are generally higher in men than women. Levels begin dropping in the 20's, hitting about 50% by 50 years old. Low levels are associated with cardiovascular disease, decreased immune function, decreased bone density, negative lipid profiles, and increased fat. Levels decrease with chronic stress and illness.

## DHEA

- Indications: depression, to increase a general sense of well-being
- Evidence: Studies of giving this compound to people are mixed. It seems to work better in the elderly. In one DBPC study, it improved mood and libido in middle-aged men and women with midlife onset of depression.
- Side effects: Testosterone increased 500% above baseline for women, and 20% above baseline for men. Side effects include facial hair, weight gain, acne, baldness, rash. (Preparations varied from 0-150% of claimed content.)

## Essential Micronutrients

## Essential Micronutrients

- There are at least 30 vitamins, minerals, and dietary components that our bodies need but cannot manufacture on their own.
- Vitamins are organic and break down in air, heat, or acid. They are often destroyed in the process of cooking and preparing food. Minerals are inorganic and are easily absorbed from the food and fluids we consume.

## Essential Micronutrients

- Water-soluble vitamins
- Fat-soluble vitamins
- Major minerals
- Trace minerals

## Water Soluble Vitamins

- Co-enzymes that participate in energy production, metabolize amino acids, make collagen (Vit C).
- They are found in the watery portion of the food we eat and easily absorbed. Most need to be replenished every few days, although we have several years' worth of B12 in the liver. High doses of B6 can damage nerves.

## Water Soluble Vitamins

- B vitamins
  - Biotin (B7)
  - Folic acid (B9)
  - Niacin (B3)
  - Pantothenic acid (B5)
  - Riboflavin (B2)
  - Thiamin (B1)
  - B6
  - B12
- Vitamin C

## Fat Soluble Vitamins

- These vitamins help with bone formation and help keep skin, vision, lungs, the GI tract, and nervous system in good health.
- Absorption of fat soluble vitamins is more complicated, requiring bile, the lymphatic system, and various proteins. They are stored in fat tissue and the liver for months at a time.
- By taking supplements, it is possible to build up to toxic levels.

## Fat Soluble Vitamins

- Vitamin D
- Vitamin E
- Vitamin A
- Vitamin K

## Vitamins

- 75% of American consumers believe vitamins and minerals are effective in the prevention of certain health conditions. 56% name specific nutrients that are missing from their diet.
- 69% of consumers use them for specific treatment of a health condition, usually joint pain, heart health, or osteoporosis.
- Vitamins represent \$7.1 billion, or 34% of the US supplement market.

### Vitamin Therapies

- Vitamin A and beta carotene (potent source of vitamin A): Antioxidants in the lab, but like vitamin E, may have pro-oxidant effects in vivo. High intake of vitamin A is associated with increased risk of hip fracture in postmenopausal women and teratogenicity. Beta carotene supplements increased the risk of lung cancer in smokers and asbestos exposed workers.

### Vitamin Therapies

- Vitamin B: B6, B9 (folic acid), and B12 are often low in people who have high homocysteine, which may be a risk factor for heart disease and Alzheimer's disease. Vitamin supplements can reduce homocysteine in weeks.
- Folate is a cofactor in making dopamine, norepinephrine, and serotonin. Depression has been associated with folate deficiency states. But no good studies show folate works as an antidepressant. There is no reason not to recommend a multivitamin supplement for all depressed clients. (Pregnant women need folate supplements to prevent neural tube defects.)
- Atrophic gastritis affects 10-30% of elderly, who are then unable to absorb B12, which is tightly bound to food protein. Supplements are recommended for older adults.

### Vitamin Therapies

- Vitamin C: Short-term randomized controlled studies have found no benefit to high doses of vitamin C for any condition (infection, cancer, heart disease), and there may be an increased risk of kidney stones.

### Vitamin Therapies

- Vitamin D: Many older adults receive inadequate amounts of vitamin D because of limited exposure to sunlight, decreased synthesis in the skin, and decreased absorption of the vitamin, which is in only a few foods (fatty fish, some mushrooms, fortified foods). Studies link low levels to type 1 diabetes, multiple sclerosis, TB, colon cancer, fractures. Vitamin D deficiency is found in white girls in Maine at the end of winter, women in Saudi Arabia, and a majority of dark skinned individuals. Some studies have found reduced risk of hip and vertebral fractures in the elderly with supplements.

### Vitamin Therapies

- Vitamin E: The promise of Vitamin E as an antioxidant cardio-protective agent has faded.
- Vitamin E is identified as an antioxidant, but supplements may block this effect in vivo. Studies have demonstrated increased death rates in those taking 400 IU/day. The causes of death are under investigation. No benefit for TD.
- Research into preventing or treating Alzheimer's disease has been mixed.

### Antioxidants in General

- A review of 67 randomized trials of antioxidant supplements has found no evidence that they prolong life, and strong evidence that they might shorten it. In the best designed studies (19), large doses of antioxidants increased the risk of death by 16% for vitamin A, 7% for beta carotene, 4% for vitamin E. Vitamin C and selenium had no effect.

## Major Minerals

- These help maintain the correct water balance in the body; they are important for healthy bones; they help form skin, hair, and nails. We have about a pound of each.
- Some are absorbed easily, like water soluble vitamins (potassium.) Others act more like fat soluble vitamins (calcium.)
- Too much of one mineral may lead to an imbalance in another. This can happen with supplements.

## Major Minerals

- Calcium
- Chloride
- Magnesium
- Phosphorus
- Potassium
- Sodium
- Sulfur

## Trace Minerals

- A thimble could contain all of the trace minerals in the body, yet they are each essential for health.
- They carry oxygen, strengthen bones and teeth, helps blood clot, and bolster immune response.
- Each of these can effect the balance of the others.
- The difference between “just enough” and “too much” of these is often very small. It is primarily a problem with supplements.

## Trace Minerals

- Chromium
- Copper
- Flouride
- Iodine
- Iron
- Manganese
- Molybdenum
- Selenium
- Zinc

## Federal Guidelines

- The US Food and Nutrition Board, a unit of the Institute of Medicine, releases dietary reference intakes (DRI's.) These guides now go beyond amending deficiencies and suggest amounts needed for enhancing health, and are expressed as recommended daily allowances (RDA's), adequate intakes (AI's), tolerable upper intake levels (UL's), and estimated average requirement (EAR's.)

## Minerals

- Calcium: Studies are very mixed concerning the amount, formulation, and benefit of calcium supplements. Non-dairy calcium supplements over a long period of time may help prevent hip fractures in women. High calcium diets are linked to increases in prostate cancer in men.
- Magnesium: helps prevent heart disease and strengthens bones. Try to get enough via a healthy diet.

## Minerals

- Potassium: Potassium can lower blood pressure and may prevent strokes. It is best to get this from fruits and vegetables, rather than supplements because of fluid/ electrolyte issues.
- Selenium: There are some suggestions that selenium may prevent cancer deaths, and specifically prostate cancer. Studies are ongoing.
- Chromium: This is an important micronutrient in glucose and lipid metabolism, and in neurotransmitter systems. There is some soft evidence that chromium supplementation may treat depression.

## Inositol

- Inositol is an isomer of glucose, and considered by some to be a B vitamin. It is an important chemical in neurotransmission. A number of small studies have found benefits of inositol over placebo for major depression, panic disorder, OCD, and bulimia. It is reasonable to recommend it for treatment of mild to moderate depression or anxiety.
- Typical studies use doses of 12 grams/day, split into smaller doses. Side effects are flatulence, diarrhea, and nausea.

## Bottom Line

- Heart: Get your B vitamins, take a multivitamin if necessary. Get carotenoids from food, not supplements. Quit smoking! Get vitamin E from your diet. Get magnesium, from a multivitamin if necessary. Cut down on salt.
- Cancer: Get folic acid – a multivitamin is good insurance. Get 1,000 IU of vitamin D every day. Get carotenoids from tomatoes. Selenium from a multivitamin may be helpful. Men should avoid calcium supplements.

## Bottom Line

- Brain: Make sure you get your minimum B vitamins. Get lots of vitamin E in your diet.
- Bones: Calcium and vitamin D work together. Most of us need more vitamin D. Women should probably take calcium supplements or get plenty of calcium in foods. Too much preformed vitamin A can interfere with bone formation.
- Eyes: Carotenoids, zinc, maybe vitamin C

## Bottom Line

- Do we need a multivitamin? There is no scientific consensus yet. We do know that the people who are most likely to take vitamin and mineral substances are those least likely to need them.
- Look for a multivitamin that has 100% of vitamin D, B12, B6 (pyridoxine), and folic acid. Try to get 1,000 IU of vitamin D. Avoid more than 10,000 units of vitamin A – may increase the risk of hip fracture.

## Bottom Line

- Don't waste money on all-natural, high potency, designer vitamins.
- Eat a healthy diet. Maintain a reasonable weight. Exercise. Don't smoke. Sleep enough. Do good. Live forever.

## Amino Acid Derivatives

## 2-Phenylethylamine (PEA)

- PEA is an endogenous amine that is produced and metabolized in brain tissue. It has amphetamine like effects when it is administered to people. Since MAO breaks it down quickly, it requires high doses or concomitant use of an MAOI. Some writers believe it increases social bonding and emotional warmth.

## S-Adenosyl-L-Methionine (SAME)

- SAME is found throughout the body, including the brain. It is involved in the synthesis of a wide variety of neurotransmitters, melatonin, and neuronal membrane components. It helps synthesize antioxidants. Without SAME, we could not produce norepinephrine or serotonin, nor could we create phospholipids.

## S-Adenosyl-L-Methionine (SAME)

- SAME has been found to be low in depressed people. In the few studies, SAME worked as well as TCA's. They have not been compared to the newer antidepressants. It is used frequently in Italy, but it is very expensive and often given by injection. It is probably effective for mild depression. It can induce mania. Generally positive studies have used a dose of 1600mg/day. Side effects are basically non-existent. SAME also reduces pain from osteoarthritis.
- Even through the most inexpensive sources, SAME will cost between \$60-\$120/month.

## Omega-3 Fatty Acids

## Omega-3 Fatty Acids

- The omega-3 and omega-6 fatty acids are naturally occurring polyunsaturated lipids, which are termed essential because vertebrates cannot make them and must get them in their food. Polyunsaturated means they are flexible and liquid at room temperature.
- The diet of modern Western nations is now largely depleted of omega-3. Omega-6 fatty acids are derived from vegetable sources and are ubiquitous in the food supply.

## Omega-3 Fatty Acids

- There are three different varieties of omega-3's: EPA, DHA, and ALA (derived from flax seed oil, not as well studied.)
- There is good evidence that omega-3's lower the risk of MI and cardiac death. The American Heart Association recommends doses from 1-4 gm/day.

## Omega-3 Fatty Acids

- Indications: depression, bipolar disorder
- Evidence: Prevalence studies show major depression and suicidal ideation decrease in populations as fish consumption increases. There is some evidence that deficiencies in omega-3 may contribute to schizophrenia, alcoholism, multiple sclerosis, dementia, and postpartum depression. They modulate calcium channels and reduce inflammation. One 4 month DBPC showed improvement in depression as an adjunctive treatment with antidepressants. Recent 22,000 subject study showed reduced risk of depression. All-in-all, the evidence is promising but not compelling for a role in psychiatric treatment.

## Omega-3 Fatty Acids

- Side effects: Side effects are predominantly GI, fishy after-taste, transient impaired platelet function.
- A gram of omega-3 every day is the same as having a salmon dinner 3-4 times per week. Most studies use from 1-6 grams/day.
- No serious side effects. Eskimos may eat more than 16 grams/day.
- The cardiovascular and anti-inflammatory benefits are well-established. This probably has significant effects on mental health.