



INTEGRATIVE, COMPLEMENTARY, AND ALTERNATIVE MEDICINE FOR PROVIDERS OF PRIMARY CARE



This pocket handbook was created by AMSA's Humanistic Medicine Action Committee (HuMed), 2006-2007.

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COMPLEMENTARY AND ALTERNATIVE MEDICINE: DEFINITIONS

From the National Institutes of Health, National Center for Complementary and Alternative Medicine (NCCAM) website at www.nccam.nih.gov

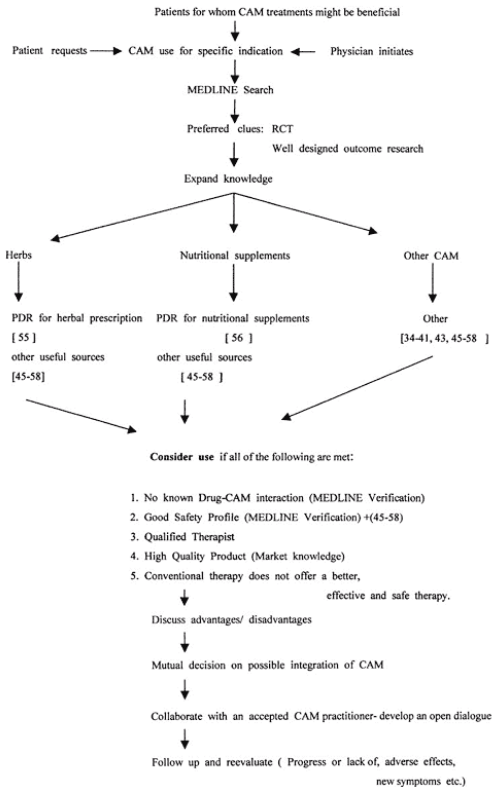
Complementary medicine is used together with conventional medicine. An example of a complementary therapy is using aromatherapy to help lessen a patient's discomfort following surgery.

Alternative medicine is used in place of conventional medicine. An example of an alternative therapy is using a special diet to treat cancer instead of undergoing surgery, radiation, or chemotherapy that has been recommended by a conventional doctor.

Integrative medicine, as defined by NCCAM, combines mainstream medical therapies and CAM therapies for which there is some high-quality scientific evidence of safety and effectiveness.

DECISION TREE ON CAM MODALITY SELECTION AND

INTEGRATION



A model for using CAM in the office setting. *Family Practice* Vol. 20, No. 3, 324-332.

Integrative, Complementary, and Alternative Medical Systems

Acupuncture – Acupuncture is a form of traditional Chinese medicine, although other forms (Japanese, Korean, and classical Chinese) are practiced and taught throughout the world. Acupuncture relies on the idea that the flow of energy, called Qi, (pronounced “chi”) affects a patient’s health. By inserting thin, sterile needles through various points in a patient’s body, acupuncturists seek to correct or regulate the flow of Qi. These points have been defined and standardized by the World Health Organization. Indications for acupuncture are wide-ranging, with documented effects for post-surgical nausea, dental pain, blood pressure, anxiety, and a wide range of disorders. A typical treatment costs between \$30 - \$100, and is covered by some insurance carriers.

Ayurveda – Ayurvedic medicine is a form of traditional Indian medicine, which focuses on balancing an individual’s body, spirit, and mind to produce health, rather than treating individual symptoms. At the initial office visit, an eight-fold examination is used to determine the balance of the three doshas, which are believed to govern all bodily processes. Each person has a dominant dosha, which determines his/her constitution type. Doshas include Vata (space and air elements), Pitta (fire element), and Kapha (combination of water and earth elements). The main aspects of Ayurveda are Panchakarma (cleansing), Abhyanga (oil massage), and Samana (herbal remedies). Cost widely ranges from \$100 for a first-time office visit, to greater for follow-up visits. Not generally covered by insurance.

Homeopathy – The foundation of homeopathy comes from Hahnemann’s supposition that “like treats like.” Practitioners use small amounts of a substance with similar properties as the illness to treat that illness. Homeopathic remedies are used to treat a number of conditions including headaches, migraines, diabetes, heartburn, indigestion, irritable bowel syndrome, asthma, fibromyalgia, infertility, PMS, menopausal issues, and hypertension. The remedies use ingredients derived from plants, animals, and minerals. Homeopathy is very cost-effective over the long term. Currently, most insurance carriers do not cover homeopathy.

Native American Healing - Native American healing encompasses a broad spectrum of belief systems practiced by members of over 500 indigenous tribes of North America. Specific practices vary among tribes, but an overarching theme is maintaining respectful, harmonious relationships between man, nature and the spiritual world. Practices consist of counseling, healing ceremony and communication with nature. Exact practices, medicines and rituals differ according to tribe and geographic location, although there are four commonalities: involvement of a healer, use of herbal remedies, use of ritual purging and purification, as well as the observance of symbolic rituals and ceremonies. <http://www.healing-arts.org/nativelinks.htm>

Naturopathy - Naturopaths have been called the “generalists” of alternative treatments. The American Association of Naturopathic Physicians defines naturopathic medicine as a distinct system of primary health care - an art, science, philosophy and practice of diagnosis, treatment and prevention of illness. Treatments used in naturopathic practice include clinical nutrition and dietary changes, counseling for lifestyle modification, herbal medicine, homeopathy, physical medicine, and Asian medicine. www.naturopathic.org

Osteopathy - Osteopathic medicine is a distinctive, equivalent form of medicine to allopathic medicine in the United States. Osteopathic medicine provides all of the benefits of modern medicine including prescription drugs, surgery, and the use of technology to diagnose disease and evaluate injury; in addition, osteopathic training emphasizes healing the whole individual, preventive care, and the musculoskeletal system more than allopathic schools. Osteopaths are trained to use Osteopathic Manipulative Medicine (OMT). Most if not all insurance carriers cover D.O. services.

Traditional Chinese Medicine - Traditional Chinese medicine views disease as a result of internal imbalance that either causes disease or allows outside agents to cause disease. Concepts in TCM include ideas of Yin and Yang (oppositional forces which mediate balance within the body), Qi (the body’s vital energy), Zang and Fu (organs system classified as solid and hollow, respectively). TCM practices include acupuncture, herbs, massage, and the use of external salves or ointments. Some TCM practices may be covered by insurance, notably acupuncture.

Tibetan Medicine – Disease in Tibetan Medicine is described as disturbances or disharmonies in one or more of seven components: milk, blood, meat, fat, bone, marrow, and essence; three excreta: excrement, urine, and perspiration; and three principles of energy: wind, bile, and phlegm. The three principles of energy are used to describe the constitution of a person, much like Ayurvedic medicine. Tibetan medicine is very preventive based, as it is meant to address unhealthy tendencies before disease occurs. Types of therapy include behavioral, diet, and herbal treatments. In addition, practitioners use acupuncture, moxibustion (use of burning moxa herb directly or indirectly on body to stimulate circulation), bloodletting, cupping, massage, and inhalation therapies.

Traditional Mexican Therapy - Mexican traditional medicine encompasses native Indian folk practices, Western European medicine, and religious-spiritual beliefs. Health is believed to be a balance of one's physical, emotional, psychological, and spiritual elements. For example, illnesses can be attributable to an imbalance between hot and cold elements, which can be treated with food and herbs to return balance to the body. In general, health advice from elders is highly respected, and there is a great reliance on herbal medicine to treat a variety of ailments.

Specific Therapies in CAM

Energy Therapies

Polarity therapy - A comprehensive health system involving energy-based bodywork, diet, exercise and self-awareness to balance and restore the natural flow of energy, resulting in improved health and fitness on all levels.

Reiki - Energy therapy where practitioners lay their hands on specific areas on a patient's body to transmit ki, believed to be a life-force energy, to improve the flow and balance of energy in a beneficial way.

Body-based therapies

Aikido – A modern Japanese martial art, which consists of striking, body throw and joint locking techniques. It is known for its fluidity and blending motions. Students cite they experience mind-body co-ordination and an increase in spiritual awareness from practicing this non-violent art.

Alexander Technique - Teaches individuals how to recognize and overcome habituated limitations within their manner of movement and thinking. This is most often addressed by alleviating unnecessary muscular tension in the body. Alexander technique is taught individually and in supportive group settings.

Breema - Described as a cross between partner yoga and Thai massage. Benefits include an enhanced sense of mindfulness and experience of presence. The Breema practitioner helps students realize a sense of peace, calm energy, and clarity.

Chiropractic - Chiropractic's premise is that spinal joint misalignments, which chiropractors call vertebral subluxations, can interfere with the nervous system and result in many different conditions of diminished health. Their treatments consist of a variety of techniques and methods which chiropractors refer to as spinal adjustments. Most PCP's refer patients to chiropractors for lower-back pain. Covered by some insurance providers.

Massage - Practice of applying structured or unstructured pressure, tension, motion, or vibration — manually or with mechanical aids — to the soft tissues of the body, including muscles, connective tissue, tendons, ligaments, joints and lymphatic vessels, to achieve a beneficial response. Proven benefit for patients with subacute and chronic non-specific low-back pain, especially when combined with exercises and education. Evidence may suggest that acupressure massage is more effective than classic/Swedish massage (Cochrane 2006).

Reflexology - Practice of stimulating points on the feet and hands, to bring positive effects to other areas of the body, or to improve general health. The most common form is foot reflexology.

T'ai Chi - A form of moving meditation, intended to teach awareness of one's own balance and what affects it. Students gain an ability to mediate extremes of behavior and attitude at both mental and physical levels

Yoga – A form of moving meditation that incorporates the practice of asanas (postures) and breathing techniques to promote strength, balance, mental clarity and calmness.

Biologically-based Therapies

Fasting - Seen as a way of cleansing the body of toxins, dead or diseased tissues, and giving the gastrointestinal system a rest. Some fasts are either water-only, or consist of fruit and vegetable juices.

Herbal Medicine – A folk and traditional method of using indigenous plants and plant extracts for treatment of various ailments.

Vitamins – Contained in daily foods or as supplements. Dietary supplements, often containing vitamins, are used to ensure that adequate amounts of nutrients are obtained on a daily basis. Used when optimal amounts of nutrients cannot be obtained through a varied diet. Scientific evidence supporting the benefits of some dietary supplements is well established for certain health conditions.

Mind-Body Medicine

Art Therapy - Based on the belief that the creative process is healing and life-enhancing. Through creating and talking about art with an art therapist, one can increase awareness of self, cope with symptoms, stress, and traumatic experiences.

Biofeedback – Biofeedback involves measuring a person's bodily processes such as blood pressure, heart rate, skin temperature, galvanic skin response (sweating), and muscle tension. This information is conveyed to the individual in real-time to raise his or her awareness and conscious control of related physiological activities.

EMDR – Short for "eye movement desensitization and reprocessing." It is a form of psychotherapy best known for treating patients with PTSD. It relies on the theory that traumatic events, and our unique responses to them, are stored in "memory networks." EMDR is an 8-phase treatment. In Phase I, the patient identifies targets for desensitization and reprocessing, including etiological traumatic incidents and current situations that cause emotional distress. In Phase 2, the therapist assesses the patient's readiness for imaginal exposure to disturbing material and works with the patient to develop adequate coping skills and behaviors. The actual desensitization and reprocessing of traumatic memories and stimuli occur in Phases 3 through 6.

Mindfulness Based Stress Reduction – Developed by Dr. Jon Kabat-Zinn in 1979, MBSR involves mindful meditation conducted in a participatory group setting. The instructor guides the group in a mindfulness meditation focusing on sensations in the body, the breath, or slow mindful movement. Later, students discuss challenges and insights they experienced as they practiced meditation.

Modern Medical Hypnosis – Describes hypnosis as a state of inner absorption, concentration and focused attention. When an individual reaches this state, he/she may be able to access unknown functions for self-improvement. Most commonly used to modify a subject's behavior, emotional content and attitudes, as well as a wide range of conditions including obesity, substance abuse, pain, ego, anxiety, stress, amnesia, phobias, and matters of performance. It may also be used to assist with functional disorders like Irritable Bowel Syndrome.

Spiritual Healing – Spiritual healing takes on many forms, including healing touch and intercessory prayer. Many studies have suggested that prayer can reduce physical stress, while uplifting patient morale, thus aiding recovery. Some studies show that "the psychological benefits of prayer may help reduce stress and anxiety, promote a more positive outlook, and strengthen the will to live."

Derived from the CAM Handbook 2006 – Integrative Medicine Network of UCSF

NOTES

CAM Therapies for Everyday Use

- RX** Ginkgo biloba 120 mg/day, taken in 2-3 divided doses, or 0.5 ml extract taken 3 times a day
Uses: Some evidence for efficacy on cognitive impairment and dementia with little side effects (2006 Cochrane collaboration) Early-stage Alzheimers, vascular dementia, peripheral claudication, tinnitus (PDR for Herbal Medicines, Third Edition)
Suggested brands: Gingkgold/Nature's Way, Ginkoba/Pharmaton, Quanterra/Warner Lambert, Ginkai/Lchtwer
Mechanism of action: Anti-inflammatory effects have been demonstrated with reduced eosinophil infiltration; antioxidant activity has been demonstrated through free scavenger action and prevention of lipid peroxidation (PDR for Herbal Medicines, Third Ed.)
Side effects/Interactions: Mild: abdominal upset, nausea, headache, dizziness, allergic skin reactions (NCCAM), Can increase risk of bleeding if used with warfarin and antiplatelet meds (AAFP)
- RX** Glucosamine sulfate 1500 mg/day, up to three times a day. Results seen after a minimum of 4 weeks and up to 3 years later (PDR for Herbal Medicines, Third Ed.)
Uses: Short and long-term benefits for osteoarthritis and symptoms have been shown with little side effects compared to placebo (2006 Cochrane)
Mechanism of action: Preclinical studies have shown glucosamine has a tropism for cartilage and bone; seems to enhance cartilage proteoglycan synthesis, inhibiting deterioration of cartilage brought about by osteoarthritis, maintaining equilibrium between cartilage catabolic and anabolic actions; an anti-inflammatory action of glucosamine has also been proposed (PDR for Herbal Medicines, Third Ed.)
Side effects/interactions: Rare (2006 Cochrane Collaboration); use with caution in patients with shellfish allergies as supplements are usually derived from crab shells, although corn-derived supplements are available (PDR for Herbal Medicines, Third Ed.)
- RX** Saint John's Wort (*Hypericum perforatum* L.) 300 mg three times a day of standard extract, or St. Johns wort tea – single dose 2-3 g dried herb placed in boiling water
Uses: Treatment for mild to moderate depressive symptoms. Minimal effects for treating major depression (2006 Cochrane Collaboration). For depressive moods, it is recommended the herb be administered for 4-6 weeks; if no improvement is apparent, a different therapy should be initiated (PDR for Herbal Medicines, Third Ed.)
Suggested brands: Jarsin/Lichter Pharma; Quanterra Emotional Balance/Warner Lambert; Perika/Nature's Way; Movana/Pharmaton
Mechanism of action: Hypericin was originally thought to be the major active component for St. John's wort in depression; however, it is now believed that hyperforin and related compounds are mostly responsible for St. John's wort's effect on mood. Hyperforin extracts have been shown to modulate neurotransmitter levels including serotonin, norepinephrine, and dopamine (2006 UpToDate).
Side effects: Fewer than pharmaceutical antidepressants (2006 Cochrane) Photosensitivity (AAFP)
Interactions: Can cause serotonin syndrome when taken with MAO-I's, SSRI, and TCAs. Inducer of CYP3A4; may reduce effectiveness of oral contraceptive pills, as well as amitriptyline, carbamazepine, cyclosporine, digoxin, indinavir, irinotecan, midazolam, nevirapine, sertraline, simvastatin, tacrolimus, theophylline, warfarin (AAFP)
- RX** Echinacea (Echinaceae species) 300 mg three times a day or 3-4 cups of tea daily
Uses: Upper respiratory tract treatment and prevention; Aerial parts of *Echinacea purpurea* might be effective for the early treatment of colds in adults; more evidence exists for reducing duration and severity of symptoms than in preventing URI (Cochrane 2006).
Suggested brands: Echinagard/Nature's Way, Echinacea Standardized, Echinacea Root Herbal
Mechanism of Action: Evidence for stimulation of phagocytic but not specifically acquired immune system (*Biochem Pharm* 2000 June 15); Causes the release of tumor necrosis factor, interleukin 1, interleukin 6, and interferon in vitro; has been noted to have antiviral activity against influenza, herpes, and poliovirus; phenolic compounds present in echinacea demonstrate antioxidant activity; evidence for anti-inflammatory activity through inhibition of LOX and COX pathways; evidence for stimulation of anterior pituitary-adrenal cortex (UpToDate 2006).
Side effects: Extensive studies have shown no toxicity in both children and adults in acute as well as long-term administration (PDR for Herbal Medicines, Third Ed.) Rash has been reported in children (Cochrane 2006).
Interactions: Inhibits cytochrome P450 in vitro (PDR for Herbal Medicines, Third Ed.); however, no cases of interaction have been reported in clinical use (AAFP). Use with caution when administered with drugs metabolized by this enzyme.

- RX Saw palmetto (*Serenoa repens*) 160 mg capsule twice daily
Uses: Mild to moderate improvement in urinary symptoms and flow measures for men with BPH (2006 Cochrane Collaboration). Approved by Commission E for use for irritable bladder and prostate complaints (PDR for Herbal Medicines, Third Ed.)
Suggested brands: Elusan Prostate/Plantes&Medicines, ProstActive/Nature's Way
Mechanism of action: Some of the mechanisms proposed include anti-inflammatory activity, blocked conversion of testosterone to dihydrotestosterone (DHT), 3,4 and prostate epithelial involution similar to effects noted with the use of finasteride (AAFP)
Side effects: Adverse effects due to *Serenoa repens* were mild and infrequent (2006 Cochrane Collaboration)
Mild; less compared to finasterides, GI upset (AAFP)
Interactions: No known drug interactions with saw palmetto (AAFP) Concurrent use may result in increased risk of bleeding. Patients with hormone-dependant cancers should observe caution and speak to a physician regarding use because of its antiestrogenic, estrogenic, and antiandrogenic effects (PDR for Herbal Medicines, Third Ed.)
- RX Horse chestnut (*Aesculus hippocastanum*) 35-70 mg daily of aescin from encapsulated standardized extracts, or as Horse Chestnut leaf tea – 1 tsp. finely cut leaves steeped in boiling water (PDR for Herbal Medicine, Third Ed.)
Uses: Approved by Commission E for treatment of venous conditions (chronic venous insufficiency), including symptoms of leg pain and heaviness (PDR for Herbal Medicines, Third Ed.)
Suggested brands Venastat/Pharmaton
Mechanism of action: The principal ingredient of Horse Chestnut seed extract, aescin, has an anti-exudative, vascular tightening effect, and reduction of vascular permeability which results in an anti-edema effect; also demonstrates improvement of venous flow (PDR for Herbal Medicines, Third Ed.)
Side effects: Health risks or side effects when used as directed are not recorded. Horse Chestnut leaf has a coumarin component, which may interact with warfarin, salicylates, and other anti-coagulants; Nausea with some pts has been demonstrated with horse chestnut seeds (PDR for Herbal Medicines, Third Ed.)

Derived from Dr. Victor Sierpina, "Integrative Medicine for the Office", available at cam.utmb.edu

NOTES

Common Herbal Remedies

HERB	COMMON USES	BENEFITS	ADVERSE EFFECTS	DRUG INTERACTIONS
Black Cohosh	Menstrual symptoms, menopausal dysfunction	Has been used for up to 6 months in treating sleep/mood disturbances and hot flashes associated with menopause – B (3)	Contraindicated during pregnancy: can stimulate uterine contraction; controversy on risks for women with family history of breast cancer (3)	Increases inhibitory effect of Tamoxifen on breast cancer cell lines (3)
Cranberry	UTI prevention and treatment	UTI prevention--B; UTI treatment--D (3)	May increase urinary oxalate levels (3)	None known (3)
Feverfew	Headaches Arthritis	Migraine prevention--C (1)	Mild and transient (1)	No significant interactions (1)
Garlic	Wide. General health promotion. Postulated cardio-vascular, anti-neoplastic, antimicrobial properties.	Small, short term lipid-lowering--A Antithrombotic and association with lower incidence of laryngeal, endometrial, colorectal and gastric cancers--B Claudication-C; lowering BP, insulin sensitivity, glucose--D; (2)	Can prolong bleeding time (prudent to stop taking high doses 7-10-days before surgery: C). Possible abdominal symptoms, dermatitis, flatulence (2)	Caution with anticoagulants; unclear effects on protease inhibitor pharmacokinetics (3)
Ginseng	Anti-inflammatory, improved well-being and physical performance	Mental functioning, diabetes--B; physical performance--D (3)	Nausea, diarrhea, euphoria, insomnia, headaches, hypertension, hypotension, mastalgia, vaginal bleeding (3)	Caution with warfarin, oral hypoglycemics, phenelzine, insulin (3)
Melatonin	Sleep disorders	Delayed sleep syndrome-B. Jet leg, shift work disorder-C. Primary and secondary sleep disorders-D,(2)	Safe in short term and at moderate-to-high doses. Reported adverse effects (nausea, headache, drowsiness) were statistically insig. (2)	Insufficient data to report (2)
Milk thistle	Liver and gall bladder disease	B--Improvement in aminotransferases in alcoholic liver disease, chronic liver disease, viral hepatitis-C,(2) Insufficient evidence of improved symptoms (2)	Few and mild. Causality not clearly established. Include GI,headache,arthralgias, impotence, anaphylaxis (2)	Insufficient data to report (2)
Valerian	Insomnia; anxiety less commonly	Improved subjective experiences of sleep (most notably sleep latency) among self-described poor sleepers--A. No benefit among self-described good sleepers (1)	Sudden cessation of long-term high dose therapy can induce withdrawal syndrome similar to benzodiazepenes (1); rarely, dizziness (2)	Can potentiate other CNS depressants. Avoid using with alcohol (3)

COMMON HERBAL REMEDIES – KEY:

Databases cited:	1: The Cochrane Collaboration	2: Agency for Healthcare Research and Quality (AHRQ)	3: American Academy of Family Physicians (AAFP)	4: National Center for Complementary and Alternative Medicine (NCCAM)
Strength of Evidence:	A:solid evidence of safety and efficacy	B: promising evidence of safety and efficacy; more research needs to be done	C: insufficient or equivocal evidence of efficacy; no evidence of harm	D: evidence shows no efficacy X:evidence of harm

Table provided by Catherine Jones, Tulane School of Medicine Class of 2008.

DIET & NUTRITION

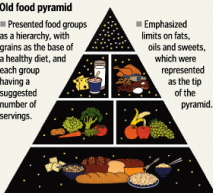
Exercise

- Adults should be physically active for at least 30 minutes most days of the week, children for 60 minutes.
- Sixty to 90 minutes of daily physical activity may be needed to prevent weight gain or sustain weight loss.



Old food pyramid

- Presented food groups as a hierarchy, with grains as the base of a healthy diet, and each group having a suggested number of servings.
- Emphasized limits on fats, oils and sweets, which were represented as the tip of the pyramid.



Oils

- Most fat should be from fish, nuts and vegetable oils.
- Limit solid fats, such as butter, margarine or lard.
- Keep consumption of saturated fats, trans fats and sodium low.
- Choose foods low in added sugar.

CATEGORY

Grains

Vegetables

Fruits

Milk

Meat and beans

RECOMMENDATION

Half of all grains consumed should be whole grains.

Vary the types of vegetables you eat.

Eat a variety of fruits. Go easy on juices.

Eat low-fat or fat-free dairy products.

Eat lean cuts, seafood and beans. Avoid frying.

DAILY AMOUNT

6 oz.

2.5 cups

2 cups

3 cups

5.5 oz.

Based on a 2,000 calorie diet.

Recommended nutrient intakes at 12-calorie levels can be found on mypyramid.gov.

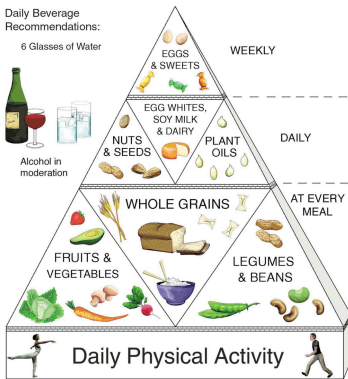
The Traditional Healthy Vegetarian Diet Pyramid

Daily Beverage Recommendations:

6 Glasses of Water



Alcohol in moderation



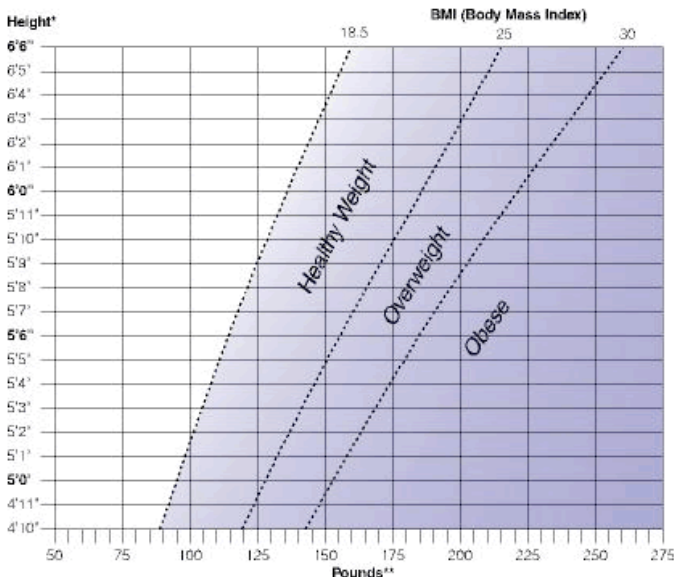
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www.oldwayspt.org

Community Nutrition Resources: Local and community-based national food and nutrition resource programs

- Women, Infants, and Children's Supplemental Food Program (WIC) <http://www.fns.usda.gov/fns/>
- Lactation consultants, other support groups such as Le Leche League <http://www.lalecheleague.org/>
- National School Lunch and Breakfast Program <http://www.fns.usda.gov/fns/>
- Food Stamps and local emergency food assistance programs providing meals or groceries <http://www.fns.usda.gov/fns/>
- Weight loss programs that are based on sound nutrition principles such as Weight Watcher's or programs offered by hospitals or clinics or private practice Registered Dietitians
- Nutrition Program for the Elderly, which includes mobile meals and congregate meals at community locations <http://www.fns.usda.gov/fdd/programs/nsip/nsiphome.htm>
- Cooperative Extension Service
- Home care programs for in-home assistance with meal preparation
- Other local community nutrition resources and food programs including local or state cooperative extension service.

From Physician's Curriculum in Clinical Nutrition: Primary Care, Second Edition. The Group on Nutrition, Society of Teachers of Family Medicine.



GLYCEMIC INDEX - Glycemic index (GI) describes how certain carbohydrates affect blood sugar and insulin. The lower a food's glycemic index, the less it affects blood sugar and insulin levels. Clinical trials in normal, diabetic and hyperlipidemic subjects show that low-GI diets reduce mean blood glucose concentrations, reduce insulin secretion and reduce serum triglycerides in individuals with hypertriglyceridemia.

GLYCEMIC INDEX OF COMMON FOODS

Low Glycemic Index <50

Moderate Glycemic Index 50-70

High Glycemic Index 70-100

Remember that glycemic index can only be measured on foods that contain carbohydrate.

Glycemic index values have not been determined on all foods, however more extensive lists can be found at <http://www.glycemicindex.com/> (University of Sidney's Web Site). The reference food for this table is glucose.

BREADS

Bagel	72
Kaiser roll	73
White bread	70
Whole wheat bread	69
Sourdough bread	52
Whole grain pumpnickel	46

CEREALS

Corn flakes	83
Rice Krispies	82
Grapenuts flakes	80
Total	76
Cheerios	74
Puffed wheat	74
Shredded wheat	69
Grapenuts	67
Cream of wheat	66
Oatmeal	61
Special K	54
All bran	42

GRAINS

Instant rice	87
Millet	71
White rice	56
Brown rice	55
Bulgur	48
Converted rice	47
Barley	25

SNACKS

Rice cakes	82
Jelly beans	80
Soda crackers	74
Corn chips	72
Chocolate bar	68
Rye crisp bread	63
Power Bar	57
Popcorn	55
Potato chips	54
Peanuts	14

PASTA

Spaghetti	41
Whole wheat spaghetti	37

BEANS

Baked beans	48
Chickpeas	33
Cooked beans	29
Lentils	29
Soy beans	18

VEGETABLES

Baked potato	85
Beets	64
New potato	62
Sweet corn	55
Sweet potato	54
Carrots	49
Green peas	48

FRUIT

Watermelon	72
Pineapple	66
Raisins	64
Mango	55
Orange juice	52
Canned peach	47
Orange	43
Unsweetened apple juice	41
Apple	36
Pear	36
Peach	28
Grapefruit	25

MILK AND YOGURT

Chocolate milk	34
Low fat fruit yogurt	33
Skim milk	32
Whole milk	27

SUGARS

Glucose	100
Honey	58
Sucrose (table sugar)	65
Fructose	43

NUTRIENT GUIDE

Nutrient	Incidence of Deficiency	Typical Sx and Diseases	Dosing
Biotin	1.6% overall	Dermatitis, eye inflammation, hair loss, loss of muscle control, insomnia, muscle weakness	1-5mg/d; safe up to 10g/d
Calcium	Average diet contains 40 to 50% of RDA	Brittle nails, cramps, delusions, depression, insomnia, irritability, osteoporosis, palpitations, periodontal disease, rickets, tooth decay	800-1200 citrate; check formulation for alternative dosing
Chromium	90% of diets deficient	Anxiety, fatigue, glucose intolerance, adult-onset diabetes	200-400ug/d; can be toxic > 600ug/d
Copper	75% of diets deficient; average diet contains 50% RDA	Anemia, arterial damage, depression, diarrhea, fatigue, fragile bones, hair loss, hyperthyroidism, weakness	1mg /d gluconate; 60mg causes emesis and blocks Zn absorption
Essential fatty acids	Very common	Diarrhea, dry skin and hair, hair loss, immune impairment, infertility, poor wound healing, premenstrual syndrome, acne, eczema, gallstones, liver degeneration	1-9g/d; limited by bleeding risk (3g/d), immune suppression (6g/d)
Folic acid	Average diet contains 60% of RDA; requirement doubles in pregnancy; 18.3% deficient in U.S.	Anemia, apathy, diarrhea, fatigue, headaches, insomnia, loss of appetite, neural tube defects, paranoia, shortness of breath, weakness	400ug-10mg/d
Iodine	Uncommon since the supplementation of salt with iodine	Cretinism, fatigue, hypothyroidism, weight gain	100-200 ug/d Na salt
Iron	Most common mineral deficiency; also 5% with excess	Anemia, brittle nails, confusion, constipation, depression, dizziness, fatigue, headaches, inflamed tongue, mouth lesions	15-45mg/d
Magnesium	75 to 85% of diets deficient; average diet contains 50 to 60% of RDA	Anxiety, confusion, heart attack, hyperactivity, insomnia, nervousness, muscular irritability, restlessness, weakness	200-400mg citrate; can be toxic greater than 500mg/day
Manganese	Unknown, may be common in women	Atherosclerosis, dizziness, elevated cholesterol, glucose intolerance, hearing loss, loss of muscle control, ringing in ears	1-5mg/d chelate;
Niacin	Commonly deficient in elderly, 13.7% general population	Bad breath, canker sores, confusion, depression, insomnia, dermatitis, diarrhea, emotional instability, fatigue, irritability, loss of appetite, memory impairment, muscle weakness, nausea, skin eruptions and inflammation	500-1000mg/d; Note: inositol hexaniacinate reduces flushing
Pantothenic acid (B5)	Average elderly diet contains 60% of RDA; deficiency in 2.6% overall	Abdominal pains, burning feet, depression, eczema, fatigue, hair loss, immune impairment, insomnia, irritability, low blood pressure, muscle spasms, nausea, poor coordination	250-500mg/d; safe up to 10g/d
Potassium	Commonly deficient in elderly	Acne, constipation, depression, edema, excessive water consumption, fatigue, glucose intolerance, high cholesterol levels, insomnia, mental impairment, muscle weakness, nervousness, poor reflexes	1000-3000mg/d, monitor Na; toxicity rare except in renal failure

Pyridoxine (B6), P5P	71% of male and 90% of female diets deficient; 22.7% deficient overall	Acne, anemia, arthritis, eye inflammation, depression, dizziness, facial oiliness, fatigue, impaired wound healing, irritability, loss of appetite, loss of hair, mouth lesions, nausea	30-250mg/d; neurotoxic above 500mg; suppresses lactation >150mg
Riboflavin (B2)	Deficient in 30% of elderly Britons; 8% overall U.S.	Blurred vision, cataracts, depression, dermatitis, dizziness, hair loss, inflamed eyes, mouth lesions, nervousness, neurological symptoms (numbness, loss of sensation, "electric shock" sensations), seizures, sensitivity to light, sleepiness, weakness	10-50mg/d; toxic above 1.3 mg/day but is rapidly excreted
Selenium	Average diet contains 50% of RDA	Growth impairment, high cholesterol levels, increased incidence of cancer, pancreatic insufficiency (inability to secrete adequate amounts of digestive enzymes), immune impairment, liver impairment, male sterility	200-400ug/d selenomethionine; toxic > 600ug/d
Thiamin (B1)	Commonly deficient in elderly; 3.3%	Confusion, constipation, digestive problems, irritability, loss of appetite, memory loss, nervousness, numbness of hands and feet, pain sensitivity, poor coordination, weakness, alcoholism, dementia	50-100mg/d; toxic > 8g
Vitamin A	20% of diets deficient, overall deficiency 10.9%	Acne, dry hair, fatigue, growth impairment, insomnia, hyperkeratosis, immune impairment, night blindness, weight loss	5-10000 IU/d short term; limit to RDA in pregnancy
Vitamin B12 (cyanocobalamin)	Serum levels low in 25% of hospital patients; 15.9% general population	Anemia, constipation, depression, dizziness, fatigue, intestinal disturbances, headaches, irritability, loss of vibration sensation, low stomach acid, mental disturbances, moodiness, mouth lesions, numbness, spinal cord degeneration, psychosis, epilepsy, ataxia, tinnitus, infertility	1-5g/d; no known toxic dose
Vitamin C	20 to 50% of diets deficient, 19.5% deficient serum levels	Bleeding gums, depression, easy bruising, impaired wound healing, irritability, joint pains, loose teeth, malaise, tiredness	1-5 g/d; limited by gastritis, low Ca, Mg, G6PD, hemochromatosis
Vitamin D	82% of elderly women's diets deficient, 42% of US adolescents (worse in Af Am and winter)	Burning sensation in mouth, diarrhea, insomnia, myopia, neuvousness, osteomalacia, osteoporosis, rickets, scalp sweating	800-2000 IU/d; toxic at greater than 24000IU/d
Vitamin E	23% of male and 15% of female diets deficient; overall deficiency 34.1%	Gait disturbances, poor reflexes, loss of position sense, loss of vibration sense, shortened red blood cell life	100-1200 IU/d (mixed tocopherols not alpha)
Vitamin K	Deficiency in pregnant women	Bleeding disorders	100-500 ug/d
Zinc	68% of diets deficient	Acne, amnesia, apathy, brittle nails, delayed maturity, depression, diarrhea, eczema, fatigue, growth impairment, hair loss, immune impairment, impotence, irritability, lethargy, loss of appetite, loss of sense of taste, low stomach acid, male infertility, impaired memory, night blindness, paranoia, white spots on nails, impaired healing	15-50mg/d picolinate; toxic > 75mg/d causes Cu deficiency

Table provided by Julie Skapnik (Johns Hopkins School of Medicine Class of 2007)

PROGRESSIVE MUSCLE RELAXATION SCRIPT

Progressive muscle relaxation is a technique that involves tensing specific muscle groups and then relaxing them to create awareness of tension and relaxation. It is termed progressive because it proceeds through all major muscle groups, relaxing them one at a time, and eventually leads to total muscle relaxation.

Instructions:

Step 1. Assume a comfortable position. You may lie down; loosen any tight clothing, close your eyes and be quiet.

Step 2. Assume a passive attitude. Focus on yourself and on achieving relaxation in specific body muscles. Tune out all other thoughts.

Step 3. Tense and relax each muscle group as follows:

- * Forehead - Wrinkle your forehead, try to make your eyebrows touch your hairline for five seconds. Relax.
- * Eyes and nose - Close your eyes as tightly as you can for five seconds. Relax.
- * Lips, cheeks and jaw - Draw the centers of your mouth back and grimace for five seconds. Relax. Feel the warmth and calmness in your face.
- * Hands - Extend your arms in front of you. Clench your fists tightly for five seconds. Relax. Feel the warmth and calmness in your hands.
- * Forearms - Extend your arms out against an invisible wall and push forward with your hands for five seconds. Relax.
- * Upper arms - Bend your elbows. Tense your biceps for five seconds. Relax. Feel the tension leave your arms.
- * Shoulders - Shrug your shoulders up to your ears for five seconds. Relax.
- * Back - Arch your back off the floor for five seconds. Relax. Feel the anxiety and tension disappearing.
- * Stomach - Tighten your stomach muscles for five seconds. Relax.
- * Hips and buttocks - Tighten your hip and buttock muscles for five seconds. Relax.
- * Thighs - Tighten your thigh muscles by pressing your legs together as tightly as you can for five seconds. Relax.
- * Feet - Bend your ankles toward your body as far as you can for five seconds. Relax.
- * Toes - Curl your toes as tightly as you can for five seconds. Relax.

Step 4. Focus on any muscles which may still be tense. If any muscle remains tense, tighten and relax that specific muscle three or four times.

Step 5. Fix the feeling of relaxation in your mind. Resolve to repeat the process again.

Remember, people respond differently to various activities. Some feel pleasant or refreshed, and others feel calm and relaxed after an activity like this one. Some people notice little change the first time, but with practice, their control increases - as well as the benefits. If you practice this activity, your relaxation should increase.

Dennis SA, Kennedy R. Techniques for Managing Stress (PDF). University of Arkansas Division of Agriculture.

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