

Complementary and Alternative Medicine: One Immunologist's Perspective

Terry O Harville, MD, PhD, D(ABMLI), D(ABHI)

**Professor of Pathology and Laboratory Medicine, and Internal
Medicine**

University of Arkansas for Medical Sciences

**Department of Pathology and Laboratory Medicine, and
Internal Medicine, Division of Hematology and Oncology
Laboratories of Histocompatibility, Immunogenetics, and
Transplantation**

Little Rock, Arkansas

Disclosure



**I have no financial or other
fiduciary issues to disclose in
regard to this presentation**

Complementary and Alternative Medicine

***The Good, The Bad,
and The Ugly***

Disclaimers

- 🌸 I am not an expert in Complementary and Alternative Medicine (CAM)
- 🌸 A discussion on CAM is best done “one-to-one” where the specific issues and needs can be discussed (*hard to do in front of an audience*)
- 🌸 There is no way to discuss everything in a short time period
- 🌸 Please...do not try this at home!!
- 🌸 Discuss with your physician before trying anything discussed here!!

Presentation Objectives



After completion of this presentation, the attendee should have a better understanding of scope and complexity of CAM




...and need for careful discussion with one's physician before implementing any



Outline

- 🌸 Explanation and Definitions of Terms
- 🌸 Vitamins
- 🌸 Amino Acids
- 🌸 Other Supplements
- 🌸 Essential Oils
- 🌸 Probiotics
- 🌸 Chiropractic Care
- 🌸 Acupuncture
- 🌸 Hypnotism
- 🌸 Helminthic Therapy
- 🌸 (*Minerals*)


Complementary and Alternative Medicine *(Definition from the Merck Manual)*

 **Complementary and alternative medicine (CAM) refers to healing approaches and therapies that are not based on principles of mainstream, conventional medicine**

Complementary and Alternative Medicine ***(Definition from the Merck Manual)*** cont

-  **Complementary medicine refers to unconventional practices used with mainstream medicine**
-  **Alternative medicine refers to unconventional practices used instead of mainstream medicine**

Complementary and Alternative Medicine ***(Definition from the Merck Manual)*** cont

 **Integrative medicine is health care that uses all appropriate therapeutic approaches--conventional and alternative--within a framework that focuses on the therapeutic relationship and the whole person**

Homeopathy

- 🌸 “Homeopathy” arose from the concept: “*a substance which causes a symptom... when made very dilute will cause the opposite of the symptom*”
- 🌸 For example: If something induces vomiting, if it is made very dilute...then it will stop vomiting
- 🌸 Generally, the “substance” is diluted so much that it can no longer be detected...
- 🌸 ...and supposedly “*its memory*” in the water is what carries out the benefit

Homeopathy cont

- 🌸 Therefore, most of us are convinced that “*Traditional Homeopathy*” has no benefit
- 🌸 In more recent times, the term “Homeopathy” has been coopted to more or less mean folk or home or “natural” remedies...
- 🌸 ...therefore, there may be some validity...
- 🌸 If you are buying “Homeopathic” medications...make sure you are not paying a lot of money for diluted water!!

Natural Remedies or Medicine

- 🌸 Natural Remedies...in general...are what most are seeking
- 🌸 These stem from observations of “natural” substances from the world that seem to produce or have healing properties
- 🌸 For example *Traditional Chinese Medicine* may be a *Natural Medicine* approach that most are after...
- 🌸 ...where herbs, etc, are concocted into remedies...that are helpful

Some Issues

- 🌸 Frequently, CAM...
- 🌸 Is “sold” via “testimonials” ...
- 🌸 ...but has not been studied in a rigorous scientific fashion
- 🌸 Someone is trying to make a profit...
- 🌸 *...and where western allopathic medicine has not provided benefit...*
- 🌸 ...individuals may fall prey to the sellers

Some Issues cont


- 🌸 When one is desperately seeking help...
- 🌸 ...it may be easy to be a victim of the “*snake-oil*” salesman
- 🌸 ...*but...Modern Allopathic Medicine is relatively new...*
- 🌸 For example, we have only had useful antibiotics for 70 years or so

Some Issues cont

- 🌸 For thousands of years, observations led to useful “natural” products (eg *Frankincense*)...
- 🌸 ...these then appear as “*Natural Medicines or Remedies*”
- 🌸 Some may be good...
- 🌸 ...but...overall...
- 🌸 ...these have little regulations...
- 🌸 ... *You may not have bought the ingredient that the label states!*

Some Issues cont

 ...you may not be getting what you paid for...

 ...A few years ago...the State of New York Attorney General found that multiple supplements did not contain the ingredients listed...but did contain ingredients which could be harmful to some people

 ...“Buyer Beware”...

Vitamins

- 🌸 B, C, D, folic acid most needed as supplements
 - 🌸 B vitamins are required for multiple purposes...and it is not likely that one can overdose
 - 🌸 B vitamins are lost in the urine...*some detractors of supplementation note that takers of B vitamins have very expensive urines!*
 - 🌸 B12 may not be well-absorbed in some...
 - 🌸 ...monthly injections may be the way to go
 - 🌸 ...sub-lingual may work in some
 - 🌸 Folic acid and B12 are needed together

Vitamins cont

🌸 Linus Pauling took 10-12 grams of Vit C each day...he said it was needed for good health, cancer prevention, protection from infections, tissue healing, etc...*He did earn 2 Nobel Prizes!!*

🌸 Studies though...have been unable to demonstrate that Vit C prevents colds...and just drinking orange juice does not give near the amount Linus Pauling took

🌸 Vit C is very important for skin, blood vessel, and tissue healing!

Vitamins cont






- 🌸 **High doses of Vit C can cause stomach upsets**
- 🌸 **For most, a gram a day may be enough, but taking more will not likely hurt you**
- 🌸 **...like B vitamins, Vit C is lost in the urine, does not build up in the body, and therefore must be taken daily to achieve the complete benefit**

Vitamins cont

- 🌸 A and E needed...but may not be necessary as supplements
 - 🌸 Some A is needed, best got as dietary beta-carotene rather than supplemented Vit A
 - 🌸 Vit A promotes achiness in and around joints (*can worsen arthritis conditions*)
 - 🌸 Due to how Vit E is manufactured, some of the material present may be *harmful* rather than helpful...
 - 🌸 ...so that taking extra supplementation may not be helpful

Vitamins cont

Vitamin D

-  We were taught about “*Hypervitaminosis D*” in medical school, and that supplementation should be restricted...
-  ...now it has been shown that “massive” doses of Vit D are not harmful
-  Almost every day, a new article is published about the benefits of Vit D supplementation in almost any disease
-  400 U RDU is way low, even the 800 U dose is too low for most
-  Most may need 2000-3000 U a day, and even as high as 10,000 U a day

Vitamins cont

- 🌸 Probably to achieve maximal benefit of Vit D...
- 🌸 ...Calcium and Magnesium need to be supplemented
- 🌸 *You should definitely discuss with your Physician before embarking on taking increased dosages of Vit D!*
- 🌸 It is interesting to note: T lymphocytes have Vit D receptors...
- 🌸 ...Vit D has been thought to mainly regulate Calcium metabolism
- 🌸 ...and...having receptors in T lymphocytes has been an enigma? *Regulation of Immunity?*

Vitamins cont

- 🌸 Niacin, 1 g each day...reduces “*bad*” *cholesterol*, increases “*good*” *cholesterol*
- 🌸 Flushing of skin can be bothersome (*but slow release forms do not seem to provide as much cholesterol benefit*)
- 🌸 Concern about liver toxicity
- 🌸 *Should be used in conjunction with your Physician*

Minerals

 **Useful: Iron, Calcium, Magnesium, Manganese, Iodine, Potassium, Zinc, Copper, Phosphorus**

 **Possibly useful: Selenium, Vanadium, Chromium**

 **Too much possibly harmful: Iron, Calcium, Iodine, Zinc, Selenium, Vanadium, Chromium**

Minerals cont

- 🌸 **Balanced diet should supply most needs**
- 🌸 **Laboratory testing can help define the need for iron, copper, etc, supplementation**
- 🌸 **Calcium does not work well without magnesium and Vit D is typically required to achieve full absorption**

Minerals cont

- 🌸 Recent concern over calcium supplementation and heart attacks and dementia in older women...but...
- 🌸 ...lack of Calcium and osteoporosis...
- 🌸 ...newer data suggesting risk for heart attacks not as great as previously thought
- 🌸 Zinc – absolutely required for wound healing (*when animals lick wounds, they are activating zinc to work with the healing enzymes!*)
- 🌸 Yet you can join the law suit against Zinc in denture paste?!?

Minerals cont

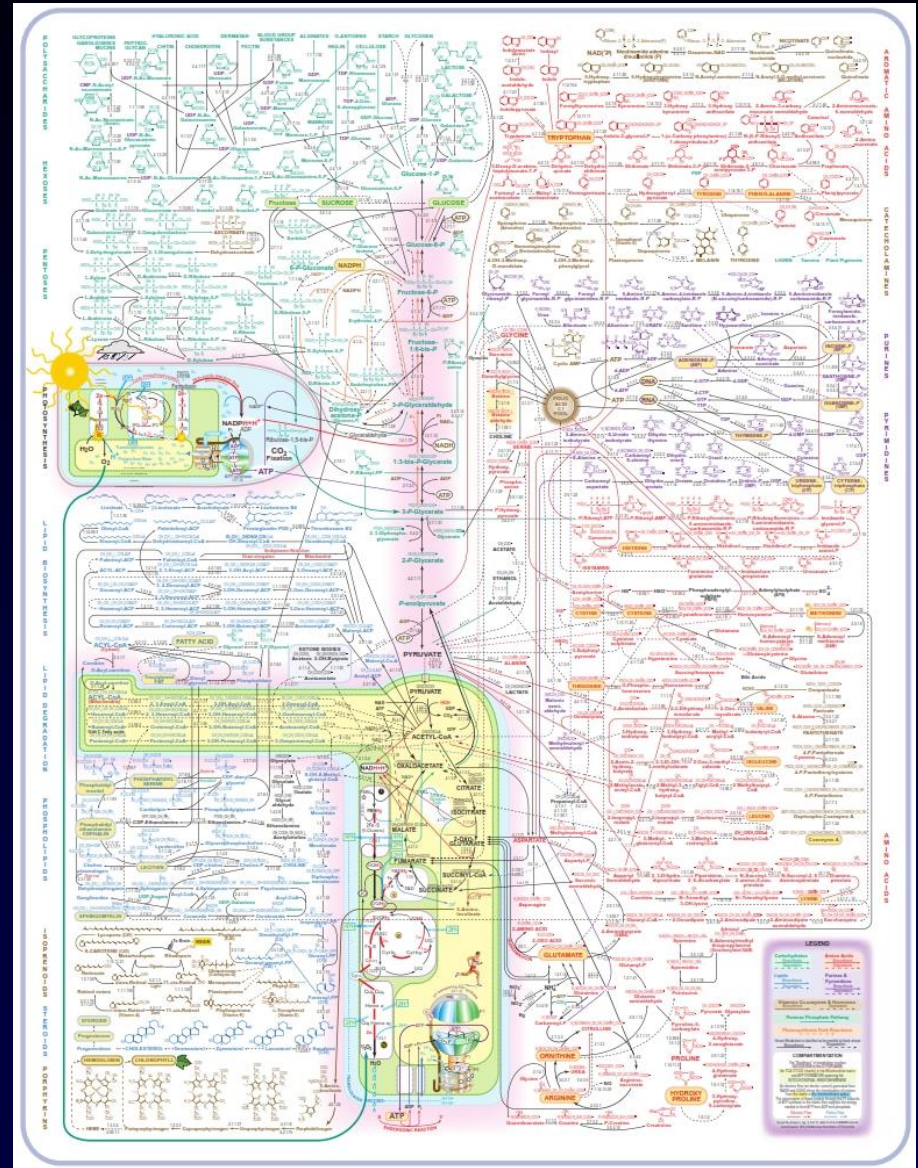
- 🌸 Magnesium...under-recognized for its benefits
- 🌸 Needed with Calcium to help bones
- 🌸 Needed for the nervous system for work
- 🌸 Acts as a “calming agent” on muscles and nerves
- 🌸 Generally...~500 mg per day...can result in loose stools (*remember “Milk of Magnesia”*)

Amino Acids

- 🌸 About one half of our amino acids have to be provided in our diet (we can make the other half)
- 🌸 The most “*essential*” amino acid is *glutamine*...
- 🌸 ...others that are likely beneficial to supplement are *arginine* and *lysine*...
- 🌸 ...NAC...N-acetyl-L-cysteine is also an amino acid, but is typically considered as an *antioxidant supplement*
- 🌸 Now available...essential amino acid mix (leucine, isoleucine, valine [2:1:1]; lysine, arginine, threonine, phenylalanine, methionine, histidine, tryptophan)

Amino Acids cont

Glutamine is metabolized to Glutamate and is essential for all metabolic processes in the body



Amino Acids cont

- 🌸 Glutamine is require to grow cells in culture
- 🌸 ...in cell culture assays and some animal studies is the “only” supplement whereby an *increase* in immune function can be demonstrated!
- 🌸 In some conditions, eg, inflammatory bowel disease...patients supplemented with 2-4 g each day can reduce or stop their other medications
- 🌸 *(Discuss with your physician before trying or changing your medications!)*

Amino Acids cont

- 🌸 Arginine is metabolized to produce “nitric oxide”...
- 🌸 ...*Nitric oxide* is a chemical used in the body to cause vasodilation of blood vessels...
- 🌸 ...this can result in a reduction in blood pressure...
- 🌸 ...but more importantly...
- 🌸 ...may result in a increase in blood flow to parts of the body that need more blood (*and oxygen*)...
- 🌸 ...eg...intestines, kidneys, heart, and brain

Amino Acids cont


- 🌸 Lysine is required for healing and helps to allow for structural proteins to “crosslink” appropriately for increasing structural strength
- 🌸 Lysine can result in healing of mouth ulcers

Amino Acids cont

NAC: N-acetyl-L-cysteine

 Cysteine is a critical sulfur containing amino acid

 It can be metabolized to produce methionine and vice versa

 NAC supplementation results in fortifying S-adenosyl-methionine (SAM)...

 ...SAM is probably our most important circulating anti-oxidant

Amino Acids cont

- 🌸 Recommended Adult dietary intake ~56 g protein
- 🌸 Supplementation Examples: 4 g Glutamine, 2 g Arginine, 1 g Lysine, 1 g NAC...
- 🌸 ...therefore, need only about ~48 or so grams of protein from other sources

Other Supplements

- 🌿 A large range of natural products are used as supplements...from...plants, algae, fish, etc
- 🌿 Omega-3 Fatty Acids (FA) may be most important
- 🌿 5 g a day led to a reduction by one half of NSAID use in patients with arthritis
- 🌿 30 g a day led to improvement in patients with Bipolar Disorder and other psychoses

Other Supplements cont

- 🌸 Some studies with Omega-3 FA have not been able to be replicated
- 🌸 One heart study did not find the benefit reported by others, *even though most studies do indicate benefit*
- 🌸 *Recently, shown to help with reduction in anxiety (>2 g each day, with <60% EPA*
- 🌸 Recommended adult fat intake ~70 g a day...must reduce other fat intake according to amount of Omega-3 FA consumed

Other Supplements cont

- ✿ St John's Wart contains a chemical similar to antidepressants such as Prozac®...
- ✿ ...but...it is not regulated...and one cannot know the actual dose
- ✿ ...thus...*should not be used in lieu of a prescriptive antidepressant!*

Other Supplements cont

🌸 Echinacea has been used for a long time as a “cold” remedy

🌸 A well-controlled study found no benefit

🌸 ...problems with studies...doses used were lower than what many use for treatment...

🌸 ...source of Echinacea may affect potency...

🌸 ***Echinacea will NOT cure immunodeficiency!***

Other Supplements cont

- 🌸 **Ginkgo Biloba has long been used to “help” circulation, improve memory, etc...**
- 🌸 **...studies have demonstrated benefit in elderly persons...**
- 🌸 **...but a few years ago in New York... several reputable distributors of supplements...**
- 🌸 **...what was labelled Ginkgo Biloba did not contain any...**
- 🌸 **...Buyer Beware....**

Other Supplements cont

- 🌸 **DMSO (Dimethyl Sulfoxide)...industrial solvent...made from pine tar extract**
- 🌸 **Not a supplement per se...but...adjunctive therapy**
- 🌸 **Anti-inflammatory...given IV for treating inflammation of the urethra**
- 🌸 **Used to keep race horses legs in good shape for running**
- 🌸 ***Not FDA approved*...used to treat tendonitis, musculoskeletal inflammation**
- 🌸 **Treated smell like “garlic”**
- 🌸 **Can dissolve “dyes from clothing” into the skin**

Essential Oils

- 🌸 Frankincense has been around a long time...helps tissue healing
- 🌸 Melaleuca helps with healing and such as mouth ulcers
- 🌸 Recently...“Essential Oils” has become a large industry
 - 🌸 Most are expensive...but use only a drop or so at a time
 - 🌸 Care must be taken about the source and purity

Probiotics

🌸 *Lactobacillus bifidus, Lactobacillus rhamnosus, Lactobacillus bulgaricus, Streptococcus thermophilus, Lactobacillus paracasei, Lactobacillus johnsonii, Lactobacillus fermentum, Lactobacillus plantarum, Bifidobacterium longum...* are among the most common...

🌸 Freeze dried or live in yoghurt or kefir

🌸 Most yoghurt does not really provide much

🌸 If on an antibiotic may need to take more

Probiotics cont

- 🌸 Rare reports of infections due to the organisms found in the probiotic supplements...
- 🌸 ...typically a cancer patient who is neutropenic...
- 🌸 ...likely safe in most patients with PIDD ...
- 🌸 *...but some Immunologists remain concerned and do not recommend*
- 🌸 Recent reports of small bowel overgrowth of bacteria...*thus if bloating occurs...mental fog develops...discontinue*

Probiotics cont


Fecal Microbiota Transplantation...

-  ...FDA approved...

-  ...as an alternative treatment for *C diff* infection

-  ...may be helpful in IBD

-  ...may help restore “*normal*” gut flora with benefit in a host of conditions

 Not truly new...done in patients receiving bone marrow transplants in the past when BMT was just beginning for re-establishing the gut flora

Helminthic Therapy

- 🌸 **(Rat Tape Worms-last up to 4 weeks in human small intestines)**
- 🌸 **Giving patients with a variety of “immune” and neuro-psychiatric issues ~20 helminthes every 3 weeks greatly attenuates the disease symptoms**
- 🌸 **Patients with relapsing MS had very good improvement in their MS!**
- 🌸 **Unclear if beneficial in PIDD...*could actually be harmful?...needs to be studied***

Chiropractic Care

- 🌸 Helpful in some...especially “*biomechanical*” problems
- 🌸 *Does not help in conditions like: Asthma, Diabetes, Thyroid Disease, etc*
- 🌸 “Mock-adjustment” trials demonstrated the same benefit as those who were actually adjusted...
- 🌸 *...therefore, concern about only being a placebo effect...*
- 🌸 ...but, problems with the studies

Acupuncture

- 🌸 **Studies demonstrate benefit...how it works is not clear**
- 🌸 **Should be performed by someone well trained...**
- 🌸 **...should use disposable needles!**
- 🌸 **...some infection risks!**

Hypnotism

- 🌸 Works...subject must be motivated...
- 🌸 ...effects can rapidly wear off in some...
- 🌸 ...therefore, frequent sessions may be necessary
- 🌸 Helpful for pain and anxiety reduction

You are getting sleepy!

Summary and Conclusions

🌸 There can be as high as a 60% effect...

🌸 ...meaning that if someone expects a benefit will occur...in some probability occur”

🌸 CAM involves numerous approaches, modalities, and ingredients, most of which are from natural sources

🌸 Buyer beware...industry not regulated



Summary and Conclusions cont



Testimonials are not reasons to believe something works



Many items are useful...few may be harmful...occasionally, the wrong and potentially harmful chemicals are placed in the product



Supplementing with Amino Acids, Omega-3 FA, etc...which may be part of normal diets...can be quite helpful in some, and likely not harmful (*kidney or dietary/metabolic issues should be considered, though*)

Summary and Conclusions cont

- 🌸 Minerals and Vitamins are helpful...but again must take care to not to take so much to become toxic
- 🌸 Natural Supplements can be helpful...but unregulated...must be careful
- 🌸 Probiotics are probably good and Okay in most people
- 🌸 Helminthic therapy appears to work...*currently expensive!!*
- 🌸 Chiropractic Care, Acupuncture and Hypnotism can be very useful adjuncts in some people

Summary and Conclusions cont

- ✿ It may be helpful to find a reputable “Naturopathic Physician (AANP)” or Practitioner of “Traditional Chinese Medicine” to discuss the issues...
- ✿ ...but...one should always discuss the plans with your regular Physician or Immunologist...
- ✿ ...to work toward beneficial results without harm

Thank You for Your Attention,

and now

Time for Questions

Case: Juvenile Arthritis Treatment

- 🌸 ~8 yo boy with Juvenile Arthritis
- 🌸 At the time, the typically available therapy was to treat with Aspirin (*dose = 35-40 baby aspirin or 9-10 adult aspirin a day*)
- 🌸 Mother wanted to use “*white willow*” as a natural remedy (*source of salicylate*)
- 🌸 Arrangements were made to discuss with the manufacturer of the white willow bark product and the mother

Case: Juvenile Arthritis Treatment cont

- 🌸 The manufacturer of the white willow bark did calculations, and stated that the mother would have to brew essentially all the bark from one tree a day to get the dose...
- 🌸 ...and that the brewing would *concentrate a number of other chemicals which may have quite toxic effects*
- 🌸 ...(not to mention the large amount of money to be spent)

Case: Juvenile Arthritis Treatment cont

🌸 He recommended against using his product and to use the “regular” aspirin as was already suggested

🌸 Take home points:

🌸 Even though the natural remedy may have an important ingredient for treatment...

🌸 ...it may not be in the correct form...

🌸 ...may not be of sufficient dosing...

🌸 ...there may be toxic material with it