


**TO CURE THE COMMON  
COLD, YOU CAN EAT  
CHICKEN NOODLE SOUP  
FOR A WEEK...  
OR WAIT SEVEN DAYS.**




---

---

---

---

---

---

---

Chapter 11  
**Alt-Med for Physical Health**

---

---

---

---

---

---

---

**Levels of Evidence Review**

- Evidence-based treatments (EBTs) –have been reliably shown to cause improvement in various symptoms
- Non-evidence-based treatments (non-EBTs) – have been reliably shown *not* to cause improvement in various symptoms
- Poorly studied treatments (PSTs) –have not been well-studied enough to determine their impact on various symptoms, or for which there is conflicting evidence regarding their effectiveness

---

---

---

---

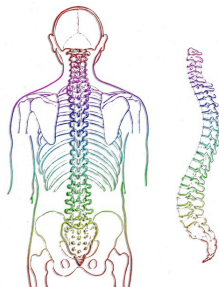
---

---

---

### Chiropractic Manipulations

- One of the most widely used CAMs, with over 77K chiropractors in the U.S. alone
- This undoubtedly contributes to their wide usage




---

---

---

---

---

---

---

### Doctor...Doctor?

- Chiro's status as a CAM is also confused by being called a "Doctor of Chiropractic" and using the honorific "Dr."
  - All degrees in U.S. are granted via 18 privately owned and run programs
- Chiro's often further confuse this by calling MD's "allopathic physicians" and themselves "chiropractic physicians"

---

---

---

---

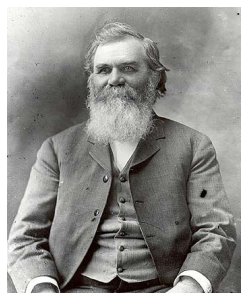
---

---

---

### History of Chiropractic

- D.D. Palmer invented the practice in 1895 in Davenport, IL
- He was a teacher, grocer, and former "magnetic healer" with no medical training




---

---

---

---

---

---

---

### History of Chiropractic

- There are two *very* different accounts of the first chiropractic adjustment
- In Palmer's, he carefully examined a man who had hearing loss, found a lump on his back, adjusted it
- This then resulted in an almost miraculous recovery of hearing!

---

---

---

---

---

---

---

### History of Chiropractic

- According to the daughter of the man he "adjusted," this was not the case at all
- She recounts her father telling some jokes to friends, Palmer coming up and slapping him heartily on the back
- The man reported a few days later to Palmer that his hearing seemed to be a bit better

---

---

---

---

---

---

---

### History of Chiropractic

- Either way, by 1897 Palmer had founded the Palmer School of Chiropractic to teach the "techniques" he invented to others
- He taught that *all* health problems were caused by a small misalignment of the spine called a **subluxation**
  - These interfered with the flow of one's life energy, or "innate intelligence"

---

---

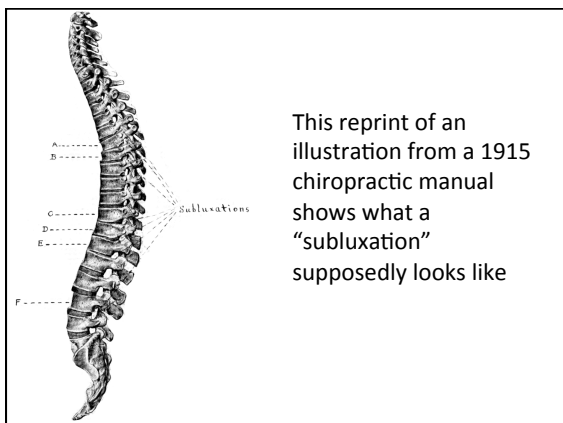
---

---

---

---

---




---

---

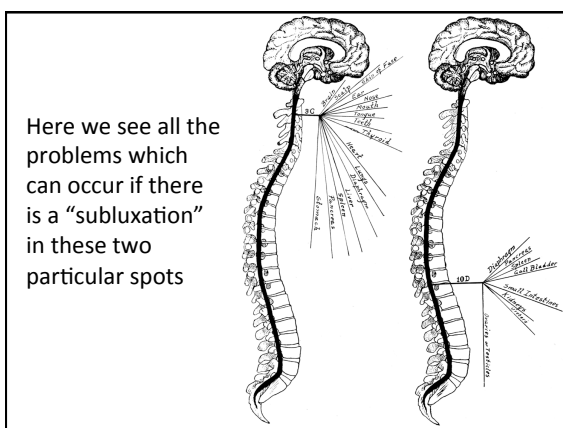
---

---

---

---

---




---

---

---

---

---

---

---

### Modern Chiropractic

- Language has updated, but subluxations still remain at the core of most chiro practice
- There has been a split, though
  - "Straights" follow Palmer's ideas exclusively
  - "Mixers" don't disbelieve in germ theory, but think disease really only happens when subluxations lower your body's ability to heal

---

---

---

---

---

---

---

### Modern Chiropractic

- Mixers comprise the majority of modern chiros, and will often incorporate other CAMs
- But, no scientific evidence that chiropractic subluxations actually exist, let alone that they are associated with health problems
- So what about treatment outcome research?

---

---

---

---

---

---

---

### Chiropractic Research

- With 27 million Americans seeing a chiropractor each year, there must be *something* to it
- Good research can tell us if that something is a placebo or an actual treatment and answer "What's the level of evidence for a *particular problem*?"

---

---

---

---

---

---

---

### But What does Chiro Treat?

- Apparently anything, based on a survey of their websites
  - Back pain, carpal tunnel, fibromyalgia, osteoporosis, headaches, scoliosis, sciatica, jaw pain, addictions, allergies, asthma, ADHD, bed wetting, infertility, ulcers, thyroid problems, improving eyesight, colic, psychological trauma, shin splints, plantar fasciitis, and MORE

---

---

---

---

---

---

---

### The Good News

- Large scale analyses support manipulative therapy being offering mild relief for *uncomplicated, chronic, lower back pain*
- It's not more effective than NSAIDs (aspirin) or exercise, though
- Also, these analyses don't separate out what chiro's do from physical therapists or physiatrists

---

---

---

---

---

---

---

### The Bad News

- No strong evidence that chiropractic is effective for *literally anything else*
  - Headaches, asthma, ADHD, bedwetting, etc.
- Strong evidence that neck manipulations place people at risk for a vertebral artery dissection
  - Can result in head and neck pain, stroke symptoms, and other problems

---

---

---

---

---

---

---

These types of neck manipulations have been used since chiropractic's beginnings, and continue to be used on adults, children, and even *infants*




---

---

---

---

---

---

---

### Chiro Conclusions

- Questionable beginnings, little scientific support for underpinnings
- Chiropractic is an EBT for chronic lower back pain, but a non-EBT for everything else
- But the risks may outweigh even those small benefits

---

---

---

---

---

---

---

### Acupuncture

- Part of traditional Chinese medicine (TCM), acupuncture use has exploded in past 40 years
- Estimated that 6% in the U.S. have tried it, with higher rates in other Western countries
- Rates are 25% or more in Japan and Taiwan, and it's the most popular CAM in China

---

---

---

---

---

---

---

### History of Acupuncture

- Earliest records show it used in China by the 2<sup>nd</sup> century BCE
- The idea is that a life force (*Ch'i*) flows through meridian points on your body and connects to internal organs
- Blocks in *Ch'i* are what cause disease or illness

---

---

---

---

---

---

---



17<sup>th</sup> century acupuncture chart, showing the traditional meridians

---

---

---

---

---

---

---

### History of Acupuncture

- Placing needles into these blocked points “releases” the Ch’i and allows healing
- Use died out in China by early 1900s, revived for political reasons in 1950s




---

---

---

---

---

---

---

### Mao and TCM

- Chinese Communist Party chairman Mao Tse-Tung pushed for widespread use of TCM
- Not due to evidence, but because they had promised accessible healthcare
- Typically delivered via “barefoot doctors” – farmers with small amounts of training

---

---

---

---

---

---

---

Even though I believe we should promote Chinese medicine, I personally do not believe in it.

I don't take Chinese medicine.

Mao Tse-Tung




---

---

---

---

---

---

---

### Acupuncture Moves Abroad

- Nixon's 1972 trip to China broke down many barriers, including introducing TCM to the West
- They were shown patient having open heart surgery using only acupuncture as anesthesia
- This plus a NYT article about it led to first center in U.S. being established in 1972

---

---

---

---

---

---

---

### Acupuncture Moves Abroad

- Left out from what Nixon saw was that these patients were actually given morphine and other painkillers *before* acupuncture
- When this became widely known, it was already one of the most commonly used CAMs
- So, is acupuncture EBT, PST, or non-EBT?

---

---

---

---

---

---

---

### Acupuncture Research

- By 1979, enough trials were run that the WHO issued a report saying it was useful for many conditions

— Asthma, headaches, diarrhea, common cold, etc.




---

---

---

---

---

---

---

### Acupuncture Research

- In trying to see why acupuncture actually worked, it quickly became apparent that the early studies were flawed
- They were small, non-randomized, non-blinded, non-placebo controlled studies
- No control for either placebo or RTM effects

---

---

---

---

---

---

---

### Acupuncture Research

- Research through the 1990s and 2000s were well-designed, using controls like sham acupuncture and telescopic needles
- These good studies show all acupuncture effects can be explained via RTM and placebo

---

---

---

---

---

---

---

### Acupuncture Conclusions

- Acupuncture is a non-EBT for all conditions studied
- This is unsurprisingly given the lack of evidence for any of the underlying ideas
  - “Life energy” and the blocking thereof

---

---

---

---

---

---

---

### Homeopathy

- Another common CAM, although who can do it varies widely among countries
- Over 2% of U.S. use it and spend over \$3 billion per year on it, with 10% in the U.K.
- In India, 100 million use it as sole medical care and there are as many homeopaths as MDs

---

---

---

---

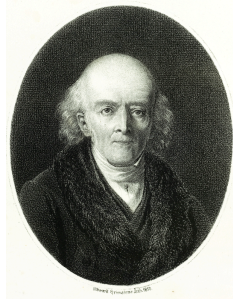
---

---

---

### History of Homeopathy

- Invented in early 1800s by German physician Samuel Hahnemann
- Described two ideas that underpin homeopathy




---

---

---

---

---

---

---

## History of Homeopathy

- Law of Similars
  - That which causes a symptom in a healthy person cures the same in an unhealthy person
- Dilution effects
  - The more diluted a homeopathic remedy is, the stronger the effect it will have

---

---

---

---

---

---

---

## Law of Similars

- *Not* the same as the concept behind modern vaccines
- In those, a small amount of the active disease cause is administered to allow immune system to build protection against it
- In homeopathy, an “analog” substance is used

---

---

---

---

---

---

---

## Dilutions

- The recommended dilutions are astounding
- Hahnemann recommended 30 stages of 100 factor dilution
  - Take 1 part of the substance, dilute it with 99 parts water
  - Repeat this with new mixture another 29 times
  - Then, take one drop and put it on an inert pill

---

---

---

---

---

---

---

### Dilutions

- At a 30C dilution the chance that *one* molecule of the original substance will be on the pill is approximately...

**1 in a billion, billion, billion, billion**

- In other words, there is *nothing in them*

---

---

---

---

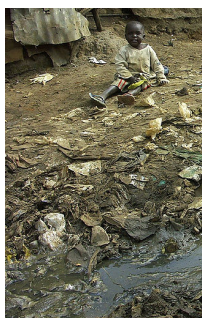
---

---

---

### How Could It Work?

- Modern homeopaths claim that water has a “memory” of sorts, and retains the essence of the original substance
- They don’t explain why it doesn’t retain the memory of everything else it contacts




---

---

---

---

---

---

---

### Research on Homeopathy

- Despite lack of plausibility, large amounts of studies have examined homeopathy
- Similar to acupuncture, small, poorly controlled studies show that it works!
- Large, placebo-controlled trials however show no impact above RTM and placebo

---

---

---

---

---

---

---

### Homeopathy Conclusions

- “There was no reliable evidence...that homeopathy was effective for treating the range of health conditions considered....”
- It’s not only implausible, homeopathy is also a non-EBT
- Conclusions apply to related systems, like “flower remedies” and isopathy

(National Health and Medical Research Council, 2015)

---

---

---

---

---

---

---

### Energy Therapies

- The idea of “energy” or “life force” is common through many different CAMs
- A number of CAMs claim it can be directly manipulated if you are properly trained
  - Therapeutic Touch, Reiki, biofield energy healing, crystal healing, Qigong, etc.

---

---

---

---

---

---

---

### Energy Therapies

- All share two underlying beliefs:
  1. Disruptions to the body’s “energy field” can cause disease or disrupt natural healing
  2. Specially trained individuals can manipulate it to restore it’s “balance”

---

---

---

---

---

---

---

### What is “Energy”?

- Modern physics defines it as “the ability of a system to do work”
  - Includes many different kinds of energy, which can be converted back and forth
- CAM practitioners tend to refer to some type of immaterial, immeasurable “force”

---

---

---

---

---

---

---

### What is “Energy”?

- CAM “energy” is often rooted in pre-scientific and/or religious worldviews
- Various practitioners define it in different ways, but none of them approach a scientific definition like in physics

---

---

---

---

---

---

---

### Measuring “Energy”

- In physics, anyone can measure how much energy (typically in *joules*) a thing possesses
- CAM “energy” is typically only measured via self-report, which practitioners claim to be able to sense
- But even that claim can be tested...and was!

---

---

---

---

---

---

---

### Emily Rosa vs. Therapeutic Touch

- Emily, who was 9 at the time, saw a TV demonstration of TT practitioners
- As part of her 4<sup>th</sup> grade science fair, she developed a simple, single-blinded experiment to test out if they could actually feel the “human energy field”

---

---

---

---

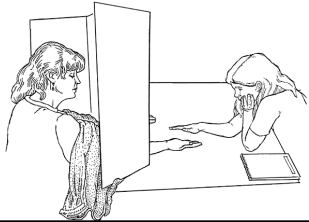
---

---

---

### Emily Rosa vs. Therapeutic Touch

- TT practitioners were asked to determine if Emily's hand was over their right or left hand when they couldn't physically see it




---

---

---

---

---

---

---

### Emily Rosa vs. Therapeutic Touch

- Practitioners were only able to correctly guess which hand was right about 40% of the time
- Large-scale trials (published in *JAMA*) showed similar results, as did follow-up studies
- Emily was able to falsify the extraordinary claim of a HEF, showing it to be nonsense

---

---

---

---

---

---

---

### Energy Field Therapies

- If you can't detect this "energy" reliably, how can one manipulate it?
- Large scale reviews of research have found no evidence to support claims of energy healers
- Most supportive studies have no placebo-controls and are not blinded, as in most CAM

---

---

---

---

---

---

---

### Energy Therapy Conclusions

- Underlying ideas are in conflict with what we know about how physics, chemistry, and biology work
- In addition, outcome studies do not support it
- So, *all* energy therapies are non-EBT for any problem or condition

---

---

---

---

---

---

---

### Natural Products and Supplements

- Humans have used various plants and herbs medicinally for at least 60,000 years
- About 25% of modern drugs are derived from plants




---

---

---

---

---

---

---

### Natural Products and Supplements

- About 20% of American use them each year, to the tune of \$15 billion in sales annually
- Primary means of healthcare in large portions of Asia, African, and Latin America
- One would expect huge amounts of research, but this is not the case

---

---

---

---

---

---

---

### Phytotherapy Research

- Of the top 1,000 most commonly used, a recent survey found
  - 156 had supportive clinical trials
  - 724 had only basic science examining them
  - 120 had no published data
- Further, only **nine** of 1,000 were found to have “considerable evidence” to support use

---

---

---

---

---

---

---

### Why the Lack of Research?

- In the U.S., it’s primarily political
- In 1994, a policy called the Dietary Supplement Health and Education Act passed helped set regulations for “dietary supplements” and the claims they could make

---

---

---

---

---

---

---

### DSHEA's Allowed Claims

1. Structure/function claims
  - “Supports the immune system” or “arouses sexual desire” or “calcium builds strong bones”
2. General well-being claim
  - “Helps you relax” or “relieves stress”
3. Benefit related to a classical nutrient deficiency disease claim
  - “Vitamin C prevents scurvy”

---

---

---

---

---

---

---

### Claims and Warnings

- Any supplement that makes a claim must also include this disclaimer:

**“This statement has not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.”**

---

---

---

---

---

---

---

### Why the Disclaimer?

- Because in the U.S., if something is labeled a dietary supplement then it does *not* have to go through FDA approval
- Manufacturers do *not* have to show that something is either effective or safe before selling it to the public
  - FDA can only step in only **after** something has been found

---

---

---

---

---

---

---

### It's all Policy

- With under 1% of the best selling herbal meds actually being EBT, the DSHEA is why they can all still be sold and marketed as being beneficial
- But who would support the DSHEA?




---

---

---

---

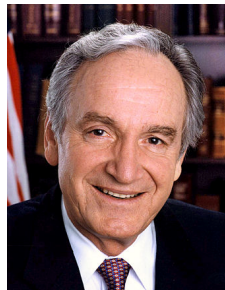
---

---

---

### The DSHEA Crafters

- Tom Harkin had pushed for the creation of what is now the NCCAM
- Supported many provisions to protect CAM practitioners




---

---

---

---

---

---

---

### The DSHEA Crafters

- Orrin Hatch has both family and friends that work for major dietary supplement manufacturers
- Repeatedly blocked regulation for DS




---

---

---

---

---

---

---

### Follow the Money

- Harkin and Hatch both heavily relied on money from the supplements and CAM industries to support their campaigns
- Top contributors included Herbalife International, American Chiropractic Association, and others

---

---

---

---

---

---

---

### Scary Effects of Non-Regulation

- Several studies have found that what is often claimed to be in the supplements is not there
- Newmaster (2013) found about 60% of products contained things *not* listed on the bottle, with over 30% didn't contain *any* of the things they advertised on the bottle

---

---

---

---

---

---

---

### Scary Effects of Non-Regulation

- NY attorney general found 80% of supplements it tested did not contain any of the listed plants
- Other research has found high levels of pharmaceuticals or heavy metals in supplements

---

---

---

---

---

---

---

### Phytotherapy Conclusions

- Lax standards, ineffective, and potentially dangerous products should lead you to be very cautious with these
- Even the small number of EBT phytotherapies are not superior to conventional meds
- Always be guided by research and a health professional before taking these

---

---

---

---

---

---

---

### Conclusions

- More people have turned in the past few decades away from conventional treatments and towards CAM
- This is very problematic, as almost all of it is non-EBT or not more effective than conventional medicine

---

---

---

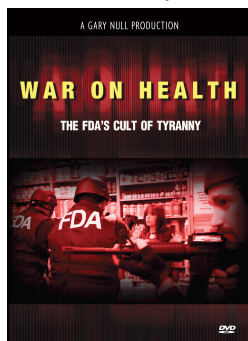
---

---

---

---

### Media Critique #5




---

---

---

---

---

---

---