Complementary and Integrative Medicine: A Basic Primer
What’s Known and What Isn’t

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Department of Family Medicine
Keck School of Medicine, USC Family Practice

Learning Objectives

▪ Manage patient’s use of herbal products especially as related to drug interactions
▪ Understand and discuss the broad appeal and reach of Complementary Integrative Medicine (CIM)
▪ Counsel patients on reliable sources of CIM information
Sir William Osler

“Medicine is a science of uncertainty and an art of probability.”

Three prongs of evidence based medicine:

1. Patient choice
2. Clinical expertise
3. External evidence


Key Takeaways

- Your patients are using Complementary Integrative Medicine (CIM)
  - So we need to know about it

- Your patients aren’t telling you about their use of CIM
  - Ask direct nonjudgmental questions about use

- The CIM they are using can have significant risks and benefits
  - Be judgmental in counseling them about their use
Definition

- “Alternative” simply means “other”
- Includes all of the approaches and techniques that are generally not taught in medical school and residency training nor reported in the common medical journals
- There is a bit of an oppositional flavor to this definition
- What it isn’t, not what it is


Definition

- National Center for Complementary and Integrative Medicine (NCCIM)
  - Complementary and alternative medicine (CAM) is the group of diverse medical and health care systems, practices, and products that are not normally considered to be conventional medicine
- National Institute of Health (NIH)
  - CAM is the term for medical products and practices that are not part of standard care
  - Again, oppositional

**Definition: Slippery Boundaries**

- In China, Traditional Chinese Medicine (TCM) would not be considered alternative
- In India, Ayurveda would not be considered alternative
- **Cochrane Collaboration**
  - “Boundaries within CAM and between the CAM domain and that of the dominant system are not always sharp or fixed”
- Is diet for CAD still considered alternative medicine?
- Is stress management mainstream or CAM?


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**Quackery**

“There is no alternative medicine, only scientifically proven, evidence-based medicine supported by solid data or unproven medicine”

Quackery is the often loud and intrusive quack of vendors to promote their unproven or fraudulent medical practices and cures

Complementary, Alternative, and Allopathic

- **Complementary**
  - Used with conventional medicine

- **Alternative**
  - Used instead of conventional medicine

- **Allopathic**
  - Early 20th century, meant opposed to then popular competing homeopathic school so would have included herbal medicine and more, now understood as what’s taught in most Western medical schools (sometimes called *Western Medicine*)

Integrative Medicine

- Not the same as CAM but has a broader meaning and mission
- Restores the emphasis of medicine on health and healing
- Celebrates the centrality of the patient-physician relationship and the need to treat the whole patient including all aspects of lifestyle
- Demands the active participation of the patient and the guidance and mentoring of the provider


Integrative Medicine

“Healing oriented medicine that takes account of the whole person (body, mind, and spirit) including all aspects of lifestyle. It emphasizes therapeutic relationships and makes use of all appropriate therapies, both conventional and alternative.”


Holistic Medicine

- Considers the whole person
  - Mind, body, and spirit
- Principles include:
  1. Treat the whole person, not just the disease
  2. Treat the root cause, not just the symptoms
  3. Believes in the person’s innate healing power
  4. Team approach with patient and provider
- Can include anything and everything
  - Patient education, western medicine, surgery, drugs, CAM, prayer, exercise, diet, spiritual work, psychotherapy
Holistic Medicine – Healing the Total Person

Achieve health and quality of life by a balance of the three modalities of mind, body, and spirit.

Body
Exercise, yoga, physician, diet, medication, herbs, acupuncture

Mind
Psychotherapy, medication, rest, meditate, vacation

Spirit
Religion, power, master, yoga, meditate, acupuncture, vacation

Another View of Holistic Medicine

Physical
Surgeon, physical therapist, general practitioner, medication, exercise, meditation

Mental
Psychoterapist, psychiatrist, counselor, hobby, vacation, meditation, religion

Energetic
Acupuncture, homeopathy, yoga, tai chi, chi gong, meditation, religion
The Pervasive Prevalence and Cost of CIM

The Broad Appeal of CIM

- Less invasive and drug-like (gentler, safer)
- Works with, not against our bodies and spirits
- Its underlying beliefs often include the positive force of nature, vitalism, and spirituality
- More in touch with patient’s world view
- More participatory and empowering
- More about the therapeutic relation
- Not so much a rejection of allopathic medicine because most patients consult both

We can learn much from our CIM colleagues
Complementary and Integrative Medicine: A Basic Primer

Prevalence by Visit Type

- Visit medical doctor first: 51.2%
- See both at the same time: 18.5%
- Visit alternative provider first: 15.4%
- Never see an alternative provider: 10.4%
- Never see a medical doctor: 1.4%
- Provider varies by condition: 3.1%

Frequency of Response


Prevalence (Patients)

- 1990 1/3 used CAM\(^1\)
- 1998 42% of all Americans were using therapies other than those their doctors prescribed\(^2\)
- 2007 and 2012: ~4 out of 10 Americans used CAM\(^3\)
- 70%-90% of cancer patients use CAM\(^4\)

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\(^1\) Eisenberg DM, et al. NEJM. 1993;329:246-252.
Complementary and Integrative Medicine: A Basic Primer

CIM Use in Adults and Children*

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Percentage of Users</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adults (2002)</td>
<td>36.0%</td>
</tr>
<tr>
<td>Adults (2007)</td>
<td>38.3%</td>
</tr>
<tr>
<td>Children (2007)</td>
<td>11.8%</td>
</tr>
</tbody>
</table>


CIM Use By Age

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Percentage of Users</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-4</td>
<td>7.6%</td>
</tr>
<tr>
<td>5-11</td>
<td>10.7%</td>
</tr>
<tr>
<td>12-17</td>
<td>16.4%</td>
</tr>
<tr>
<td>18-29</td>
<td>36.3%</td>
</tr>
<tr>
<td>30-39</td>
<td>39.6%</td>
</tr>
<tr>
<td>40-49</td>
<td>40.1%</td>
</tr>
<tr>
<td>50-59</td>
<td>44.1%</td>
</tr>
<tr>
<td>60+</td>
<td>41.0%</td>
</tr>
<tr>
<td>70-84</td>
<td>32.1%</td>
</tr>
<tr>
<td>85+</td>
<td>24.2%</td>
</tr>
</tbody>
</table>

CIM Use By Race/Ethnicity*

<table>
<thead>
<tr>
<th>Race/Ethnicity</th>
<th>Percentage of Users</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Indian/Alaska Native</td>
<td>50.3%</td>
</tr>
<tr>
<td>White</td>
<td>43.1%</td>
</tr>
<tr>
<td>Asian</td>
<td>39.9%</td>
</tr>
<tr>
<td>Black</td>
<td>25.5%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>23.7%</td>
</tr>
</tbody>
</table>


*Percentages of adults who used CAM within a 12 month period.

CIM Use By Type

2012 - Adults

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Percentage of Users</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acupuncture</td>
<td>17.7%</td>
</tr>
<tr>
<td>Energy healing therapy</td>
<td>10.9%</td>
</tr>
<tr>
<td>Hypnosis</td>
<td>10.1%</td>
</tr>
<tr>
<td>Biofeedback</td>
<td>8.4%</td>
</tr>
<tr>
<td>Ayurveda</td>
<td>8.0%</td>
</tr>
<tr>
<td>Acupuncture</td>
<td>6.9%</td>
</tr>
<tr>
<td>Guided imagery</td>
<td>3.0%</td>
</tr>
<tr>
<td>Progressive relaxation</td>
<td>2.2%</td>
</tr>
<tr>
<td>Massage therapy</td>
<td>2.1%</td>
</tr>
<tr>
<td>Tai chi and q gong</td>
<td>1.7%</td>
</tr>
<tr>
<td>Homeopathic treatment</td>
<td>1.5%</td>
</tr>
<tr>
<td>St. John's supplements</td>
<td>0.5%</td>
</tr>
<tr>
<td>Deep breathing exercises</td>
<td>0.4%</td>
</tr>
<tr>
<td>Yoga</td>
<td>0.1%</td>
</tr>
<tr>
<td>Naturopathy</td>
<td>0.1%</td>
</tr>
<tr>
<td>Biofeedback</td>
<td>0.1%</td>
</tr>
</tbody>
</table>

Complementary and Integrative Medicine: A Basic Primer

CIM Use By HCP

- 2/3 of rheumatologists use CIM\(^1\)
- 300,000 providers of CIM in the EU, 60% are non-medical providers\(^2\)
- 56% of PCPs believed that CIM has ideas and methods from which conventional medicine could benefit, 54% referred to CIM, 16% practiced some form of CIM\(^3\)

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Prevalence (Providers)

- More medical schools teach CAM as an elective
  - Topics include:
    - Acupuncture (76.7%)
    - Herbs and botanicals (69.9%)
    - Meditation and relaxation (65.8%)
    - Spirituality/faith/prayer (64.4%)
    - Chiropractic (60.3%)
    - Homeopathy (57.5%)
    - Nutrition and diets (50.7%)
  - But average contact time is only 2 hours

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Prevalence by Country

http://nccam.nih.gov/health/webresources

Healthcare Costs and CIM

- In 2012, adults in the United States spent $30.8 billion out-of-pocket on visits to CIM practitioners and purchases of CIM products, classes, and materials

Evidence (medical literature)

Level of Evidence Pyramid

- Large randomized clinical trials
- Small randomized clinical trials
- Uncontrolled trials
- Observational studies
- Case studies
- Anecdotes

Nature Reviews | Immunology
## Grade of Recommendation Based on Level of Evidence

<table>
<thead>
<tr>
<th>Grade of Recommendation</th>
<th>Level of Evidence</th>
<th>Type of Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1a</td>
<td>Systematic review of (homogeneous) randomized controlled trials</td>
</tr>
<tr>
<td></td>
<td>1b</td>
<td>Individual randomized controlled trials (with narrow confidence intervals)</td>
</tr>
<tr>
<td>B</td>
<td>2a</td>
<td>Systematic review of (homogeneous) cohort studies of &quot;exposed&quot; and &quot;unexposed&quot; subjects</td>
</tr>
<tr>
<td></td>
<td>2b</td>
<td>Individual cohort study / Low-quality randomized controlled trials</td>
</tr>
<tr>
<td></td>
<td>3a</td>
<td>Systematic review of (homogeneous) case-control studies</td>
</tr>
<tr>
<td></td>
<td>3b</td>
<td>Individual case-control studies</td>
</tr>
<tr>
<td>C</td>
<td>4</td>
<td>Case series, low-quality cohort or case-control studies</td>
</tr>
<tr>
<td>D</td>
<td>5</td>
<td>Expert opinions based on non systematic reviews of results or mechanistic studies</td>
</tr>
</tbody>
</table>

### A Randomized Clinical Trial (RCT) on Parachutes Use and Gravity

- A systematic review of RCTs of parachute use to prevent death and major trauma related to gravitational challenge
- **RESULTS:** No RCTs of the parachute
- **ONLY TWO POSSIBLE CONCLUSIONS:**
  1. Under exceptional circumstances, common sense might be applied when examining risk/benefit
  OR
  2. Preclude parachute use outside the context of a properly conducted trial

A woman survived a plunge of more than 5,000 feet after her parachute failed
By Gabrielle Sorto, CNN Updated 1:51 PM ET, Thu August 15, 2019

“Not everything that can be counted counts, and not everything that counts can be counted.”
Albert Einstein

Problems with RCT in CIM

- Equipoise
- Codification of treatment
  - Practitioner, patient, gender, time of day, and season dependent
- Agreed outcome
  - Can’t be measuring Qi flow
- Adequate controls
- Difficulty blinding
- Bias control
- Lack of funding


Journals Devoted to CIM

<table>
<thead>
<tr>
<th>Country</th>
<th>Journals</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>98</td>
</tr>
<tr>
<td>United States</td>
<td>71</td>
</tr>
<tr>
<td>India</td>
<td>34</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>28</td>
</tr>
<tr>
<td>Germany</td>
<td>15</td>
</tr>
<tr>
<td>Japan</td>
<td>15</td>
</tr>
<tr>
<td>France</td>
<td>12</td>
</tr>
<tr>
<td>Netherlands</td>
<td>12</td>
</tr>
<tr>
<td>Australia</td>
<td>7</td>
</tr>
<tr>
<td>Canada</td>
<td>7</td>
</tr>
<tr>
<td>Iran</td>
<td>7</td>
</tr>
<tr>
<td>Poland</td>
<td>6</td>
</tr>
<tr>
<td>Italy</td>
<td>5</td>
</tr>
<tr>
<td>Singapore</td>
<td>5</td>
</tr>
<tr>
<td>Spain</td>
<td>5</td>
</tr>
<tr>
<td>Switzerland</td>
<td>5</td>
</tr>
<tr>
<td>Austria</td>
<td>4</td>
</tr>
<tr>
<td>Nigeria</td>
<td>3</td>
</tr>
<tr>
<td>Taiwan</td>
<td>3</td>
</tr>
<tr>
<td>New Zealand</td>
<td>2</td>
</tr>
</tbody>
</table>

Evidence (Online)

Checking Out a CIM Web Site: 5 Quick Questions

1. **Who?** Who owns and runs the web site? Are they trustworthy?
2. **What?** What does the site have to say? Is it too good to be true?
3. **When?** Is the information up-to-date?
4. **Where?** What is the source of the information? Is it based on peer reviewed scientific research or only testimonials?
5. **Why?** Why does the site exist? Does it have something to sell including a subscription?

Online Resources

- NCCIH (formerly OAM, then NCCAM) part of NIH (free)
  - Mission is to study CAM through research
  - $123 million budget
  - Research results, licensing of CIM providers, herbs, more
    - [https://nccih.nih.gov](https://nccih.nih.gov)
- American Botanical Council ($50 or more/year)
  - German Commission E and more
    - [http://abc.herbalgram.org/site/PageServer](http://abc.herbalgram.org/site/PageServer)
- German Commission E (free partial look)


Online Resources

- Consumer Lab ($42/year or less)
  - Independent testing of individual products
    - [http://www.consumerlab.com](http://www.consumerlab.com)
- Weil (free with options to purchase)
  - Thoughtful: articles, diet, recipes, herbs, vitamins
    - [http://www.drweil.com](http://www.drweil.com)
- HerbMed ($45/year but 20 most popular herbs free)
  - Good herbal monograms with researchable results
    - [http://www.herbmed.org](http://www.herbmed.org)

Online Resources

- Quackwatch (free)
  - Mission to check for fraud
  - Literature review
  - Budget: $7,000/year
    - [http://www.quackwatch.com](http://www.quackwatch.com)

Placebo or Dummy Effect

- 35% or higher response rate to placebo
- Partially blocked by opioid antagonist
- Dependent on conditioning and verbal suggestion, and expectations

Placebo Effect
“"I shall please""

Powerful Placebo
St John’s Wort vs. Placebo vs. Sertraline

<table>
<thead>
<tr>
<th>Clinical Response Rates*</th>
<th>Hypericum (n=113)</th>
<th>Placebo (n=116)</th>
<th>Sertraline (n=109)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Response, No. (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any response</td>
<td>43.0 (38.1)</td>
<td>50.0 (43.1)</td>
<td>53.0 (48.6)</td>
</tr>
<tr>
<td>Full response</td>
<td>27.0 (23.9)</td>
<td>37.0 (31.9)</td>
<td>27.0 (24.8)</td>
</tr>
<tr>
<td>Partial response</td>
<td>16.0 (14.2)</td>
<td>13.0 (11.2)</td>
<td>26.0 (23.9)</td>
</tr>
<tr>
<td>No response</td>
<td>70.0 (61.9)</td>
<td>66.0 (56.9)</td>
<td>56.0 (51.4)</td>
</tr>
</tbody>
</table>

* No significant differences were noted between Hypericum and placebo (P=0.21) or between sertraline and placebo (P=0.28) in the log odds of full response with adjustment for site, sex, and baseline Hamilton Depression (HAM-D) scale total score through logistic regression.

Nocebo Effect

- Incidence of nocebo side effects may = or > the side effects of those taking the active drug
- A possible biological basis: cholecystokinin (CCK) mediates the hyperalgesia that can result from the administration of a nocebo
- Proglumide (a cholecystokinin antagonist) blocks this nocebo effect


Nocebo Effect
"I shall harm"

Malpractice and Legal Concerns

Complementary Medicine, Refusal of Conventional Cancer Therapy, and Survival Among Patients with Curable Cancers

Survival Among Patients with Curable Cancers

- Retrospective observational study
- National Cancer Database (258 in the CIM group, 1,032 patients in matched cohort)
- Diagnosed with nonmetastatic breast, prostate, lung, or colorectal cancer between 2004 and 2013
- CIM pts had higher refusal rates of surgery (7.0% vs 0.1%), chemotherapy (34.1% vs 3.2%), radiotherapy (53.0% vs 2.3%), and hormone therapy (33.7% vs 2.8%); all \( P < .001 \)
- CIM pts had 2-fold greater risk of death **BUT**
- No significant association between CIM and survival once treatment delay or refusal is figured in


Malpractice

- Liability for referral
  - Generally not an issue, but can be if:
    1. Decision to refer is negligent (and harm is done)
      - Referral to CIM provider delays more appropriate care
      - Know or should know of lack of benefit from CAM
    2. Personally knows or supervises or works directly with CAM provider
    3. Knows the CIM provider is not competent

- Licensing
  - All 50 states license chiropractors, 35 acupuncturists, 27 massage therapists, 14 naturopaths, 4 homeopaths
  - Referral less of a risk to a licensed provider

## Malpractice

### 4 Questions to Ask Yourself

1. Is there evidence from the medical literature to suggest that the therapies a patient will receive as a result of the referral will offer no benefit or will subject the patient to unreasonable risks? **NO**

2. Is the practitioner licensed in my state? **YES**

3. Do I have any special knowledge or experience to make me think that this particular practitioner is incompetent? **NO**

4. Is this the usual arm's length referral without my supervision of the patient's management? **YES**

These answers should remove most concerns that the referral decision will be construed as negligent.

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## Classification Systems for CIM

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Classification Systems

Biologically based approaches
- Diets, Herbs, Vitamins
- Manipulative and body-based therapies
- Massage, Chiropractic, Osteopathy
- Yoga, Spirituality, Relaxation

Energy therapies
- Reiki, Magnets, Qigong

Alternative medical systems
- Homeopathy, Naturopathy, Ayurveda

Manipulative and body-based therapies
- Massage, Chiropractic, Osteopathy

Mind-body interventions
- Yoga, Spirituality, Relaxation

Examples of CIM Based on Type

Energy therapies
- Path-healing
- Reiki
- Magnets
- Qi gong

Mind-body intervention
- Yoga
- Meditation
- Art therapy
- Music therapy

Manipulative therapies
- Acupuncture
- Cupping
- Tai chi
- Chinese herbal medicine

Biologically-based therapies
- Nutrition therapy
- Herbal medicine
- Homeopathy
- Phytotherapy

Common CAM Practices
- Massage, Chiropractic, Osteopathy
- Yoga, Spirituality, Relaxation
- Homeopathy, Naturopathy, Ayurveda

Common CAM Practices
- Massage, Chiropractic, Osteopathy
- Yoga, Spirituality, Relaxation
- Homeopathy, Naturopathy, Ayurveda

Examples:
- Insomnia
- Depression
- Erectile dysfunction
- Ulcers
- Cancer
- PTSD
- Fibromyalgia
- Arthritis
- Back pain
- Incontinence
- Fatigue

Sources: nccam.nih.gov, Pubmed, Cochrane.org
Use by Type of Therapy

Alternative Medicine Users (%)

- Acupuncture: 45%
- Homeopathic Treatment: 41%
- Naturopathy: 10%
- Ayurveda: 4%

Use of Complementary Health Approaches in the U.S.
National Health Interview Survey (NHIS)

Out-of-Pocket Spending on Physician Visits vs. Complementary Practitioner Visits

- Physician Visits*: $49.6 billion
- Complementary Practitioner Visits: $14.7 billion


Source: NCHS, National Center for Health Statistics. 2018 National Health Interview Survey.
Cost by Type of Therapy

- Total costs: $33.9 billion
  - NVNMNP 1: $14.8 billion (43.7%)
  - Yoga, tai chi, qigong classes: $4.1 billion (12.0%)
  - Homeopathic medicine: $2.9 billion (8.7%)
  - Relaxation techniques: $0.2 billion (0.6%)
  - Practitioner costs: $11.9 billion (35.2%)

1 Non-vitamin, non/mineral, natural products


Figure. Out-of-pocket costs for complementary and alternative medicine among adults aged 18 years and over: United States, 2007

Botanical Medicine (Herbalism)
18% of adults and 5% of children used natural products in 2012

Top 10 Natural Products Used Among Adults - 2012

- Fish Oil/Omega 3: 7.8%
- Glucosamine and/or chondroitin: 2.6%
- Probiotics/Prebiotics: 1.6%
- Melatonin: 1.3%
- Coenzyme Q10: 1.3%
- Echinacea: 0.9%
- Cranberry (pills, capsules): 0.8%
- Garlic Supplements: 0.8%
- Ginseng: 0.7%
- Ginkgo biloba: 0.7%


8-year sales trends for individual non-vitamin, non-mineral natural products

* Nutrition Business Journal, Supplement Business Reports
Herbs and Supplements

- 63% to 72% did not disclose at least one type of CAM therapy to the medical doctor, mostly herbs and supplements
  - 60% because the doctor never asked

- Why we must know and ask about herbs
  - Natural doesn’t mean effective or gentle or even safe
  - Also doesn’t mean always ineffective or unproven
  - Need to know risk of interactions and contaminants
  - Herbs can be parsimonious - one herb can treat multiple problems (ie, gingko for tinnitus and memory)

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A Partial List of Interactions

### Important potential interactions between herbal preparations and conventional drugs

<table>
<thead>
<tr>
<th>Herb</th>
<th>Conventional Drug</th>
<th>Potential Problem</th>
</tr>
</thead>
<tbody>
<tr>
<td>Echinacea used for &gt; 8 weeks</td>
<td>Anabolic steroids, methotrexate, amiodarone, ketoconazole</td>
<td>Hepatotoxicity</td>
</tr>
<tr>
<td>Feverfew</td>
<td>Non-steroidal anti-inflammatory drugs</td>
<td>Inhibition of herbal effect</td>
</tr>
<tr>
<td>Feverfew, garlic, ginseng, gingko, ginger</td>
<td>Warfarin</td>
<td>Altered bleeding time</td>
</tr>
<tr>
<td>Ginseng</td>
<td>Phentolamine sulphate</td>
<td>Headache, tremulousness, manic episodes</td>
</tr>
<tr>
<td>Ginseng</td>
<td>Oestrogens, corticosteroids</td>
<td>Additive effects</td>
</tr>
<tr>
<td>St John's wort</td>
<td>Monoamine oxidase inhibitor and serotonin reuptake inhibitor antidepressants</td>
<td>Mechanism of herbal effect uncertain. Insufficient evidence of safety with concomitant use - therefore not advised</td>
</tr>
<tr>
<td>Valerian</td>
<td>Barbiturates</td>
<td>Additive effects, excessive sedation</td>
</tr>
<tr>
<td>Kyushin, liquorice, plantain, uzara root, hawthorn, ginseng</td>
<td>Digoxin</td>
<td>Interference with pharmacodynamics and drug level monitoring</td>
</tr>
<tr>
<td>Evening primrose oil, borage</td>
<td>Anticonvulsants</td>
<td>Lowered seizure threshold</td>
</tr>
<tr>
<td>Shankapulshi (Ayurvedic preparation)</td>
<td>Phenytoin</td>
<td>Reduced drug levels, inhibition of drug effect</td>
</tr>
<tr>
<td>Kava</td>
<td>Benzodiazepines</td>
<td>Additive sedative effects, coma</td>
</tr>
<tr>
<td>Echinacea, zinc (immunostimulants)</td>
<td>Immunosuppressants (such as corticosteroids, cyclosporin)</td>
<td>Antagonistic effects</td>
</tr>
<tr>
<td>St John’s wort, saw palmetto</td>
<td>Iron</td>
<td>Tannic acid content of herbs may limit iron absorption</td>
</tr>
<tr>
<td>Kelp</td>
<td>Thyroxine</td>
<td>Iodine content of herb may interfere with thyroid replacement</td>
</tr>
<tr>
<td>Liquorice</td>
<td>Spironolactone</td>
<td>Antagonism of diuretic effect</td>
</tr>
<tr>
<td>Karela, ginseng</td>
<td>Insulin, sulphonylureas, biguanides</td>
<td>Altered glucose concentrations. These herbs should not be prescribed in diabetic patients</td>
</tr>
</tbody>
</table>

Adapted from: Miller LG. Arch Intern Med. 1998;158:2200-2211.
A Better List of Interactions

Described Mechanisms

- Absorption
  - Inhibition of drug transport
- Distribution
  - Protein binding
- Metabolism
  - Pharmacokinetic involving Cytochrome p450
- Pharmodynamic Interactions
  - Synergic or antagonist activity


Foods and Herbs that Interact with Blood Thinners

Herbs
- chamomile
- echinacea
- clove
- evening primrose oil
- dong quai
- licorice
- ginseng
- gingko biloba
- goldenseal
- willow bark

Foods
- cabbage
- brussels sprouts
- broccoli
- asparagus
- endive
- kale
- lettuce
- spinach
- mustard greens
- turnip greens
- collard greens
Adulteration and Contaminants

Contaminants
- Toxic element contamination above preferred daily endpoints for mercury, cadmium, lead, arsenic, or aluminum
- Products manufactured in China generally had higher levels of mercury and aluminum
- 83 of 260 (32%) had heavy metals or undeclared drugs

Adulterants
- Chuifong Toukuwan (1974-95)
  - Phenylbutazone, indomethacin, dexamethasone, HCTZ, diazepam, diclofenac, and more
- 7% of 243 products had undeclared ingredients
- Ephedrine, chlorpheniramine, analogues of amphetamine and sildenafil, methyltestosterone, phenacetin
- OxyElite Pro (2013) contains aegeline
  - 97 cases of severe hepatitis or liver failure

Herbs and Supplements

- Providers: Whom to Trust?
- Consider a ND or an Herbalist
  - American Herbalist Guild
  - American Association of Naturopathic Physicians
    - Or learn a supplement or herb yourself one at a time
- To begin, avoid high risk populations (pregnant, renal or hepatic failure, children, the frail, on multiple drugs or drugs with narrow therapeutic windows)

Herbs and Supplements

- To start:
  - Pick well studied herbs
  - Use reliable sources for information
  - Prefer to chose therapeutic areas where current allopathic therapy is either not effective or toxic or expensive or a pain
  - Recommend reputable brands with standardized extracts (this is controversial)

Standardized Extract (SE) vs. Whole Herb Extracts Debate

- Applies to “full” extracts, not whole chopped herbs
- SE ensures that the studied amount of the active ingredient ie, milk thistle with 80% silymarin, or ginkgo with 24% flavoglycosides
- If not standardized, subject to wide variation in potency
- But traditional herbalist argue that the main active ingredient is not the whole story
- Turns the “subtle and complex” herb into more of an allopathic “drug”

“Squeezing our plants into isolated elements is not herbalism.”

Mimi Kamp, Arizona
Advice I give to my patients about taking herbs:

Best to grow your own herbs in your garden, but if not:

1. Don’t buy whole dried herbs from bins or jars in store. Probably worthless as they deteriorate rapidly when exposed to air, light, and moisture (but OK if fresh picked from your garden)
2. Avoid powdered capsules of herbs because when plants are ground into powders, they’re exposed to oxidation
3. Buy reputable brands that state the purity of their ingredients
4. Look for organic herbs or those that have been “wildcrafted”
5. Use caution when buying Chinese herbs. Buy only from reputable sources and not those that do not list ingredients
6. Check with Consumer Lab if any concerns

Growing your Own

- Best for medicinal: Horizon Herbs
- Best for vegetable gardening: Baker Creek Heirloom Seeds
- Easy to get / available at Armstrong Garden Centers: Botanical Interests

Horizon Herbs®. https://www.horizonherbs.com/
Botanical Interests®. https://botanicalinterests.com/
The New Medicines?

Horse Chestnut Seed Extract

- Used mostly for chronic venous insufficiency (CVI), but also hemorrhoids and hearing loss

- Cochrane review of 7 RCTs for CVI:
  - “The evidence presented suggests that HCSE is an efficacious and safe short-term treatment for CVI”

- Use standardized extract 20% aescin for a total of 50 mg of aescin bid

- Avoid in pregnancy and with anticoagulants

### Red Yeast Rice
*(Monascus purpureas)*

- Used since Tang dynasty of 800 CE
- Contains many monacolins known to inhibit cholesterol synthesis including “monacolin K,” a potent inhibitor of HMG-CoA reductase, also known as lovastatin (Mevacor)
- Natural source of statins, but unlike pharmaceuticals, it has a mix of compounds
- Multiple positive RCTs since 1970s
- 2014: Mayo Clinic review gives strong evidence of efficacy of lowering lipids and evidence of lowering CAD

### Red Yeast Rice
*(Monascus purpureas)*

- BUT in 1998 FDA banned leading brand because it was an “unapproved drug”
- Only approved now if contains no monacolins
- 2011 Consumer Lab found some brands still contain lovastatin (so either legal or effective, but probably not both)
- Usual dose 1200 mg bid or 2400 hs
- Concern re: Mycotoxin citrinin (kidney toxin)
- Interactions: Cytochrome P450 and anticoagulants

**Antioxidants**

- 78 RCTs of almost 300,000 patients
  - An increased risk of mortality was associated with beta-carotene and possibly vitamin E and vitamin A, but was not associated with the use of vitamin C or selenium
  - The current evidence does not support the use of antioxidant supplements in the general population or in patients with various diseases


**Effects of Nutritional Supplements and Diet on CVS Outcomes**

- Nine systematic reviews and 4 new RCTs were selected that encompassed a total of 277 trials, 24 interventions, and 992,129 participants for a total of 105 meta-analyses
  - Reduced salt intake, omega-3 LC-PUFA use, and folate supplementation could reduce risk for some cardiovascular outcomes in adults
  - Combined calcium plus Vit. D may increase risk for stroke
  - Vit. B6, Vit. A, multivitamins, antioxidants, and iron and dietary interventions, such as reduced fat intake had no significant effect on mortality or cardiovascular disease outcomes

Acupuncture

- Evidence of use 5,000 years ago
- Key part of Traditional Chinese Medicine (TCM) that has to do with flow of qi (chi) through meridians
- No scientific evidence of qi, but can still use it effectively without a TCM approach
- Evidence is very mixed, some studies showing better results with sham versus real acupuncture
- Adverse events are very rare and usually minor
Acupuncture (AC) in Low Back Pain

- NHS review of 23 RCTs with over 6,000 patients
  - AC vs. no RX: moderate short term pain relief
  - AC vs. sham AC: no evidence of benefit
  - AC plus conventional Rx vs. conventional Rx alone: strong evidence for pain relief
  - Conflicting results for AC vs. conventional Rx
  - Conflicting results for AC plus conventional Rx vs. sham AC vs. conventional Rx

**Conclusions:** Only AC versus no treatment and AC as an adjunct to conventional care should be supported for treatment of low back pain


Energy Medicine
### Reiki, Therapeutic Touch, Healing Touch

- Founded by Reiki in 1922
- Detects and moves life force (ki or qi) to heal without or just lightly touching the patient
- American Cancer Society
  - “Available scientific evidence at this time does not support claims that Reiki can help treat cancer or any other illness”
- NCCAM
  - “Overall, these therapies have impressive anecdotal evidence, but none has been proven scientifically to be effective”
- Cochrane Review: 24 studies; 1,153 patients
  - May have a modest effect in pain relief

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### Mind Body Medicine
Mindfulness Meditation Based Stress Reduction (MBSR)

- 90 cancer patients randomly assigned to either wait list or completed a 7 week group and at home meditations (MBSR)

**RESULTS**

- MBSR group had 65% less total mood disturbance and significant improvements on subscales of depression, anxiety, anger, confusion, and vigor when compared to controls
- May have slight selection bias as the dropouts were more anxious, depressed, and stressed
- No clear data in trials on improved survival


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**Yoga**

- 20,000,000 practitioners in the US
- Ancient Indian practice that can focus on mindfulness, breathing, and physical movements
- 10 RCTs with 973 patients: showed benefit for both short and long relief of low back pain\(^1\)
- Systemic review: no help with asthma\(^2\)
- 8 RCTs: inadequate to determine effect on anxiety\(^3\)

\(^2\) NIH. NCCAM. *Yoga for Health*. http://nccam.nih.gov/health/yoga/introduction.htm
Tai Chi

- Tai Chi is an ancient Chinese tradition that is a slow graceful exercise accompanied by deep breathing
- Trial comparing 6 months of stretching with Tai Chi in the elderly to prevent falls
- RESULTS
  - Fewer falls (n = 38 vs 73; p = 0.007), lower percent fallers (28% vs 46%; p = 0.01), fewer injurious falls (7% vs 18%; p = 0.03) Tai Chi group
- 12 week single arm trial
- RESULTS
  - Improved anxiety, hypertension, and lipids


Manipulative
Massage Therapy

- Manipulation of superficial and deep tissues to decrease muscle activity, to inhibit motor-neuron excitability, to stretch and to relax
- Approximately $6 billion spent in 2009
- 3 RCTs: effective and cost saving for low back pain\(^1\)
- 50% improvement for 48 hrs in cancer patients’ pain, fatigue, stress/anxiety, nausea, depression, and “other”\(^2\)

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Alternative Systems of Medicine
Homeopathy

- Hahnemann in 1796: “Like cures like”
  - Logarithmic dilutions, successions, and provings
- 40 RCTs reviewed: no evidence of effect\(^1\)
- 2 small studies from 1970s suggests a possible benefit with the remedy asafoetida over placebo for people with IBS-C\(^2\)
- Small RCT in India showed quicker response and fewer antibiotics for AOM\(^3\)

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Sir William Osler

“The good physician treats the disease; the great physician treats the patient who has the disease.”

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Key Takeaways

- Your patients are using Complementary and Integrative Medicine (CIM)
  - So we need to know about it
- Your patients aren’t telling you about their use of CIM
  - Ask direct nonjudgmental questions about use
- The CIM they are using can have significant risks and benefits
  - Be judgmental in counseling them about their use