Beyond the Prescription Pad:
Approaches to Anxiety

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Patient case
Anxiety incidence

- Anxiety disorders are extremely common
  - 40 million American adults per year (18% of our total population)

- Children and adolescents rate ranges from 2-24%
  - most common anxiety disorders in children are Generalized Anxiety Disorder and Social Anxiety Disorder

Anxiety Diagnoses

- Generalized anxiety disorder (GAD)
- Panic attacks
- Phobias
- Obsessive-compulsive disorder
- Post-traumatic stress disorder
Creating an Integrative Treatment Plan

1. Screen for medical conditions that mimic anxiety
2. Investigate and adjust or remove medications or supplements that could be contributing to anxiety
3. Initiate lifestyle changes
4. Explore mind-body approaches
5. Discuss risks and benefits
<table>
<thead>
<tr>
<th>Could it be something else?</th>
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<tbody>
<tr>
<td>Hypo- or hyperthyroidism</td>
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<tr>
<td>Vestibular dysfunction</td>
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<td>Congestive heart failure</td>
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<td>Cardiac arrhythmia</td>
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<td>Chronic obstructive pulmonary disease</td>
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<td>Pneumonia</td>
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<td>Hyperventilation</td>
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<td>Vitamin B12 deficiency</td>
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<td>Porphyria</td>
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<td>Neoplasms</td>
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<td>Pulmonary embolism</td>
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<td>Pheochromocytoma</td>
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<td>Hyperadrenalism</td>
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<td>Overdose</td>
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<td><em>(methamphetamine, cocaine, stimulant medication)</em></td>
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<td>Lead toxicity</td>
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<td>Pesticide exposure</td>
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Medication or Supplement Side Effects

- Sympathomimetics
- Beta agonists
- Corticosteroids
- Thyroid hormones
- Estrogen, or oral contraceptives in sensitive patients
- Stimulant or non-stimulant drugs to treat ADHD
- OTC medications that contain large amounts of caffeine
- Coffee, tea, colas, and energy beverages: Red Bull, 5-Hour Energy, AMP Energy, Full Throttle, Monster, Rockstar, etc.
Conventional Therapy

- Medications
- Benzodiazepines
- SSRIs/SNRIs
- Beta blockers
- Psychotherapy
Limitations of existing medications

- Benzodiazepines
  - Addiction
  - Dependence
  - Hard to wean off
  - Falls
  - Cognitive changes
  - Long term ineffective

- Anti-depressants
  - Transient headache and nausea
  - Drowsiness
  - Agitation
  - Weight gain
  - Anorgasmia
Psychotherapy

- Cognitive Behavioral Therapy (CBT)

- persons with GAD tend overestimate and catastrophize negative events; show limited confidence in problem solving; and have a low tolerance of uncertainty

- CBT: uses cognitive skills that encourage evidence-based thinking, which lessen attentional biases to threat. CBT encourages a problem-coping focus, as well as behavioral skills for enhanced decision making and time management

Non-pharmaceutical approaches

- Physical activity
- Address diet
- Mind Body Approaches
- Improve sleep
- Consider Supplements and Botanicals
- Consider traditional Chinese medicine or massage
Exercise

- Mechanisms are still under investigation
- May be mediated through neurobiological adaptations
- Increased availability of neurotransmitters including serotonin and dopamine
- Positive effects on HPA axis reactivity to stressors
Aerobic Exercise Training

- 242 women with breast cancer randomized to wait list, resistance training, or aerobic exercise training concomitant with chemotherapy

Results:

- Aerobic group reported significantly lower anxiety
- Patients who continued combined resistance/aerobic exercise training program after treatment period experienced continuing improvements in quality of life and reduction in anxiety

Yoga for anxiety

- 9 women enrolled in an 8-week, 90 min twice weekly lyengar yoga program vs wait list group
  - evaluated diurnal salivary cortisol levels, emotional well-being, and fatigue
  - yoga group had lower cortisol levels, improved emotional well being, and reduced fatigue scores
- 3-month biweekly yoga program with 200 breast cancer survivors:
  - significant improvements in fatigue, vitality and inflammatory markers (i.e., IL-6, IL-1B, TNF~a) compared to wait list control

Shinrin-yoku or Forest Bathing

Tai Chi

- Study of 38 adults –
  - 20-min Tai chi/yoga class
    - standing Tai chi movements, balancing poses and a short Tai chi form and 10 min of standing, sitting and lying down yoga poses
  - State Anxiety Inventory pre/post 20 minute Tai Chi class combined with yoga
  - Overall increase in EEG theta activity
  - Reduction in self reported anxiety symptoms

Tai chi

- Meta-analysis of 40 studies totaling 3,817 subjects
  - 29 psychological measurements
  - 21 of 33 randomized and nonrandomized trials reported that 1 hour to 1 year of regular Tai Chi significantly increased psychological well-being including reduction of stress (ES, 0.66; CI, 0.23 to 1.09), anxiety (ES, 0.66; CI, 0.29 to 1.03), and depression (ES, 0.56; CI, 0.31 to 0.80), and enhanced mood (ES, 0.45; CI, 0.20 to 0.69)
  - 7 observational studies: beneficial association between tai chi and psychological health

Fleeing Syria / Peyton Power / Steve McQueen

THE MINDFUL
REVOLUTION

The science of finding focus in a stressed-out, multitasking culture by Tara Parker
“Mindfulness means paying attention in a particular way; on purpose, in the present moment and non-judgmentally.”

Jon Kabat-Zinn
Mindfulness and IBS Relief

- Prospective trial of 93 participants in MBSR

- Assessed: Rome III IBS status, bowel symptoms (IBS-Severity Scoring System, IBS-SSS), IBS-Quality of Life (IBS-QOL), GI-specific anxiety (Visceral Sensitivity Index, VSI), mindfulness (Five Facet Mindfulness Questionnaire-FFMQ), and functional status (SF-8) at baseline and 2 and 6 months after enrollment

- There was a significant correlation between the change in VSI and the change in FFMQ across the three time periods (r = 0.33)

Guided imagery

http://www.healthjourneys.com/kaiser/panicAttacks_flash.asp

https://healthy.kaiserpermanente.org/health/care/!ut/p/ao/FchBDoMgEADAt_iAzYZEYfFmhH6hhdsGiZlGELt99seZ9DjC33hO-3cUy18_uxCILD22md9bqnCnLVZ8okd_Nd4zoysVAocj_o9bTG-M6lzVap2MBamlBCGsgEWPBohoUkKp8UErXjnTZxmgL2IKPpl!/
Guided Imagery

- A directed daydream
- Immersive multi-sensory experience that creates a receptive state
- Targeted goal-directed healing experience
65 breast cancer patients randomly assigned to the experimental (n = 32) or control group (n = 33)

- Both groups received chemotherapy self-care education
- Experimental group also received guided imagery training

The training on relaxation with guided imagery was conducted before chemotherapy, and the patients were supplied with a guided imagery CD, to be listened to for 20 minutes daily for 7 days post chemotherapy.

Experimental group showed significant decreases in insomnia (-0.34 ± 0.83, P < 0.05), pain (-0.28 ± 0.58, P < 0.05), anxiety (-3.56 ± 2.94, P < 0.00), and depression (-2.38 ± 2.70, P < 0.00) between the pre and post test.

Comparing the two groups, statistically significant differences were found in overall symptom distress (B = 0.11, P < 0.05), insomnia (B = 0.50, P < 0.05), depression (B = 0.38, P < 0.05), and physical numbness (B = 0.38, P < 0.05), as well as in anxiety (B = 3.08, P < 0.00) and depression (B = 1.86, P < 0.00) in psychological distress.
Relaxing Breath

1. Place tip of tongue against ridge on roof of mouth
2. Exhale completely through mouth, making a “whoosh” sound
3. Inhale deeply through nose to count of 4
4. Hold breath for count of 7
5. Exhale through mouth to count of 8
6. Repeat 3, 4, and 5 for a total of 4 breaths
Metta meditation

May I be safe
May I be peaceful
May I be healthy
May I take care of myself easily
May you be safe …
May all beings be safe …
Impact of Diet on Anxiety
You eat a protein rich meal

You have more energy and feel more alert

dopamine is stored in nerve cells or converted to norepinephrine (with help of vitamin C)

Your blood levels of tyrosine rise which leads to a rise in brain levels of tyrosine

elevated brain tyrosine leads to elevated dopamine levels (in presence of vitamin B6 and magnesium)
You eat a carbohydrate rich meal which leads to release of insulin by the pancreas.

Blood levels of all amino acids (except tryptophan) drop as the amino acids enter muscle cells.

Tryptophan levels remain high in your blood and easily enters the brain.

Tryptophan (in presence of vitamins B6, B12 and folic acid) is converted into serotonin.

High levels of serotonin lead you to feel calm and your mood improves.
Microbiome and Anxiety

- 25 healthy women: half ate a cup of commercially available yogurt twice a day for 4 weeks,
  - Yogurt contained strains of four species, *bifidobacterium*, *streptococcus*, *lactococcus*, and *lactobacillus*
  - fMRI performed pre and post yogurt exposure to gauge women’s response to a series of images of facial expressions
  - the yogurt eaters reacted significantly more calmly to the images than the control group

“Enjoy the honey heaven dew of slumber”  Shakespeare

“Sleep is a criminal waste of time and a heritage from our cave days.”  Edison
Sleep deprivation

- Sleep data
  - 1950s – average 8 hours
  - 2013 average 6.5 hours
  - Teenagers need 9 hours – average teen get 5 hours
  - Shift workers – circadian rhythm doesn’t adjust
<table>
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<tr>
<th>Increases</th>
<th>Reduces</th>
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<tr>
<td>Concentration</td>
<td>Mood change</td>
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<td>Attention</td>
<td>Stress</td>
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<td>Decision-making</td>
<td>Anger</td>
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<td>Creativity</td>
<td>Impulsivity</td>
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<tr>
<td>Social skills</td>
<td></td>
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<tr>
<td>Health</td>
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Supplements:
Choosing supplements

- DSHEA
- Evidence
- Quality
- Safety
B vitamins - 5 RCTs of high dose B vitamins in both healthy and stressed adults – all showed reduced stress, anxiety, and depression

Conclusion: there is sufficient evidence to support the use of high dose B vitamins in the treatment of stress and anxiety in the general population

Inositol

- Part of the vitamin B-complex
- Is required for formation of cell membranes and is important for nerve transmission
- Small studies for the treatment of anxiety associated with menopause and for benzodiazepine withdrawal
- Studies used up to 20 g/day. Buy the powder (not 500 mg capsules) mix into water or juice

Cochrane Review: kava extracts standardized to 70% kavalactones (approximately twice the concentration usually found in OTC supplements) were superior to placebo for the treatment of anxiety.

Small studies of kava supplements in anxiety associated with menopause and to aid in benzodiazepine withdrawal.

Safety issues: Serious questions regarding kava's safety were raised after case reports suggested that it might cause liver damage. Check LFTs.

Rhodiola (*Rhodiola rosea*)

- Herbal supplement widely used to alleviate everyday anxiety, depression, and insomnia.
- UCLA pilot study - 10 people with GAD
  - 340 mg rhodiola extract daily for 10 weeks
  - Significant reductions in Hamilton Anxiety Rating Scale
  - Well tolerated (side effects: dizziness and dry mouth)

Chamomile (*Matricaria recutita*)

- 57 patients with mild to moderate generalized anxiety disorder (28 treatment group, 29 controls)
- Chamomile capsules containing 220 mg extract from *Matricaria recutita*, standardized to 1.2 percent apigenin, or placebo
- The treatment group showed greater reduction in mean Hamilton Anxiety Rating-A ($p=0.047$)
- Minimal side effects

1 Nov, 2010
Aug, 2009
Other Strategies
Traditional Chinese Medicine
Acupuncture for Anxiety

- A narrative review of acupuncture as a treatment of anxiety found consistent improvements following both regular acupuncture and electro-acupuncture.

- A meta-analysis reviewing literature suggests a substantial positive effect for the use of acupuncture in anxiety, although variable study design and needle placement patterns preclude a conclusive endorsement.

- RCT of uniform acupuncture treatment for pre-exam anxiety in 60 students showed a strong beneficial effect using a protocol of three 30-minute treatments.

Errington-Evans N. Acupuncture for Anxiety. CNS neuroscience & therapeutics Jun, 2011
Massage

- Massage is one of the oldest of health practices, included in Chinese medical texts written 4,000 years ago.
- Hippocrates advocated massage in the 4th century BC
- Resurgence of interest in the 1970's
Systematic review of 6 studies of 1,558 patients review using massage for pain and anxiety reduction in oncology patients receiving palliative care

- Reduction of pain perception statistically significant in massage patients; effect sustained for up to 18 hours
- Massage significantly associated with reduction in anxiety
- Full body massage more beneficial than foot massage

68 subjects with GAD randomized to massage (23), thermotherapy (22), or relaxing room therapy (23) for 10 sessions over 12 weeks

- Measurement of anxiety, depression, and GAD at baseline, post-treatment course, and at 6 months out. All groups experienced symptom improvement

80 post-CABG patients – randomized to 4 days of foot reflexology massage for 20 minutes per day versus 1 minute of gentle foot rub with oil

- Significant decreases in anxiety symptoms in the reflexology group

Aromatherapy
Can you Reframe the Anxiety?

- Stirred up
- Excited
- Stimulated
- Engaged
“You should sit in meditation for 20 minutes every day – unless you are too busy; then you should sit for an hour.”

Zen proverb