Stressed out!
The science and practice of stress management

Bonnie A. McGregor, Ph.D.
Cancer survivors’ beliefs about cancer causes

Costanzo, et al., 2005

Stewart et al., 2001
“With all we know about how stress aggravates cardiovascular disease, promotes viral infections, exacerbates metabolic diseases, and modulates the normal function of virtually every cell in the body, why would cancer cells be exempt?”

--Steven Cole, Ph.D., UCLA, Bulletin of the National Cancer Institute, October 2006
Life events predicting occurrence:

+ Chen et al., BMJ 1995,
- Maunsell et al., Psychosomatic Med. 2001
+/- Price et al., Cancer 2001
  Michael et al., Health Psych. 2009

Psychosocial Interventions and survival:

- Goodwin et al., NEJM 2001
+ Andersen et al., Cancer 2008
How stressed are you right now?
Take a deep breath...
How stressed are you right now?

0  10
What is stress?
What is stress?

The physical, mental, or emotional tension experienced in reaction to an event.
What is stress?

• Typically experienced when we perceive demands exceeding our resources
What is stress?

• Typically experienced when we perceive demands exceeding our resources
What is stress – caveats…

• The more time you spend feeling stressed, the more responsive you are to stress.

• ↑ cortisol causes ↑ amygdala activation
THE STRESS RESPONSE CURVE

- Good Stress
- Distress

Stress Management Increasing
The Performance Level

- Actual Performance
- Fatigue
- Exhaustion
- ILL-Health
- Breakdown

Adapted from Nixon P, Practitioner, 1979

AROUSAL STRESS

Perfomance
COGNITIVE APPRAISAL OF STRESSOR

STRESSOR

Challenge or acute stress

Threat or chronic stress

Health Outcomes

Efficient allostasis
Physical thriving

Allostatic load
Disease

From Epel, McEwan, and Ickovics, 1998
Effects of chronic stress

- Increased vulnerability to common cold
- Slower wound healing
- General decrements in immune function
- High blood pressure and high cholesterol
- Heart disease
- Weight gain (central fat storage)
- Poor control of blood sugar among diabetics
- Poor health behaviors (e.g., diet, smoking, no exercise)
- Shortened telomeres and telomerase activity
- DNA damage and poor repair
- Increased VEGF production and vascularization of tumor cells
- Increased rates of tumor cell metastases
Effects of chronic stress

Before work

After work
Bio Behavioral cancer risk factors

- Increased vulnerability to common cold
- Slower wound healing
- General decrements in immune function
- High blood pressure and high cholesterol
- Heart disease
- Weight gain (central fat storage)
- Poor control of blood sugar among diabetics
- Poor health behaviors (e.g., diet, smoking, no exercise)
- Shortened telomeres and telomerase activity
- DNA damage and poor repair
- Increased VEGF production and vascularization of tumor cells
- Increased rates of tumor cell metastases
Psychological Stress (HPA, SNS)

- ↑ Smoking
- ↑ Fat consumption
- ↑ ETOH
- ↓ Exercise
- ↑ BMI

DNA changes
- ↑ DNA damage
- ↓ DNA repair
- ↓ Telomere length
- ↓ Telomerase activity

Immune system
- Cellular & antibody responses

VEGF Production

Poor health behaviors

Cancer phenotype e.g. MUC1

Tumor vascularization

Metastases
Are you stressed yet?

Take a deep breath....
Psychological Stress (HPA, SNS)

Psychological Intervention

↑ Smoking
↑ Fat consumption
↑ ETOH
↓ Exercise
↑ BMI

DNA changes

↑ DNA damage
↓ DNA repair
↓ Telomere length
↓ Telomerase activity

Immune system
Cellular & antibody responses

VEGF Production

poor health behaviors

cancer phenotype e.g. MUC1

Tumor vascularization

Metastases
How can we manage stress?

“Try these relaxation methods. If they don’t work, I’ll prescribe a tranquilizer dart.”
How can we manage stress?

- Decrease perceived demands
- Increase perceived resources
step 1. Increase Awareness:

How do you know when you are stressed?
Symptoms of stress

- Hostility
- Resentment
- Headaches
- Backaches
- Ulcers
- Muscle Spasms
- Sleeping Difficulties
- Depression
- Drinking/Drug Use
- Irritability
- Fears
- Neck Aches
- Anger
- Irritable Bowel
- Muscle Tension
- Indigestion
- Constipation
- Poor Concentration
- Obesity
- Low Self Esteem
- Chronic Diarrhea
- Insomnia
- Physical Weakness
- Withdrawal
Symptoms of stress

Stressful situation

- cognitive
- emotional
- behavioral
- physical
- social
Thoughts determine feelings
Imagine a lemon
Symptoms of stress

Stressful situation

cognitive

emotional

behavioral

physical

social
Symptoms of stress

Stressful situation

Automatic thoughts

- cognitive
- emotional
- behavioral
- physical
- social
Symptoms of stress

- Stressful situation
- Automatic thoughts
  - Cognitive
  - Emotional
  - Behavioral
  - Physical
  - Social

Challenge
Step 3: Coping with stress

- Problem focused coping
  - Ask for help
  - Get more information

- Emotion focused coping
  - Talk to a friend
  - Relaxation practice
Coping with stress

- Exercise
- Yoga
- Social support
- Meditation
"That's part of our in-house, stress management program..."
Mindfulness and Stress

• Staying present in the moment reduces stress

• Living in the past or future brings the past and future demands into the present – adding to your perception of stress in this moment

• Planning is good, but when you plan, just plan, then execute your plan moment by moment.

• Multi-tasking is less efficient than doing one thing at a time
Cognitive Behavioral Stress Management And Relaxation Training for Health
Stress and Awareness
Automatic Thoughts and Cognitive Distortions
Cognitive Restructuring
Coping Strategies
Social Support
Anger Management
Assertiveness Training
Relaxation training
CBSM effects on distress

Antoni et al. (2006) *Amer J. Psychiatry*


**Graphs:**
- **CBSM effects on distress**
  - Negative Affect (ABS)
  - Thought Intrusion (IES)
  - Rated Anxiety (Hamilton)
Emotional Distress: Relaxation Use

(Andersen et al., under review)
Change in proliferative response T1 – T3

McGregor et al., 2004
Changes in gene transcription

CBSM associated with decreased recurrence

- Early stage breast ca
- 11 year follow up
- HR .45

Fig. 4 Disease-free interval difference in study groups. Differences between study groups (CBSM vs. control) with Weibull accelerated failure time models on disease-free interval controlling for covariates: age, stage of disease, HER2/neu, endocrine therapy, and tumor size. “Cumulative Survival” indicates disease-free interval

CBSM associated with improved survival

- Early stage breast ca
- 11 year follow up
- HR .25

Fig. 3 Breast cancer-specific survival difference in study groups. Differences between study groups (CBSM vs. control) with Cox proportional hazards models on time to breast cancer-specific mortality controlling for covariates: age, HER2/neu, endocrine therapy, and tumor size.
Psychological Intervention associated with 45% Reduced Risk of Breast Cancer Recurrence
Anderson et al. 2008

- Stage 1-3 breast cancer
- 4 mo intervention
  - 8 booster sessions
- 11 year follow up
60% Reduced Risk of Breast Cancer Death
Anderson et al. 2008

- Stage 1-3 breast ca
- 4 mo intervention
  - 8 booster sessions
- 11 year follow up
Psychological Interventions

- Promote better management of stressors
- Reduce distress, anxiety, depressed mood
- Enhance quality of life
- Enhance emotional growth
- Improve immune function
- May improve survival
The next Generation of Intervention
Mindfulness Enhanced Cognitive Stress Management for Ovarian Cancer Survivors.
How can we manage stress?
ANTI-STRESS KIT

Instructions
1. Place on firm surface.
2. Follow directions provided in circle.
3. Repeat until you are anti-stressed or become unconscious.

BANG HEAD HERE
• CBSM and Psychotherapy
• Naturopathic Medicine
• Acupuncture
• Oncology Massage
• And much more…