

Respite Care - Medical Aspects

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The Relationship Between Stress and Illness

- Why Respite?
- Stress on Caretakers
- Why Should Society Care?

Caretakers without Respite
= Chronic Stress!!

Importance of Stress and Stress Response

- **Patients**
 - | Relationship to illness and healing
- **Families**
 - | Role of caretakers, decision makers

Definitions

- Stress characterizes a discrepancy between the demands impinging on a person and the individual's potential responses to these demands
 - | Acute stress - Major events which provoke the flight or fight response
 - | Chronic stress - Cumulative load of minor stresses

Frequent Acute Stress

- Normal stress response repeated over time
- Exposure to a stress "dense" environment
 - Job related - air traffic controllers
 - Environmental - Inner city violence
 - Personal - Social/family disorganization
 - | Research - Repeated elevations of blood pressure in primates in response to societal disorganization accelerate atherosclerosis

Lack of Adaptation to Repeated Stress

- Lack of adaptation to repeated stressors of the same type
- Prolonged exposure to stress hormones
- Function of individual's adaptive ability
- Accounts for different responses to similar environmental stresses
 - Research - Stress hormones increases in some but not all individuals exposed to a repeated public speaking challenge Kirschbaum Psychosom Med 1995;57,468-74

Prolonged stress response

- █ Failure to turn off the Hypothalamic Pituitary axis and sympathetic activity after stress
- █ Function of individual responses and possibly aging
 - █ Research - Elevation of blood pressure fails to normalize in some individuals after acute arithmetic test GerIn 1995 J Hypertens 13:603-10

Inadequate stress response

- █ Inadequate responses by some stress response systems trigger compensatory increases in others
- █ If cortisol secretion in response to stress is inadequate secretion of inflammatory cytokines which are counterregulated by cortisol increases
 - █ Research- Rats genetically hyporesponsive to stress have increased susceptibility to autoimmune and inflammatory disturbances (SternbergProc Natl Acad Sci 1989;86:4771)

Major Systems Affected by Stress and Stress Response

- █ Hypothalamic Pituitary Adrenal Axis
- █ Cardiovascular
- █ Immunologic
- █ Neurologic
- █ Dermatologic

Hypothalamic Pituitary Axis

- █ Activation essential for successful adaptation to short-term stress
- █ Long term activation linked to increased cardiovascular disease, diabetes, hypertension, and cancer.

Stress induces Hypothalamic -Pituitary Axis (HPA) Activation

- █ ↑ glucocorticoid levels
- █ ↑ serum glucose and lipid levels
- █ ↑ cardiovascular tone
- █ ↑ immunosuppression

The Connection Between Stress and Illness

- █ Animal models:
 - █ Disruption of the social hierarchy within a mouse colony caused increased aggression among cohorts of mice.
 - █ This was associated with activation of the HPA axis and reactivation of latent herpes simplex virus infection in 41.7% of the stressed mice, compared to none of the controls.

• Padgett, Sheridan et al, Proc Natl Acad Sci USA. 1998;9:7231-5

Immunologic Effects of Stress

- In rats injected with mammary adenocarcinoma cells and subjected to stress
 - Tumor burden increased
 - Leukocyte count decreased
 - Total T cells and suppressor T cells decreased

• Steplewski A, 1985 Ca Res 45:105:28-33

Immunologic Effects of Stress

- The anxiety and fear induced in mice by shipping, hand capturing, bleeding and routine handling by lab personnel produce typical stress reactions that activate the adrenals.
- Plasma concentrations of corticosterone increase from a normal of 40 ng/ml to over 700 ng/ml.

• Riley, Science, 1975; 189:465

The Connection Between Stress and Illness

- 80-100% of female mice of the C3H strain infected with the mammary tumor virus develop tumors within 8-18 months of birth, when studied under usual housing and experimental conditions.
- When groups of mice were provided with special housing and handling that reduced chronic stress, extended latency periods were seen before tumors developed.

The Connection Between Stress and Illness

- Under these optimal housing conditions (low noise, less handling), population density affects tumor regression.
- In female mice housed alone, the regression rate of implanted lymphosarcomas was 60%. In all other population densities (2, 3, 5, 10, 20 mice to a cage), the rate averaged 93%.

• Riley, Science, 1981; 212:1100-1109

Stress Obesity Connection

- Stress of social subordination in female monkeys has been shown to be associated with increased central fat deposition.
- Chronic uncontrollable stress resulted in increased adipocyte size and heavier fat pad in rats.

Shively CA. Acta Med Scand Suppl; 723:71-78,1988

Rebuffe-Scrive M. Physiol Behav 52:581-590,1992.

Stress and The Immune Response

- Human model: Chronically stressed populations, such as spousal caregivers of patients with Alzheimer's disease
- Two recent studies measured the immune response to influenza vaccine
- Caregivers had poorer cellular and humoral immune responses than well matched controls

Klecolt-Glaser, Proc Natl Acad Sci USA1996:93:3043-7

Vedhara, Lancet 1999;353:627-631

The Connection Between Stress and Illness

- 394 healthy subjects completed a questionnaire assessing degree of psychological stress
- They were then given nasal drops containing one of five respiratory viruses
- Infection was defined by isolation of virus or an increase in virus-specific antibody

• Cohen et al NEJM, 1991; 325:606-612

The Connection Between Stress and Illness

- Rates of respiratory infection and clinical symptoms increased in a dose response manner with increases in the degree of psychological stress.
- Not explained by personality variables (e.g. self-esteem) nor by potential stress-illness mediators like smoking or alcohol ingestion.

The Connection Between Stress and Illness

- In a second study, a life-stress interview replaced the questionnaire, allowing for specification of the type of stress associated with increased risk of infection
- Highest risk was associated with chronic events (more than a month), especially chronic social conflict, and under or unemployment

• Cohen et al, Health Psychol 1998;17:214-223

The Connection Between Social Ties and Health

- Having more diverse social networks was associated with greater resistance to upper respiratory illness
- 276 healthy volunteers reported on the extent of their participation in 12 types of social ties (spouse, parent, friend, social group)
- Subjects were then given nasal drops containing 1 of 2 rhinoviruses, and monitored for development of a cold

• Cohen et al, JAMA 1997;277:1940-4

The Connection Between Social Ties and Health

- Those with more types of social ties were less susceptible to common colds, produced less mucus and shed less virus.
- Susceptibility to colds decreased in a dose-response manner with increased diversity of the social network.
- There was a relative risk of 4.2 comparing persons with the fewest (1 to 3) to those with the most (≥ 6) types of social ties.

Cardiovascular Response to Stress

- Risk of heart attack increased in persons experiencing lack of control on the job
- Increased blood pressure and increased left ventricular mass index in persons experiencing high psychological demands and lack of control

1. Bosma BMJ 1997;314:558-65.
2. Schnell Hypoerten. 1992;19:88-94

Central Nervous System Effects of Stress and Stress Response

■ Acute stress increases cortisol secretion which suppresses the mechanisms in the hippocampus and temporal lobe involved in short term memory.

— Kirschbaum C. Life Sci 1996;58:1475-83.

■ Chronic repeated stress causes atrophy of dendrites of pyramidal hippocampal neurons.

— McEwen BS. Curr Opin Neurobiol 1995;5:205-16.

The Connection Between Social Ties and Health

■ 5,000 adults between ages of 30 and 69 completed a survey in 1965, assessing four types of social ties.

■ Population was controlled for physical health, SES, smoking, activity, race etc.

■ Being well integrated socially reduced all-cause age-adjusted mortality by half, over the following nine years.

• House et al, Science, 1988;241:540-545

Stress Reduction and Healing

■ Recent randomized studies have shown an association of psychosocial support with longer survival for patients with breast cancer, malignant melanoma and lymphoma.

■ Patients with psoriasis exposed to meditation training tapes showed more rapid healing of lesions.

• Spiegel et al, Lancet, 1989;2:888-891

• Kabat-Zinn et al, Psychosom Med, 1998;60:625

Stress Reduction and Healing

■ 112 patients with either asthma or rheumatoid arthritis were randomly assigned to write about the most stressful events of their lives or about emotionally neutral topics.

■ Asthma patients were evaluated with spirometry, arthritis patients by a rheumatologist, at 2 and 4 months.

Stress Reduction and Healing

■ Asthma patients in the experimental group showed improvement in lung function (FEV1), controls showed none.

■ Rheumatoid arthritis patients in the experimental group showed improvement in overall disease activity on a 4-point scale; controls showed no improvement.

($P < .001$)

• Smyth et al, JAMA 1999; 281:1304-9

Individual's Response to Stress

■ Genetic

■ Individual's perceptions of a situation

■ Individual's general state of physical health

Factors contributing to allostatic load

- Anticipatory anxiety
 - Salivary cortisol levels increase within 30 minutes after waking in people who are under psychological stress due to work or family matters.
- Schulz Stress Med (In press).
- Intrusive memories of a traumatic event (PTSD) can give rise to a physiologic stress response
- (Baum Psychosom Med 1993;55:274-86).
- Coping behaviors which add to stress response i.e. alcohol, inactivity, overeating.

Personal Manifestations of Stress

- **Body** - Nausea, diarrhea, headache, colds, flu, malaise, change in appetite
- **Mind** - Forgetting, having arguments, alcohol, drugs
- **Feelings** - keyed up, anxious, irritable, depressed
- **Spirit** - hopelessness, worthlessness, lack of meaning

Burnout

- Burnout is a manifestation of increased allostatic load in response to stress
- Burnout is characterized by three feelings
 - **Emotional Exhaustion** - feeling drained, not having anything to give even before the day begins
 - **Depersonalization** - feeling disconnected from other people, feeling resentful and seeing them negatively
 - **Reduced Sense of Person Accomplishment** - feeling ineffective, that the results achieved are not meaningful

Stages of Burnout

- Stage 1 - Enthusiasm
- Stage 2 - Stagnation OR overload
- Stage 3 - Frustration
- Stage 4 - Apathy

Burnout Quiz

- 1. Do you feel generally more fatigued and less energetic?
- 2. Do you feel less of a sense of satisfaction about your performance?
- 3. Are you working harder and harder but accomplishing less?
- 4. Do you feel more cynical and disenchanted with your work and the people at work?

Burnout Quiz (cont.)

- 5. Are you getting more irritable, angry, and short-tempered with people around you?
- 6. Are you seeing close friends and family members less frequently?
- 7. Are you having more than your share of physical complaints like aches, pains, headaches, colds, or the flu?
- 8. Do you feel that you just do not have anything more to give to people?

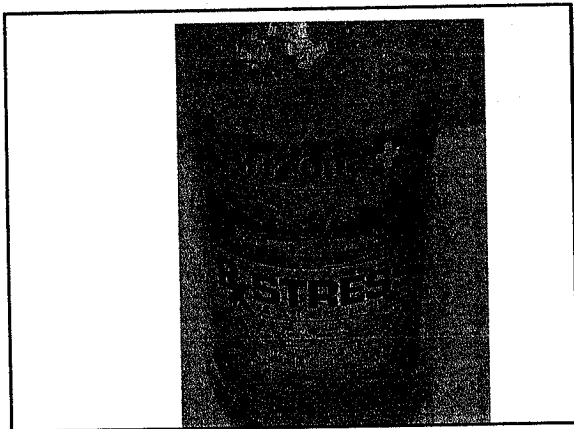
Debra L. Kamen MD

Burnout Quiz Scoring

- Give one point to each question you answered yes.
- Greater than 2 points is early stage burnout.
- Greater than 6 points is burnout.

Relaxation Response

- The physiologic response which is in general the opposite of the stress response.
 - | Increased parasympathetic activity
 - | Decreased sympathetic activity
 - | Decreased metabolism
 - Decreased heart rate, blood pressure, breathing rate, oxygen consumption and cardiac output
 - | Decreased muscular tension
 - | Increased clotting time



Relaxation Response-Individual Strategies

- Meditation
- Prayer
- Massage
- Breathing
- Guided imagery
- Focused walking
- Mindfulness

Relaxation Response-Group Strategies

- Family, social, community support
- Shared ritual
- Tai Chi class
- Nature walk
- Forgiveness
- 12-Step Fellowships
- Shared beauty

Lack of Respite = Stress!!

- Caretakers of close family members are among those with the highest amount of stress
- Chronic stress can lead to impaired immunity, cardiovascular disease and emotional exhaustion
- Caretakers need to care for themselves if they are to continue to care for others

Strategies to Relieve Stress

- Community support
- Social ties
- Relaxation activities – meditation, prayer, mindfulness, focused walking.
- Common denominator: Time, social support

THE END