

***Stress and Illness/Disease***

Chapter 3

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***Hot Reactors***

- People who overreact to stressful situations.
- Symptoms of hot reactors can include:
  - feeling anger easily
  - often becoming anxious or depressed
  - urinating frequently
  - experiencing constipation or diarrhea more often than usual
  - experiencing nausea or vomiting

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***Psychosomatic Disease***

- Diseases for which the mind makes the body more susceptible.
- Also referred to as psychophysiological disease.
- Two types of psychosomatic disease are:
  - psychogenic
  - somatogenic

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### ***Psychogenic Disease***

- Physical disease caused by emotional stress.
- The mind changes the body's physiology so that body parts break down.
- Examples of psychogenic disease include
  - ulcers
  - asthma

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### ***Somatogenic Disease***

- Physical disease caused by the mind increase the body's susceptibility to:
  - disease-causing organisms (germs).
  - natural degenerative processes.
- Examples of psychogenic disease include
  - colds and other infections
  - cancer
  - rheumatoid arthritis

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### ***Stress and the Immune System***

- **Psychoneuroimmunology** is the study of the chemical basis of communication between the mind and the body (nervous system and the immune system).

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### ***How Stress Affects the Immune System***

- Research has demonstrated that the mind can:
  - increase the body's susceptibility to disease by reducing the effectiveness of the immune system.
  - increase the healing of the body by increasing the effectiveness of the immune system.
- Poorly managed stress can negatively affect the effectiveness of the immune system.

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### ***Basic Principles of the Immune Response***

- The most important component of the immune response is the **white blood cell** (WBC).
- There are several categories of WBCs.
  - **Phagocytes**, including macrophages
  - **B-cells**, or **B-lymphocytes**
  - **T-cells**, or **T-lymphocytes**

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### ***Basic Principles of the Immune Response (cont'd)***

- **Types of T-lymphocytes**
  - Helper-T cells
  - Killer-T cells
  - Suppressor-T cells
  - Memory-T cells
- **B-cells** can also become memory cells

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## **Research Has Begun to Show That...**

- Higher stress levels tend to lower the amount of antibodies in the bloodstream.
- Depression can lower the amount of antibodies in the body.
- Neuropeptides (chemical message transmitters from the brain) attract phagocytes (macrophages) to help combat infection.
- People in stressful situations tend to have a lower quantity of T-cells.

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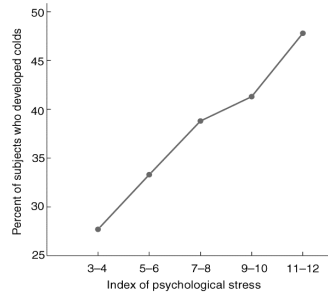
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► **Percent of Subjects with Colds as a Function of an Index of Psychological Stress**



Source: Adapted from Cohen, S., Tyrrell, D.A.J., and Smith, A.P. *New England Journal of Medicine*, 1991, 325, 606-612.

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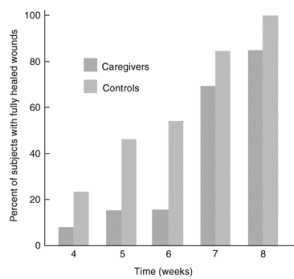
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► **Percentage of Caregivers and Control Subjects Whose Wounds Had Healed as a Function of Time After the Biopsy Was Performed**



Source: Adapted from Kiecolt-Glaser, J.K., Marucha, P.T., Malarkey, W.B., Mercado, A.M., and Glaser, R. *Lancet*, 1995, 346, 1194-1196.

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► Stimulation of White Blood Cell Production by an Antigen in Blood of Husbands Before and After Wives' Death



Source: Adapted from Schleifer, S.J., Keller, S.E., Camerino, M., Thornton, J.C., and Stein, M. *Journal of the American Medical Association*, 1993, 250, 374-377.

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### ***Stress-Related Psychosomatic Diseases***

- Hypertension (essential)
- Stroke
- Coronary Heart Disease
- Ulcers
- Migraine Headaches
- Tension Headaches
- Cancer
- Allergies
- Asthma
- Hay Fever
- Rheumatoid Arthritis
- Backache
- TMJ Syndrome

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### ***Stress and Serum Cholesterol***

- **Cholesterol** accumulates on the artery walls.
- Blocked arteries can cause:
  - coronary heart disease
  - strokes
- Stress is related to increased serum cholesterol.
- **Perception** of stressfulness is more significant than the situation itself. (perceived stress)

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## ***Hypertension & Heart Disease***

- Defining Hypertension
  - SBP & DBP / borderline & essential hypertension
  - 41% of adults (60-80 million)
  - short & long term effects
    - cerebral hemorrhage
    - heart attack (myocardial infarction)
    - plaque
- Stroke- loss of flow (oxygen) to brain
- CHD & CAD
  - arteriosclerosis & atherosclerosis
  - research of stress & CHD // Type A Behavior Pattern
  - Flanders-Dunbar, Type A, Stoney, Everson (direct vs indirect)

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## ***Ulcers & Headaches***

- Ulcers
  - salivary production, peristaltic activity & HCL
  - H. pylori- inflammatory bacteria
- Migraine Headaches (vascular)
  - prodromal symptoms (constriction phase)
  - causes: diet & personality characteristics?
- Tension Headaches (muscular)
- Backaches (muscular)

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## ***Cancer & Allergies etc***

- Cancer-
  - stress may be directly (immune system) or indirectly (behavior) related
  - Cancer prone personality?
- Allergies, Asthma & Hay Fever
  - antigens & antibodies (histamine release)
  - asthma in absence of antigens
- Rheumatoid Arthritis
  - autoimmune disease--- some personality evidence
- TMJ- bruxism & other characteristics

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### ***Posttraumatic Stress Disorder***

- A condition that develops in people who have experienced extreme psychological and/or physical event that is interpreted as particularly distressing.
  - A threat to one's life, serious injury, or being subject to horror with intense fear and helplessness.
  - Recurrent flashbacks, repeated memories and emotions, dreams, nightmares, illusions, or hallucinations related to traumatic events from which one is often amnesic.

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### ***Posttraumatic Stress Disorder***

- Most people will experience a traumatic event in their lives, and up to 25 percent of them will develop PTSD.
- People who have successfully managed PTSD have supportive relationships with family and friends, did not dwell on the trauma, had personal faith/religion, and had a sense of humor.

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