14 Stress and Cancer: An Overview

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"The cure of many diseases is unknown to physicians . . . because they are ignorant of the whole. For the part can never be well unless the whole is well."

—Plato

In recent times, there has been a substantial shift in health care toward recognition of the wisdom of Plato's creed, namely, that the mental and physical are not separate, isolated, and unrelated, but are instead vitally linked elements of a total person. Health is becoming increasingly recognized as a balance of many parts—physical and environmental factors, emotional and psychological states, nutritional habits, and exercise patterns. As part of that balance, the role of stress is well established as the cause of a broad range of disorders.

For example, it is now generally acknowledged that for heart disease—the nation's leading cause of death—emotional stress is a major risk factor, equal in importance to other such recognized risk factors as hypertension, cigarette smoking, elevated serum cholesterol level, obesity, and diabetes. Stress also has been recognized as an important risk factor in high blood pressure, ulcers, colitis, asthma, pain syndromes (e.g., migraine, cluster, and tension headaches; backaches), skin diseases, insomnia, and various psychological disorders. Most standard medical textbooks attribute anywhere from 50 to 80 percent of all disease to stress-related origins.

The role of stress in cancer is unclear. What is important for patients is that the reduction of stress may very well improve chances for recovery, improve quality of life, and provide an opportunity for greater participation in total treatment.

It should also be emphasized that stress is only one element of the mind-body balance that determines your well-being. Like a river with many tributaries flowing into it, health depends on the contribution and equilibrium of many factors. There can be no doubt that exposure to harmful substances (carcinogens) increases the incidence of cancer; but there also is evidence that genetic predisposition, exposure to radiation, and a poor diet also contribute.

The Nature of Stress

We often speak casually of stress as if its meaning was well established, but scientific study has continued to discover new meaning for the concept and attributes new importance to its role in health and disease. While the word may imply a purely mental reaction, research has shown that stress induces virtually every part of the body.

Most research has focused on the "fight-or-flight" response that the body has to threats, and on the long-term effects of chronic stress, in which the body is subjected to repeated arousal.

The fight-or-flight response has been shown to produce a wide variety of mental and physical changes. For instance, when a car swerves toward us on the highway, we may consciously feel afraid, anxious, and angry. Internally, our body is reverberating from head to toe with all the aspects of the stress response: a part of the brain called the hypothalamus stimulates the pituitary gland, which in turn activates the thyroid and adrenal glands, which quickly flood the bloodstream with adrenaline, cortisone, and other stress hormones. The entire body is affected: heart rate increases, blood pressure rises, breathing becomes faster, body muscles tighten, facial muscles constrict, pupils dilate, hearing becomes sharper, sugar is secreted into the bloodstream, blood flows to the brain and muscles and away from the stomach and intestines, the bowels and bladder relax, brain wave activity quickens, palms sweat, and hands and feet become colder as blood flows away from the skin to the brain and muscles.

In addition to its usefulness for physical survival, the fight-or-flight response carries with it an emotional safety valve: by discharging internal tension. Either in physical struggle or escape, the body first releases the built-up pressure, then eventually goes to a post-stress, let-down phase, and finally returns to a neutral, nonstress state. However, what worked in other societies or times often does not work in ours. Recent research has shown that the fight-or-flight response can, ironically, become a threat to our health and survival. The nature of civilization makes this response inappropriate in many situations. For example, being stopped by a police officer may arouse the fight-or-flight response, but to fight or flee would only make matters worse. We therefore stifle those responses for the sake of personal survival and social harmony. But as the number of similarly charged situations increases and tension is not discharged, a state of chronic stress can develop, with the risk of resulting health problems.

It is not difficult to understand how modern life increases the chances for arousal of the stress syndrome: living conditions become more crowded, noisy, and polluted; the pace and intensity of life increases; mass media remind us constantly of the deaths, injuries, and threats all around us; sources of information proliferate and then become increasingly confusing.

When the world around us becomes increasingly stressful, the tendency is for the fight-or-flight response to be chronically activated. If the body is unable to regularly let down, it tends not to swing back to its neutral nonstress point and it becomes pulled more and more toward a chronic stress response. The result is a slowly rising level of internal pressure.

This prolonged buildup of tension and excessive arousal can lead to a host of disorders. Many researchers have found that chronic stress can wear down our body's defenses, lower our immune response, and make us more vulnerable to all sicknesses, including cancer.

Some researchers have attempted to clarify to what degree stressful life events are related to sickness. After long research, Drs. Thomas Holmes and Richard Rahe developed a scale based on forty-three common stressful experiences, in the order they were found to be

Social Readjustment Rating Scale

Rank	Event	Value	Your Score
1	Death of spouse	100	
2	Divorce	73	
3	Marital separation	65	
4	Jail term	63	
5	Death of close family member	63	
6	Personal injury or illness	52	
7	Marriage	50	
8	Fired from work	47	
9	Marital reconciliation	45	
10	Retirement	45	
11	Change in family member's health	44	
12	Pregnancy	40	
13	Sex difficulties	39	
14	Addition to family	39	
15	Business readjustment	39	
16	Change in financial status	38	
17	Death of a close friend	37	
18	Change to different line of work	36	
19	Change in number of marital arguments	35	
20	Mortgage or loan over $10,000	31	
21	Foreclosure of mortgage or loan	30	
22	Change in work responsibilities	29	
23	Son or daughter leaving home	29	
24	Trouble with in-laws	29	
25	Outstanding personal achievement	28	
26	Spouse begins or stops work	26	
27	Starting or finishing school	26	
28	Change in living conditions	25	
29	Revision of personal habits	24	
30	Trouble with boss	23	
31	Change in work hours, conditions	20	
32	Change in residence	20	
33	Change in schools	19	
34	Change in recreational habits	19	

35	Change in church activities	19	
36	Change in social activities	18	
37	Mortgage and loan under $10,000	17	
38	Change in sleeping habits	16	
39	Change in number of family gatherings	15	
40	Change in eating habits	15	
41	Vacation	13	
42	Christmas season	12	
43	Minor violation of the law	11	
		TOTAL SCORE = _____	

Source: Holmes, T. H., and R. H. Rahe, "The Social Readjustment Rating Scale," *Journal of Psychosomatic Research* 11 (1967): 213–18.

related to illness. By checking the items that have occurred in the last year, you will arrive at a total score that indicates your supposed level of vulnerability to illness.

This scale reflects that change, *whether positive or negative,* tests our ability to adapt. The higher the score, the higher the probability that a person will become sick. High scores (above 300) do not necessarily mean a person *will* get sick, only that the risk is greater. For instance, in one study using this scale, the 30 percent with the highest scores had 90 percent more illnesses than the 30 percent with the lowest scores. In another study, 49 percent of the people in the high-risk group (scores above 300) became ill; 25 percent of the medium-risk group (200–299) became ill; but only 9 percent of the low-risk group (150–199) became ill.

The life-change scale, though, also shows that there is nothing necessarily health-threatening about life changes. In one of the studies, 51 percent of the high-risk group did not get sick.

When difficult and threatening events occur, it is *how we perceive and respond to them* that determines the intensity of the stress. As any sailor knows, it is not the direction of the wind that determines our course so much as how we set the sails—in sailing parlance, this is known significantly as the "attitude" of the sails. Our attitude about what we feel we should be and our imagined punishment if we fail determines how we see and react to events.

In a classic study of heart-disease patients, Dr. Nanders Dunbar noted the recurring trait of compulsive striving: some patients would rather die than fail. The study showed clearly how attitude could create a chronic life-threatening situation where no real threat exists.

Failure is not death, and it is certainly not worse than death. But as long as we believe that it is, our bodies will respond with the fight-or-flight response; coming events that might be handled with relative ease instead create the constant burden of chronic stress—with the ironic possibility of creating an actual life-threatening illness if the pressure is not removed.

On the positive side, it is equally true that by altering our attitudes and tension-producing habits, we may tip the scales in a more healthful direction. Recent research in areas such as biofeedback and meditation has shown that we can become aware of our stress responses and can influence them.

Stress and Cancer

The possible role of stress-related factors in the onset and course of cancer is certainly not a new or radical notion. As far back as the second century, the Greek physician Galen noted that melancholy women appeared more likely to develop cancer than cheerful ones. Eighteenth- and nineteenth-century physicians frequently noted that severe life disruptions and resulting emotional turmoil, despair, and loss of hope seemed to occur before the onset of cancer. In 1870, Dr. James Paget emphasized that emotional disturbance was related to cancer: "The cases are so frequent in which deep anxiety, deferred hope, and disappointment are quickly followed by the growth and increase of cancer that we can hardly doubt that mental depression is a weighty additive to the other influences favoring the development of the cancerous constitution."

In 1885, Parker made the mind-body connection in a prophetic way by emphasizing the physical results of emotion: "There are the strongest physiological reasons for believing that great mental depression, particularly grief, induces a predisposition to such disease as cancer, or becomes an existing cause under circumstances where the predisposition had already been acquired."

Despite the consistent trend of these observations, the interest in more physical interventions—such as radiation, surgery, and chemotherapy—drew medical attention away from the emotional contribution. Furthermore, the lack of tools for dealing with stress understandably has led to a reliance on these medical interventions.

Emotional Life-History Pattern of Cancer Patients

Recent exploration of the role of stress and emotions in cancer, led by the work of Lawrence LeShan, has aroused new interest. A quarter-century ago, LeShan studied the lives of more than five hundred cancer patients, many of whom he worked with in psychotherapy. He found a distinct emotional life-history pattern in 76 percent of the cancer patients, but the same pattern appeared in only 10 percent of a control group that did not have cancer.

This pattern had four distinctive features:

1. The person's childhood was marked by extreme difficulty in establishing warm, satisfying relationships. Usually, because of the death of a parent, divorce, chronic conflict, or prolonged separation from one or both parents, the child developed a deep sense of isolation and loneliness, with a hopeless view of ever gaining lasting, fulfilling relationships. The child tried to please others in order to win affection.
2. In adulthood, the person found strength and meaning in a relationship or career and poured a great deal of energy into this vital source of support.
3. When this key source was removed—through death, divorce, disillusionment, or retirement—and the childhood wound reopened, the person again experienced that sense of loss, despair, hopelessness, and helplessness.
4. Feelings—especially negative ones like anger, hurt, and disappointment—were constantly bottled up; in fact, others viewed the person as "too good to be true." But this superficial saint-like quality was a reflection of a deeper inability to express hostility and an overcompensation for feelings of unworthiness.

The pattern described by LeShan in *You Can Fight for Your Life* has been found with remarkable consistency by other researchers. However, it is important to understand that this research identifies emotions as only one possible factor in the development of cancer—not the only one.

Positive Role of the Emotions

Research suggests that there is a positive role for the emotions in cancer. For, just as an attitude of hopelessness and helplessness may hurt a person's chances for health or recovery, so an attitude of determination, hope, and fighting back can help lead to a positive outcome. If bottling up emotional expression and holding a reservoir of tension inside can create a dangerous load of chronic stress, learning to let go can reduce that burden and its risk.

This perspective has led many physicians and patients to recognize that a comprehensive approach to cancer includes dealing with the emotional and stress-related aspects of the disease. Even physicians who are skeptical of the role of stress in the onset of cancer generally speak of the will to live as an important element of treatment. Adding counseling and stress-reduction techniques to traditional medical care is becoming more common.

Cancer treatment is beginning to focus on the "whole" person, as Plato put it, and on how the patient may actively join in the rehabilitation effort.

Coping with Stress

"It is much more important to know what sort of patient has a disease than what sort of disease a patient has."

—Sir William Osler, M.D.

The importance of attitudes, feelings, and beliefs has been revealed by various studies.

The Placebo Effect

First, it is well known, though perhaps not well understood, that if a person has faith in a treatment and believes that it will work, the chances are greatly increased that the treatment will work—even if the treatment has no known therapeutic value. In science this is described as the placebo effect, and it is one of the most powerful tools available to the health practitioner.

The power appears to rest solely on the strength of the patient's positive beliefs and expectations; the placebo effect is stronger if the doctor also believes that the treatment is effective.

The more severe the pain, the more effective the placebo is. The placebo effect goes even beyond pain relief and can change the state of the disease. For example, two groups of patients with bleeding ulcers were given the same medication, but one group was told by a physician that the drug would undoubtedly produce relief, while the second group was told by a nurse that the drug was experimental and its effectiveness was unknown. In the first group, 70 percent showed significant improvements; in the second group, only 25 percent improved. The sole difference was the positive expectation created in the first group.

In another intriguing study, 150 patients were divided into three groups. The first group was the control group and received no medication. The other two groups were told they were going to receive a new drug that would increase health and longevity. One of these groups received a placebo, and the other group received the actual drug. After years of follow-up, the first group showed a normal amount of illness and mortality; the experience of the second (placebo) group was significantly better than the first (control) group, and the third (medicated) group displayed about the same amount of additional improvement over the placebo group as the placebo group had over the control group. Thus, while the drug reduced illness and prolonged life, so did the placebo.

How the power of belief affects the body remains a mystery. Recent research suggests that the placebo may relieve pain by releasing the body's own natural painkilling chemicals. But whatever the mechanism, the fact remains that attitude and belief can play a vital role in the success or failure of any treatment. To ignore or neglect the power of positive expectations and beliefs is to abandon one of the most valuable tools known to medicine.

Biofeedback

Another area that confirms the influence of mind on body is biofeedback—the ability of an individual to have some control over what were previously believed to be involuntary functions. Through the use of sensitive electronic devices, a person can view, for example, his or her own heart rate, brain wave activity, and skin temperature. The startling finding has been that the patient who can "see" internal biological activity can generally learn to exercise some conscious influence over that activity.

Although the study of biofeedback is still in its early stages, it has already proven effective for a broad range of stress-related problems, including heart disorders, high blood pressure, migraine and tension headaches, asthma, ulcers, and chronic pain. The range of applications keeps expanding. Epileptics have been able to reduce seizures by using biofeedback instead of medicine to control their brain wave activity.

Meditation

Recent research into meditation has shown that simple periods of daily deep relaxation may have important and lasting effects on a wide variety of stress disorders, perhaps most notably high blood pressure.

Self-Change

Given the research described earlier and these additional findings, the conclusion seems inescapable: for a person facing cancer, learning to cope with stress in a self-nourishing way can be an important factor in aiding the treatment process, increasing chances for recovery, helping to prevent or minimize flare-up, and maximizing the quality and length of life. Coping with stress is only part of a comprehensive treatment program, but it is the part perhaps most influenced by the patient.

It is often possible, even necessary (although undoubtedly difficult) to see a major illness as an opportunity rather than a tragedy. To become hopeless and feel helpless only makes the situation worse; to go to the other extreme with a denial of feelings and a "business as usual, everything is fine" facade also does nothing about the internal load of stress. Between blindly giving up and blindly charging on is another option—self-examination and change. The two key elements of change are analyzing and restructuring your lifestyle, and practicing and developing enjoyable techniques for reducing stress.

Both of these tasks are easier said than done. The first is no doubt the more difficult and requires real motivation. The key questions you must ask if you are going to alter your stance toward life, are:

- What do I want out of life?
- What is important to me?
- What are my priorities, and where has my own health and happiness been on the list?
- What chronic habits do I have that may have helped lead to the illness? Are they worth dying for?
- What realistic steps can I take to change?

Answering these questions may require the involvement of professionals, family, a number of close friends, and, perhaps, a support group. To establish new priorities and develop realistic ways to reach them takes time, communication, and honest self-analysis. Changing is not easy. But by making a concentrated effort to alter your pattern of stressful life events and the way you respond to stress, you can influence the pace and intensity of your life.

In conjunction with that goal, you may want to seek professional help in developing useful stress-reduction techniques, especially if you feel that tools such as biofeedback may have value for you. In any event, the following relaxation technique will provide a good beginning.

An Easy Introductory Relaxation Method

1. Sit or lie down and get comfortable. Let your arms rest at your sides, and don't cross your legs. (Initially, it's useful to eliminate as many distractions as possible. A quiet, darkened room helps. As you practice, letting go becomes easier and easier, even in less than ideal settings.) Squirm and stretch your muscles a little until you feel more relaxed. Then let your eyes gently close.
2. Take a slow, deep breath in through your nose, feeling your lungs fill up and your stomach expand. When your lungs are full, hold the air in for just a second, then slowly let the air go, feeling yourself letting go all over. When you feel the air exhaled, don't hurry to inhale, just slowly take another smooth, deep breath, feel yourself filling up, hold it for a second, then slowly and completely let it all go and feel yourself relaxing even more. Let the exhale be longer than the inhale, and really let go. Get lost and absorbed in simply listening to your breathing and feeling your body letting go. Do this for a few more breaths, and then breathe naturally, without trying to take especially deep breaths. Make sure you are breathing deeply and not shallowly (just from the chest).
3. Now let your attention drift down to your toes. Slowly and gently tense the muscles in your toes. Become aware of how the tension feels, then let the toes relax and feel the difference. Notice the sensations you feel in the toes as you let them relax.
4. Repeat this cycle of tensing and relaxing with each major muscle group as you move up your body—your calves, thighs, hips, stomach, back, shoulders, arms, neck, jaws, eyes, forehead, and scalp. Just as you became absorbed in your breathing, get lost in feeling and enjoying the sensations you produce in directly relaxing all your muscles.
5. After going through each muscle group separately, stretch your arms and legs out and tense up all your muscles at once (or as many as you can). Then let your body go limp. Take a few deep, slow breaths. If you notice any residual tension in any part of your body, repeat the tense-and-relax cycle there to see if you can loosen up that area.
6. Finally, before opening your eyes, take a brief journey around your body, sensing how it feels to be more deeply relaxed. Become familiar with the feeling. Then, when you are ready, take another deep breath and slowly open your eyes.

Slow, deep breathing and overall muscular relaxation are perhaps the two easiest and most direct ways to calm down. Most of us breathe sixteen to twenty times a minute; with slow, deep breathing we cut that number in half or more.

Combined with muscular relaxation, the ultimate effect is to slow down heart rate, lower blood pressure, relax muscles, and increase blood flow to the hands and feet—in short, to produce the opposite of the stressful fight-or-flight response.

This relaxation technique can be modified in many ways. One helpful maneuver is to silently repeat a sound, word, or phrase in rhythm with your breathing, such as, "I am . . ." (as you breathe in) ". . . relaxed" (as you breathe out).

Buddhists say that the mind is like a drunken monkey. It wanders and rambles all over the place. Thoughts run past in random fashion, like the chatter of several radio programs. Images flash across the internal mental screen like the pictures on a movie screen.

The key to stopping these distracting thoughts and images is to have a simple focus, a home base to return to when you are aware you've been wandering or getting distracted by external stimuli or internal chatter. Then

you simply take another deep, slow breath; let the word, phrase, or sound repeat itself in rhythm with your breathing; and let go again. The possibilities for a control focus are endless—music; self-suggestions (such as "My arms and legs are warm and pleasantly heavy"); simple words such as "calm," "peace," "serene," or traditional mantras like Om, Shum, and Mu. One pleasant technique is to imagine yourself in a peaceful, pleasurable setting—a warm beach, a lush green meadow, a refreshing mountain lake, or floating on a soft white cloud.

The key is to keep it simple and enjoyable. If the process isn't enjoyable, chances are good it won't be effective, and eventually it won't be done. Making it into a chore will only tend to maintain your tension. Stress reduction should be viewed along with food, sleep, and exercise as a vital element in maintaining health and resisting disease.

Positive Attitude

Carl and Stephanie Simonton are perhaps the most noted and controversial proponents of the importance of stress in cancer treatment. In addition to providing traditional medical care, they have emphasized a full-scale treatment of the psychological aspects of cancer. Their perspective emphasizes mobilizing the positive attitude of the patient as part of the treatment.

The Simontons reason that if chronic stress increases the probability of cancer, reducing stress and encouraging the will to live should improve the chances of recovery and enhance the quality of life. To that end, they employ relaxation imagery techniques and intensive counseling in addition to the usual medical treatments. They write: "Essentially, the visual imagery process involved a period of relaxation, during which the patient would mentally picture a desired goal or result. With the cancer patient, this would mean his attempting to visualize the cancer, the treatment destroying it, and, most importantly, his body's natural defenses helping him recover."

The Simontons believe that a positive attitude toward treatment is a better predictor of response to treatment than the severity of the disease. Although the extent of "mind over matter" is not known, dealing with stress and encouraging the will to live are undoubtedly important in extending the length of life and enhancing its quality. To what extent we can actually influence our immune system and help it fight cancer remains to be explored.

To have suggested twenty years ago that people with epilepsy would today be stopping their seizures through controlling their own brain waves would have been considered sheer nonsense, yet that, and much more, is now a reality. The importance of mobilizing the mind as a positive ally cannot be questioned. Cancer is a dreaded disease, perhaps the most frightening diagnosis a person can face. Helping the person to cope with that fear is clearly an essential element of any complete treatment.

The perspective emphasizing the relationship between stress and cancer carries with it a new role not only for doctors and other health practitioners, but for patients as well. No longer can patients be seen, or see themselves, as passive recipients of treatment, helpless bystanders awaiting the outcome. In many ways, the patient's motivation, attitude, and behavior can be the key elements that shift the scales from a poor outcome to a good one.

In this light, one anecdote from medical history seems particularly relevant. Louis Pasteur is a well-known name in science: he was the pioneer in exploring the microbe, dispelling the myth of "spontaneous generation," and helping to eradicate such diseases as diphtheria and typhus that ravaged the world in the nineteenth century. Less well known is his colleague, Claude Bernard, who insisted, somewhat in opposition to Pasteur, that it was not so much the presence or absence of

microbes, bacteria, or viruses that determined health, but the overall equilibrium of the entire organism. As he put it, "The constancy of the inner terrain is the essential condition of the free life." In other words, microbes hover around and inside us constantly, but it is only when our "inner terrain" is out of balance and vulnerable that they can take root. Pasteur's dying words were reported to have been, "Bernard was right. The microbe is nothing, the terrain, everything."

Both Pasteur and Bernard were right. A total treatment approach encompasses both the physical (the microbe) and the mental and emotional (the inner terrain), and recognizes their interaction. Major illness confronts us with what most of us would rather avoid—the inevitability of death. While death certainly has its tragic aspects, its blunt reality can be a spur to recognizing the importance of really living, here and now, and to reevaluating (as even Pasteur did) our perspective. No matter what quantity of life is left to each of us, we all have a choice about its quality. Nurturing, enjoying, and balancing our "inner terrain" is perhaps the best place to start.