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Today in the United States, **438** people died of lung cancer.



Deborah Shaffer wasn't one of them. *Page 16*

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WEIGHING IN:
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PREVENTING CANCER WEIGHT LOSS

BY SANDRA GORDON

When Dahlia Cox began chemotherapy as part of her treatment for colon cancer in July 2002, she lost 12 pounds in three weeks. "I couldn't keep food down," says the 80-year-old retired kindergarten teacher from Decatur, Georgia. "And I wasn't hungry, so I didn't want to eat." Alarmed by her weight loss, Cox's physicians stressed the importance of trying to maintain her standard 124 pounds throughout her six months of treatment. Since then, Cox has been steadily gaining. Her secret: "I realized that I just couldn't say, 'Oh, I'm not hungry today,' and give up. I had to work at eating."





CANCER— A VAST WASTELAND

What Cox experienced was anorexia, loss of the desire to eat or lack of hunger, which is only one aspect of a complex syndrome called **cachexia** or cancer “wasting”—the loss of weight common among patients with advanced cancer. In fact, according to the American Cancer Society, up to 40% of cancer patients report unexplained weight loss at first diagnosis; 80% experience weight loss in cancer’s advanced stages.

Understanding the source of cachexia is important, says Daniel W. Nixon, MD, president of the Institute for Cancer Prevention in New York City, who has studied the issue for more than 25 years.

“The first thing that a doctor and patient must determine is whether it is primary or secondary,” says Dr. Nixon. “Primary means the tumor is the direct cause by impacting the body’s ability to

maintain weight for some reason. Secondary cachexia is related to treatment, and it can often be impacted more effectively than primary.”

Primary cachexia can cause early satiety—getting full too fast and/or cancer-related changes in the bowel that inhibit nutrient absorption or weight loss from unknown tumor host mechanisms. Secondary cachexia is associated with treatment that may include surgery issues, nausea, vomiting, and food aversions brought on by chemotherapy and radiation as well as obstructive cancers of the oropharynx and esophagus, in which consuming food in general is a challenge.

Those with gastric, pancreatic, small-cell and non-small-cell lung cancer are especially at risk for cachexia because the tumor

TREATMENT OPTIONS FOR APPETITE & NAUSEA

Weight loss prevention during cancer treatment helps maintain a patient’s quality of life and strength to fight the disease. Several classes of drugs are available that provide nutritional support.

APPETITE STIMULANTS

- ▶ **Megace**® (megestrol acetate), an appetite stimulant and widely used treatment for weight loss in cancer patients, is a synthetic female hormone similar to progesterone generally given at high doses ranging from 100-800 mg/day.
- ▶ **Marinol**® (dronabinol), a synthetic form of the active ingredient found in marijuana, produces results similar to those seen in people who smoke marijuana and get the “munchies.” Useful in patients who have diminished appetite due to cancer, Marinol can also decrease chemotherapy-associated nausea in some patients. Caution should be taken in older patients because Marinol may cause confusion and hallucinations.

ANTIEMETICS

- ▶ Nausea and vomiting caused by chemotherapy are thought to be the result of signals from the central nervous system to the gut as a result of a chemical signal known as serotonin that is released after exposure to certain chemotherapy agents. Serotonin then binds to the 5-HT3 receptors, resulting in nausea and vomiting. Drugs that inhibit this process include the following.

Zofran® (ondansetron), a specific 5-HT3 receptor antagonist, is usually given orally or intravenously 30 minutes before chemotherapy. Continued treatment every eight hours for one to two days after chemotherapy may be used to prevent delayed nausea.

Kytril® (granisetron), another specific 5-HT3 receptor antagonist, is usually given one hour before chemotherapy either orally or intravenously and then every 24 hours for two to three days by mouth.

Anzemet® (dolasetron), a 5-HT3 receptor-specific antagonist, is generally given orally or intravenously 30 minutes prior to chemotherapy.

Aloxi™ (palonosetron), a 5-HT3-specific serotonin antagonist currently being reviewed by the FDA, is designed to have a longer half-life for more prolonged efficacy.

- ▶ Another class of antiemetics, the substance P inhibitors, are a regulatory protein that binds to the neurokinin (NK) receptors found in the gut and the nervous system to interfere with the binding of substance P to NK receptors, thought to play a central role in development of chemotherapy-induced nausea. **Emend**® (aprepitant), the first therapy approved for the treatment of delayed chemotherapy-induced nausea and vomiting, which is frequently seen with cisplatin therapy, was approved by the FDA in March 2003, and is used in combination with other antiemetics. It is given orally at 100 mg one hour before chemotherapy, and at a lower 80 mg for two days following chemotherapy.

ANTIDEPRESSANTS

- ▶ Depression, reported in up to 25% of cancer patients, can lead to a lack of desire to eat. Antidepressants are frequently prescribed to alleviate the symptoms of depression and aid in weight gain. Several antidepressants, including **Prozac**® (fluoxetine), **Zoloft**® (sertraline), **Paxil**® (paroxetine), **Effexor**® (venlafaxine) can increase appetite, resulting in weight gain. The mechanism of how this occurs is not fully understood, and in some cases antidepressants can cause decreased appetite.

TNF BLOCKERS

- ▶ Tumor necrosis factor-alpha (TNF-alpha), a type of protein known as a cytokine that is an important regulator of the immune system, has also been shown to be important in development of weight loss often seen in cancer patients. **Remicade**® (infliximab), a purified antibody that binds to TNF-alpha rendering it inactive, and **Enbrel**® (etanercept), a false TNF-alpha receptor that acts as a decoy to divert TNF-alpha away from its normal function, are currently being tested in clinical trials.

OTHER DRUGS CURRENTLY BEING TESTED

- ▶ **Thalomid**® (thalidomide) has been approved by the FDA for the treatment of weight loss in HIV patients and is currently being studied for use in cancer patients. Extreme caution should be taken by women because this drug can cause severe birth defects. □

—BY HEATHER DeGRENDLE, PhD

Nathan Ehrlich says that today, three years after his bone marrow transplant, his weight fluctuates between 150 and 155 pounds, but during treatment his weight got down to 130.

FOOD FIGHT

One of the best ways to conquer cachexia is to stick to your treatment plan. “We know the chemotherapy, for example, is working when a patient starts gaining weight,” says Herman Kattlove, MD, a medical oncologist in Los Angeles and medical editor for the American Cancer Society. However, for some cachexic patients, such as those with advanced breast cancer, weight gain during treatment may worsen prognosis.

“Women need to gain what is called functional weight,” says Dr. Nixon. “Water weight and fat weight are not good and could be detrimental.”

Overall, to combat secondary cachexia, “It’s important to consolidate calories by consuming as many nutrient-dense calories as you can,” says Kim Dalzell, PhD, RD, director of Holistic Nutrition Counseling Services, Cancer Resource Center, Gurnee, Illinois, and author of *Challenge Cancer and Win! Step-By-Step Nutrition Action Plans For Your Specific Cancer*.

But how do you do that when you don’t feel like eating, fill up too fast, or otherwise have trouble consuming enough calories? Here are some timely weight-maintenance tips to chew on.

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Rev your appetite: To stimulate appetite and promote weight gain, your doctor may prescribe steroids or a synthetic progesterin (female hormone) such as **Megace**® (megestrol) or **Marinol**® (dronabinol), which contains a synthetic version of the active ingredient in marijuana. Take them as prescribed. “They don’t work for everyone,” says Dr. Kattlove.

“Marinol definitely gave me the munchies,” says Nathan Ehrlich, a 6-foot, 19-year-old sophomore at Brandeis University in Boston, who got down to 130 pounds after receiving a bone marrow transplant in 2000 to treat his leukemia. Ehrlich adds that he was unaware of how much his body would be affected, and while being treated for acute myeloid leukemia, he preferred to eat cold foods like ice cream, popsicles, and salads because the chemotherapy dulled his taste buds and dried out his mouth.

itself can set off a domino effect of hormonal and inflammatory changes that throw the body into a hypermetabolic state—one in which calories burn at a much higher rate than normal.

“Tumor-induced cachexia is like pushing on the gas pedal of a car stuck in the mud,” says registered dietitian Rebecca Wright, Tulsa, Oklahoma. “You can eat and eat, but lose weight. We call it ‘hitting the wall.’”

Dr. Nixon says such weight loss is hard to manage and no data show conventional nutrition will have an impact.

“Cancer is a growing group of cells that needs food,” Dr. Nixon says. “It’s like a parasite, growing as the body shrinks. What we are trying to do is figure out the mechanism that allows the tumor to do that and block it.”

What makes tumor-induced cancer cachexia particularly problematic is that the body will preferentially cannibalize protein in the form of lean body mass, which includes the large muscles of the arms and legs as well as organ tissue in the heart and diaphragm. As a result, breathing can become more difficult and the heart can become stressed, says Wright. Cachexic muscle loss can also heighten fatigue and affect long-term prognosis.

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—AMERICAN CANCER SOCIETY





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Pack on protein: Because cancer cachexia can preferentially metabolize stored protein (muscle), you'll generally need to consume 20% more daily protein than normal—or 1.2 grams of protein per kilogram of your body weight—to retain lean body mass, says Julia Hemingray, a registered dietitian at Food and Friends, an organization that delivers specially prepared meals at no charge to cancer patients in Washington, D.C.

Of course, whole food sources of protein, such as lean red meat, fish, and skinless chicken are excellent options. But you may not be able to eat enough of them to meet your quota, in which case, it's a good idea to "spike" your foods with whey-based protein powder. Mix protein powder into soups and stews, oatmeal, fruit juice, and smoothies.

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Don't be a fat phobic: Omega-3 fatty acids, a "healthy" type of fat found in cold-water fish such as salmon and fish-oil supplements, are thought to help minimize the cascade of hormonal and inflammatory events in the body that drive hypermetabolic cachexia. And although more investigation is needed, recent studies indicate that omega-3 fatty acids may reverse cancer cachexia.

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Take anti-nausea drugs preventively: If your doctor prescribes an anti-nausea drug such as **Zofran**[®] (ondansetron), **Kytril**[®] (granisetron), or **Anzemet**[®] (dolasteron), take it before you feel nauseous (before you've had a chemotherapy treatment). "It's easier to prevent nausea than to treat it," says Wright. Another anti-nausea drug, **Emend**[®] (aprepitant) was recently approved by the FDA and has been shown to be helpful in minimizing delayed chemotherapy-induced nausea.

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Divide and conquer: Instead of structuring your day around breakfast, lunch, and dinner, which can seem like too much to tackle, think of your day as a running buffet and eat a couple of bites here and there, says Carolyn Katzin, a certified nutrition specialist at the Center for Health and Healing, St. Vincent's Medical Center, Los Angeles, California, and author of *The Cancer Nutrition Center Handbook*.

"And if you aren't hungry at dinnertime, make breakfast or lunch your main meal," she says, adding that heating food in the microwave will prevent odor-induced nausea. "Microwaved food tends to give off less aroma than food that's cooked or baked." Another option she recommends is eating cold foods instead. And sip smoothies and other beverages through a straw with a lidded cup.

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Eat your water: Instead of simply drinking water throughout the day and with meals, sip vegetable soup or low-sodium vegetable or fruit juice instead. All are nutrient-dense calorie sources that can help maintain cellular health and help you stay hydrated.

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Fiber up: Besides a cornucopia of nutrients, whole grains like oatmeal and fruits and vegetables are a good source of fiber. "Fiber is especially important for cancer patients because it can help control the diarrhea or constipation they may be experiencing from chemotherapy, which can interfere with nutrient absorption," says Hemingray.

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Don't wait to weight train: Even though you may be fatigued, it's important to resistance train to maintain and rebuild lean tissue. Do what you can. "Besides sticking to an anticachectic diet, we have patients do bicep curls with 2- to 3-pound hand or wrist weights for 30 to 90 seconds several times throughout the day," says Keith Block, MD, an integrative oncologist and editor of *Integrative Cancer Therapies*. "You might also try strapping on ankle weights and, while sitting on the edge of your bed, extend your knees slowly, one at a time. Isometric exercises and resistance bands can also be helpful for preventing cachexic muscle loss. In general, 'the adage, 'If you don't use it, you lose it,' holds true," Dr. Block says.

Dr. Nixon says research continues as to the causes and control of cachexia, including how to starve the tumor and not the body. □

Editor's note: Dahlia Cox passed away April 8, 2003. Her son, Randy, told CURE she was very excited about being featured in this article. CURE is proud to honor her memory in this article and on the website.

"Think of your day as a **running buffet** and eat a couple of bites here and there . . . And if you aren't hungry at dinnertime, make breakfast or lunch your main meal." —CAROLYN KATZIN