

Chapter 8

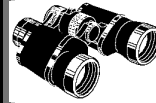
MALNUTRITION AMONG CANCER PATIENTS



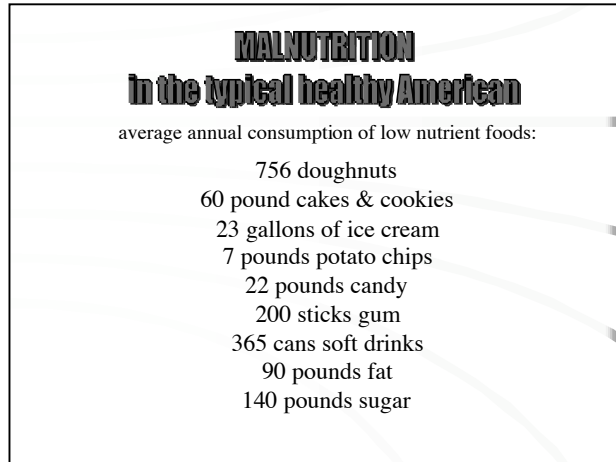
"Each patient carries his own doctor inside him. We are at our best when we give the doctor who resides within a chance to go to work."
Albert Schweitzer, MD, 1940, Nobel Laureate & medical missionary

WHAT'S AHEAD?

- ↳ At least 20% of Americans are clinically malnourished, with 70% being sub-clinically malnourished (less obvious), and the remaining "chosen few" 10% in good to optimal health.
- ↳ Once these malnourished people get sick, the malnutrition oftentimes gets worse through higher nutrient needs and lower intake
- ↳ Once at the hospital, malnutrition escalates another notch
- ↳ Cancer is one of the more serious wasting diseases known
- ↳ A malnourished cancer patient suffers a reduction in quality and quantity of life, with higher incidences of complications and death
- ↳ The only solution for malnutrition is optimal nutrition



Howard Hughes, the multi-billionaire, died of malnutrition. It is hard to believe that there can be malnutrition in this agriculturally abundant nation of ours--but there is. At the time of the Revolutionary War, 96% of Americans farmed while only 4% worked at other trades. Tractors and harvesting combines became part of an agricultural revolution that allowed the 2% of Americans who now farm to feed the rest of us. We grow enough food in this country to feed ourselves, to make half of us overweight, to throw away enough food to feed 50 million people daily, to ship food overseas as a major export, and to store enough food in government surplus bins to feed Americans for a year if all farmers



quit today. With so much food available, how can Americans be malnourished?

The answer is: poor food choices. Americans choose their food based upon taste, cost, convenience, and psychological gratification--thus ignoring the main reason that we eat,

which is to provide our body cells with the raw materials to grow, repair, and fuel our bodies. The most commonly eaten foods in America are white bread, coffee, and hot dogs. Based upon our food abundance, Americans could be the best



nourished nation on record. But we are far from it.

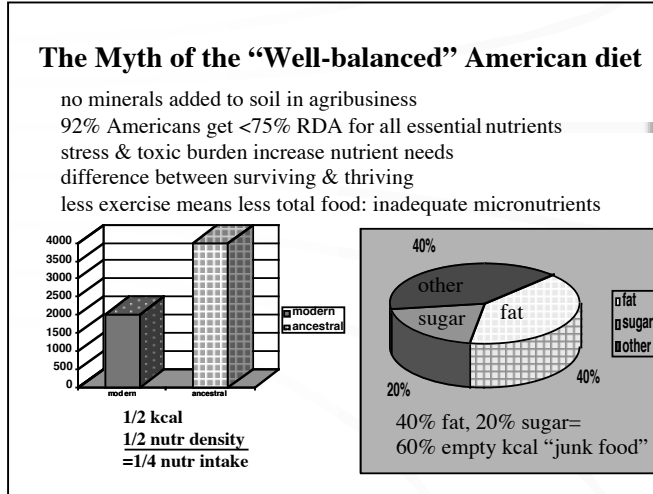
CAUSES OF NUTRIENT DEFICIENCIES:

There are many reasons for developing malnutrition:

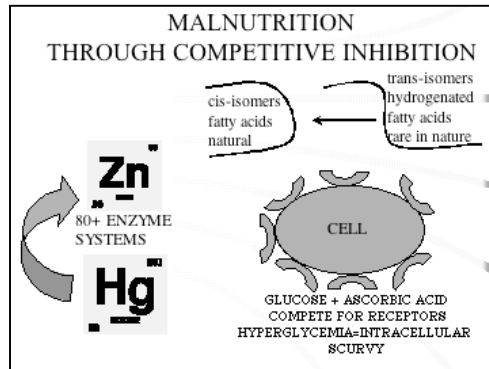
- ⇒ We don't eat well due to poor food choices, loss of appetite, discomfort in the gastrointestinal region, or consuming nutritionally bankrupt "junk food"; many people just don't get enough nutrients into their stomachs.
- ⇒ We don't absorb nutrients due to loss of digestive functions (including low hydrochloric acid or enzyme output), allergy, "leaky gut", or intestinal infections, like yeast overgrowth.
- ⇒ We don't keep enough nutrients due to increased excretion or loss of nutrients because of diarrhea, vomiting, or drug interactions.
- ⇒ We don't get enough nutrients due to increased requirements caused by fever, disease, alcohol, or drug interactions.

Anyone who is confused about why we spend so much on medical care with such poor results in cancer treatment might glean some wisdom by reading what sells best in American grocery stores. Overwhelming evidence from both government and independent

scientific surveys shows that many Americans are low in their intake of:¹



-VITAMINS: A, D, E, C, B-6, riboflavin, folacin, pantothenic acid
 -MINERALS: calcium, potassium, magnesium, zinc, iron, chromium, selenium; and possibly molybdenum and vanadium. With many common micronutrient deficiencies in the Western diet, it makes sense that a major study in Australia found that regular use of vitamin supplements was a protective factor against colon cancer.²



Meanwhile, we also eat alarmingly high amounts of: fat, salt, sugar, cholesterol, alcohol, caffeine, food additives, and toxins.

-MACRONUTRIENTS: fiber, complex carbohydrates, plant protein, special fatty acids (EPA, GLA, ALA), clean water

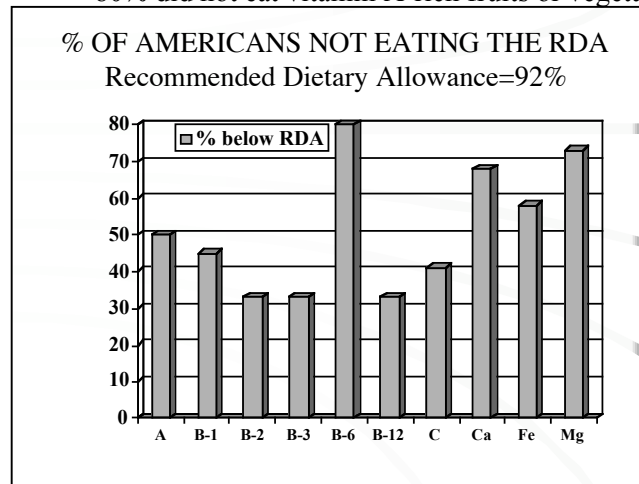
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This combination of too much of the wrong things along with not enough of the right things has created epidemic proportions of degenerative diseases in this country. The Surgeon General, Department of Health and Human Services, Center for Disease Control, National Academy of Sciences, American Medical Association, American Dietetic Association, and most other major public health agencies agree that diet is a major contributor to our most common health problems, including cancer.

The typical diet of the cancer patient is high in fat, while being low in fiber and vegetables--"meat, potatoes, and gravy" is what many of my

patients lived on. Data collected by the United States Department of Agriculture from over 11,000 Americans showed that on any given day:

- 41% did not eat any fruit
- 82% did not eat cruciferous vegetables
- 72% did not eat vitamin C-rich fruits or vegetables
- 80% did not eat vitamin A-rich fruits or vegetables



-84% did not eat high fiber grain food, like bread or cereal³

The human body is incredibly resilient, which sometimes works to our disadvantage. No one dies on the first cigarette inhaled, or the first drunken evening,

or the first decade of unhealthy eating. We misconstrue the fact that we survived this ordeal to mean we can do it forever. Not so. Malnutrition can be as blatant as the starving babies in third world countries, but malnutrition can also be much more subtle.

SEQUENCE IN DEVELOPING NUTRIENT DEFICIENCY

- ⇒ 1) *Preliminary*. Reduction of tissue stores and depression of urinary excretion.
- ⇒ 2) *Biochemical*. Reduction of enzyme activity due to insufficient coenzymes (vitamins). Urinary excretion at minimum levels.
- ⇒ 3) *Physiological*. Behavioral effects, such as insomnia or somnolence. Irritability accompanied by loss of appetite and reduced body weight. Modified drug metabolism and reduced immune capabilities.
- ⇒ 4) *Clinical*. Classical deficiency syndromes as recognized by the scientific pioneers in the developmental phases of nutrition science.
- ⇒ 5) *Terminal*. Severe tissue pathology resulting in imminent death.

It was the Framingham study done by Harvard University that proclaimed: "Our way of life is related to our way of death." Typical hospital food continues or even worsens malnutrition. While many Americans are overfed, the majority are also poorly nourished. If proper

nutrition could prevent from 30 to 90% of all cancer, then doesn't it seem foolish to continue feeding the cancer patient the same diet that helped to induce cancer in the first place?

MALNUTRITION AMONG CANCER PATIENTS

From 25-50% of hospital patients suffer from protein calorie malnutrition. Protein calorie malnutrition leads to increases in mortality and surgical failure, with a reduction in immunity, wound healing, cardiac output, response to chemo and radiation therapy, and plasma protein synthesis, and generally induces weakness and apathy. Many patients are malnourished before entering the hospital, and another 10% become malnourished once in the hospital. Nutrition support, as peripheral parenteral nutrition, has been shown to reduce the length of hospital stay by 30%. Weight loss leads to a decrease in patient survival. Common nutrient deficiencies, as determined by experts at M.D. Anderson Hospital in Houston, include protein calorie, thiamin, riboflavin, niacin, folate, and K.

So nutrition therapy has two distinct phases

1) Take the clinically malnourished patient and bring him/her up to "normal" status.

2) Take the "normal" sub-clinically malnourished person and bring him/her up to "optimal" functioning. For at least the few nutrients tested thus far, there appears to be a "dose-dependent" response--more than RDA

levels of intake provide for more than "normal" immune functions.

Not only is malnutrition common in the "normal" American, but malnutrition is extremely common in the cancer patient. A theory has persisted for decades that one could starve the tumor out of the host. That just ain't so. The

MALNUTRITION KILLS >40% OF CANCER PATIENTS

REDUCED NUTRIENT INTAKE:

loss of appetite (anorexia), chemo, disease, stress
maldigestion, chemo, disease, stress

ELEVATED NUTRIENT NEEDS

hypermetabolic state
squandering calories via anaerobic glycolysis
needs in fighting disease; host defense mechanisms

AS DETECTED BY

Subjective Global Assessment score "C"
rapid weight loss, >10% loss in 6 mo, 5% 1 mo.
bio-impedance (BCA), lean body mass < ideal

TREATMENT

dietary intervention; foods, Dragonslayer shake
metabolic support: TPN/TNA, enteral, G-tube
enzymes, anabolic hormones, hydrazine sulfate

tumor is quite resistant to starvation, and most studies find more harm to the host than to the tumor in either selective or blanket nutrient deficiencies.⁴ Pure malnutrition (cachexia) is responsible for at least 22% and up to 67% of all cancer deaths. Up to 80% of all cancer patients have reduced levels of serum albumin, which is a leading indicator of protein and calorie malnutrition.⁵ Dietary protein restriction in the cancer patient does not affect

the composition or growth rate of the tumor, but does restrict the patient's well being.⁶

A commonly used anti-cancer drug is methotrexate, which interferes with folate (a B vitamin) metabolism. Many scientists guessed that folate in the diet might accelerate cancer growth. Not so. Depriving animals of folate in the diet allowed their tumors to grow anyway.⁷ Actually, in starved animals, the tumors grew more rapidly than in fed animals, indicating the parasitic tenacity of cancer in the host.⁸ Other studies have found that a low folate environment can trigger "brittle" DNA to fuel cancer metastasis.

There is some evidence that tumors are not as flexible as healthy host tissue in using fuel. A low carbohydrate parenteral formula may have the ability to slow down tumor growth by selectively starving the cancer cells.⁹ Overall, the research shows that starvation provokes host wasting while tumor growth continues unabated.¹⁰ Weight loss drastically increases the mortality rate for most types of cancer, while also lowering the response to chemotherapy.¹¹

Parenteral feeding improves tolerance to chemotherapeutic agents and immune responses.¹² Of 28 children with advanced malignant disease, 18 received parenteral feeding for 28 days with resultant improvements in weight gain, increased serum albumin and transferrin, and major benefits in immune functions. In comparing cancer patients on TPN versus those trying to nourish themselves by oral intake of food, TPN provided major improvements in calorie, protein, and nutrient intake, but did not encourage tumor growth. Malnourished cancer patients who were provided TPN had a mortality rate of 11%, while the group without TPN feeding had a 100% mortality rate.¹³ Pre-operative TPN in patients undergoing surgery for GI cancer provided general reduction in the incidence of wound infection, pneumonia, major complications, and mortality.¹⁴ Patients who were the most malnourished experienced a 33% mortality and 46% morbidity (problems and illness) rate, while those patients who were properly nourished had a 3% mortality rate with an 8% morbidity rate. In 49 patients with lung cancer receiving chemotherapy with or without TPN, complete remission was achieved in 85% of the TPN group versus 59% of the non-TPN group.¹⁵ A TPN formula that was higher in protein, especially branched chain amino acids, was able to provide better nitrogen balance in the 21 adults tested than the conventional 8.5% amino acid TPN formula.¹⁶

A finely-tuned nutrition formula can also nourish the patient while starving tumor cells. Enteral (oral) formulas fortified with arginine, fish oil, and RNA have been shown to stimulate the immune system, accelerate wound repair, and reduce tumor burden in both animals and humans.

In 20 adult hospitalized patients on TPN, the mean daily vitamin C needs were 975 mg, which is over 16 times the RDA, with the range being 350-2250 mg.¹⁷ Of the 139 lung cancer patients studied, most tested deficient or scorbutic (clinical vitamin C deficiency).¹⁸ Another study of

cancer patients found that 46% tested scorbutic, while 76% were below acceptable levels for serum ascorbate.¹⁹ Experts now recommend the value of nutritional supplements, especially in patients who require prolonged TPN support.²⁰ The Recommended Dietary Allowance (RDA) is inadequate for many healthy people and nearly all sick people.

PATIENT PROFILE: J.H. was a wasting 38 year old male with advanced lymphoma when he was admitted to our hospital as a medical emergency, having failed prior therapies. He was dying more from malnutrition than the cancer. We put him on total parenteral nutrition, with a disease-specific formula that is higher in protein and fats and lower in glucose than standard TPN formulas. Within a month, he was able to eat solid foods. He rebounded from his malnutrition so that he could resume chemo. Within 6 months he was disease-free. Eight years later, still in remission, he attended our Celebrate Life festival and planted a tree.

ENDNOTES

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