



Topic
Better Living

Subtopic
Health & Wellness

The Science of Natural Healing

Course Guidebook

Dr. Mimi Guarneri
Scripps Center for Integrative Medicine



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Founder of the Scripps Center
for Integrative Medicine

Dr. Mimi Guarneri, Founder of the Scripps Center for Integrative Medicine in California, is board certified in cardiology, internal medicine, nuclear medicine, and holistic medicine. She studied English Literature as an undergraduate at New York University, and she received her medical degree from SUNY Downstate Medical Center, where she graduated first in her class. Dr. Guarneri served her internship and residency at New York-Presbyterian Hospital/Weill Cornell Medical Center, where she later became Chief Medical Resident. She also completed cardiology fellowships at both NYU Langone Medical Center and Scripps Clinic.

Dr. Guarneri served as an attending physician in interventional cardiology at Scripps Clinic, where she placed thousands of coronary stents. Recognizing the need for a more comprehensive and more holistic approach to cardiovascular disease, she pioneered the Scripps Center for Integrative Medicine, where she uses state-of-the-art cardiac imaging technology and lifestyle-change programs to aggressively diagnose, prevent, and treat cardiovascular disease.

Dr. Guarneri is a member of the American College of Cardiology, the Alpha Omega Alpha Honor Medical Society, and the American Medical Women's Association. She is also a Diplomate of the American Board of Integrative Holistic Medicine and was recently elected President of the organization. In 2009, Dr. Guarneri was named Scientist of the Year by the San Diego Chapter of the Achievement Rewards for College Scientists Foundation.

Dr. Guarneri has authored several articles that have appeared in professional journals such as the *Journal of Echocardiography* and the *Annals of Internal Medicine*. She participated as a member of the writing committee for the American College of Cardiology Foundation, and in 2005, an

expert consensus statement on integrating complementary medicine into cardiovascular medicine was published as a result of the committee's efforts.

Dr. Guarneri is the author of *The Heart Speaks: A Cardiologist Reveals the Secret Language of Healing*, a poignant collection of stories from cardiology patients who have benefited from integrative medicine approaches. Both *The Heart Speaks* and her clinical work have been featured on NBC's *TODAY* show and PBS's *To the Contrary* and *Full Focus*. In her book, Dr. Guarneri takes the reader on a journey of the heart—exploring the emotional heart, which capable of being crushed by loss; the intelligent heart, with a nervous system all its own; and the spiritual heart, which yearns for a higher purpose. With groundbreaking new research and unparalleled experience, Dr. Guarneri skillfully weaves the science and drama of the heart's unfolding. Her work was also featured in a two-part PBS documentary called *The New Medicine*.

Dr. Guarneri is regularly quoted in national publications such as *Yoga Journal*, *Whole Living: Body + Soul in Balance*, *Trustee* magazine and *WebMD the Magazine*. She has been recognized for her national leadership in integrative medicine by The Bravewell Collaborative and now serves as chair of the organization's Clinical Network. In 2008, she was honored by Project Concern International for her work in southern India, and she currently serves on the international subcommittee for Direct Relief International.

Dr. Guarneri also served on an advisory panel for the Institute of Medicine to explore the science and practice of integrative medicine for promoting the nation's health. The summit's findings were released in 2009 in Washington DC. ■

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Disclaimer

This course, *The Science of Natural Healing*, is intended to increase your ability to recognize medical misinformation and make use of reliable, evidence-based information when making health-related choices. These lectures are not designed for use as medical references to diagnose, treat, or prevent medical illnesses or trauma. Neither The Great Courses nor Dr. Mimi Guarneri is responsible for your use of this educational material or its consequences. If you have questions about the diagnosis, treatment, or prevention of a medical condition or illness, you should consult a qualified physician.

The Science of Natural Healing

Scope:

Western medicine focuses on disease without getting to the underlying cause, and physicians are trained to make a diagnosis and offer a drug or surgical treatment. The result is that the people of the United States are the greatest consumers of pharmaceutical therapy. It is one thing to make a diagnosis, but to offer medication without including instructions for how to reverse the disease process is shortsighted. The goal of this course is to turn this approach inside out, offering solutions to disease prevention and treatment that are embedded in how we live our lives. Treating disease after it occurs is not the solution. Once a diagnosis is made, the next obvious questions are why and how to reverse the process. Focusing on health, vitality, and longevity requires a completely different approach. Macro- and micronutrition, physical activity, herbal medicine, enhanced resiliency, and spirituality are just a few of the key components to healing. This course will explore causes of disease along with state-of-the-art biomarkers and imaging for diagnosis. Most importantly, this course will offer solutions to immediately improving many chronic problems, including arthritis and heart disease. In general, this course will offer the necessary tools to prevent disease.

This course focuses on the role of nutrition in health—offering clear guidance on eliminating common inflammation-causing and allergy-inducing foods and how to replace them with foods that lead to the production of healthy proteins. The role of herbal medicine in health, vitamins, and supplementation will be discussed, and questions regarding the right supplements, choices, and options for dosing and purity will be addressed. The course will also discuss which foods should be purchased organic and how the industrialized food system has altered nutrition options. Full programs will be offered for naturally treating diabetes, high cholesterol, and high blood pressure.

Today, many people are struggling with stress, anxiety, and depression. Acute and chronic stress affect both the physical and mental bodies of individuals; high blood pressure and high cholesterol as well as diabetes

and insomnia are just a few of the effects that are experienced. One of the keys to enhancing resiliency is to change perception and practice, utilizing techniques that lead to emotional flexibility. In this course, you will explore natural approaches to stress, including breathing techniques, guided imagery, and meditation. The use of natural supplements for mental well-being along with exercise and mind-body techniques will be offered.

Throughout this course, you will explore the connection between people and the planet as you journey to an understanding of ecology and health. The choices that you make for your health are also healthy choices for the planet. From eating less dairy and meat to walking instead of driving, you will gain an understanding of how even small contributions to your health can lead to big contributions for the planet. Practical tools for improving the health of the planet while eliminating toxins, pesticides, and plastic are just a few of the topics that will be addressed.

This course will teach you everything that you need to know to stay healthy from a mind-body-spirit perspective. Whether you are seeking solutions to common diseases or wanting to achieve optimal health, this course will explore simple solutions that can be put into practice immediately. Health is our greatest wealth, and with simple tools and practical solutions, it is absolutely possible to achieve. ■

Shifting the Health-Care Paradigm

Lecture 1

As compared with the Western health-care model, the science of natural healing takes a more holistic approach to disease treatment and prevention. If you think of the human body as a tree that uses nutrients found in the soil to grow and thrive, you might be able to pinpoint maladies of the tree—the human body—by analyzing the contents of the soil—the elements that you consume and the environmental factors that surround you. This course features all of the scientific evidence and practical techniques that you will need to strengthen your soil naturally, improving your health and life.

The State of Health Care

- Physicians perform over 400,000 bypass surgeries per year and place over one million stents into clogged arteries per year. In addition, 2,200 Americans die each day of cardiovascular disease, and coronary heart disease claims one in every six deaths. Each year, approximately 795,000 people in the United States experience a new or recurrent stroke. Currently, 42.7 million women are living with some form of cardiovascular disease.
- In the United States, 2.5 trillion dollars was spent on health care last year, and it is predicted that 4.3 trillion dollars will be spent by 2023. Currently, that is 16 percent of our nation's gross domestic product, and it is double the amount of money that other developed nations spend on health care. However, despite the money that is spent, the United States is ranked 37th in the world in health outcomes.
- Much of the money that is spent on health care is spent on pharmaceutical therapy. North America consumes 47.7 percent of all the pharmaceuticals made for the entire world. In 2010, Americans spent 310 billion dollars on pharmaceutical therapy.

Acute versus Chronic Care

- Surgery and drugs are the hallmarks of Western medicine, and they definitely can be effective. Western medicine is great for acute care. For example, if you are having a heart attack or if you have just been involved in a car accident, you want to get to the best state-of-the-art Western medical facility.
- However, conventional medicine falls short in some very important areas—specifically, illness prevention and chronic disease care. Medical professionals are more trained to be reactive. In addition, they are disease driven and often only treat parts of people. For example, heart specialists are expected to just treat the heart—to treat symptoms, deal with problems as they arise, and then impose a treatment.
- There is a reason for this kind of training. Physicians are taught to ask patients one question: “What is your chief complaint?” This question already implies that the patient has a problem. Physicians then hear the chief complaint, do a physical exam, run a few tests, and quickly arrive at a diagnosis. Once they have the diagnosis, they then decide on a treatment.
- The primary training for physicians in conventional Western medicine involves arriving quickly at a diagnosis. Rapid diagnosis leads to rapid treatment, and rapid treatment can save lives. This process allows physicians to control the underlying problem.
- Problems arise when physicians take that model of acute-care medicine and apply it to chronic, long-term health issues. In addition, that model certainly does nothing to prevent illness. Instead, the clinician is taught to proceed directly to the diagnosis—to name the disease—in order to identify as quickly as possible a medication or procedure.
- When physicians apply the acute model to chronic disease, they miss a lot of information that might alert them to the cause of the problem. For example, if a patient has a headache and the physician

offers a diagnosis and a prescription, the physician would be missing the essential aspects of that person's life: who they are, who they live with, what they eat, what their joys and hopes are, what their exercise regimen is, and what medications they take. Socially, the physician would not know whether they are married, belong to a community, or gain strength from their belief system.

- The result of using the acute-care model is that little attention is paid to the patient's story. Physicians are aware of the patient's chief complaint and present symptoms of illness, but the patient's whole story is not understood. Each major issue becomes a discrete diagnosis dealt with in isolation from all the others because physicians are trained to look at the parts.
- Physicians end up with what can best be called "the ill to the pill." Everything that physicians have a diagnosis for is associated with a pill or a surgery because that is what is in their toolbox. The problem with this approach is that the patient ends up with a bag full of pills.



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Personalized medicine involves the understanding that not everyone needs the same pills for the same illnesses.

A Natural Alternative

- When it comes to the prevention and treatment of disease, nature provides the best solutions. Think of yourself as a tree that has a few health challenges. Think about the soil in which you live. You might be able to label some of the leaves of your tree—maybe as "depression," "diabetes," "high cholesterol," or "heartburn." Some people have many sick leaves.

- Imagine that the trunk of your tree is your genes—your genetic makeup. Then, think about what makes up the soil because what determines whether you have healthy or sick fruit is a very special interaction between your genes and your environment, and the soil is the environment in which you live.
- Soil ingredients interact with the trunk of your tree—with your genome—and determine if our leaves are sick or healthy. Important soil ingredients include the following.
 - Macronutrition: What kind of protein do you eat? What kind of carbohydrates do you choose? Do you eat good fats or bad fats?
 - Micronutrition: vitamins and minerals, such as vitamin D, zinc, and selenium.
 - Clean air and clean water.
 - Physical activity: Do you walk every day? Do you have a formal exercise program?
 - Sound sleep at night.
 - Environmental toxins.
- In addition to the components of the physical body, your soil has other components that are equally important: How do you live your life? How do you feel emotionally, mentally, and spiritually? Are you angry and hostile? Where is your resiliency? Do you believe in a higher power? Where do you gain your strength?
- The best way to heal your tree is by strengthening your soil. However, not everyone needs the same things. Some people need nutrition while others need exercise—and perhaps others need to reduce the amount of stress they have.

Questions to Consider

1. What is the current health-care paradigm, and how is it good for acute care?
2. Prevention and chronic disease care require a new approach to health. How do they differ from the acute-care model?

Understanding Holistic Integrative Medicine

Lecture 2

Holistic integrative medicine is a new paradigm for health care that completely reverses the old paradigm; it's a whole new philosophy. Traditional Western physicians are trained to believe that the foundation of health care involves drugs and surgery. On the other hand, holistic integrative practitioners are trained to take care of the whole person—body, mind, and spirit—and to understand a patient's connection to his or her community. Holistic integrative medicine is about food, love, touch, micro- and macronutrition, moving and exercise, and prayer and meditation.

What Is Holistic Integrative Medicine?

- Using the holistic integrative medicine model of care, physicians do not just treat symptoms—they get to the underlying cause. They do not just treat the physical body; they do not separate the emotional, mental, and spiritual aspects of healing from the physical.
- In essence, holistic integrative physicians create a bridge between the best of global healing traditions. For example, they combine yoga, meditation, and vegetarian diet, which are components of Ayurvedic medicine from India. However, patients still take their medications—they engage in both concepts together. As a result, a bridge is created between Ayurvedic medicine and Western medicine.
- Integrative holistic medicine is not about alternative medicine, which implies taking an alternative route to mainstream medicine. In alternative medicine, a patient might choose to do diet and nutrition-infusion therapies and not to do chemotherapy and radiation.
- With integrative holistic medicine, physicians use a combination of all of the treatment options available. If you need a bypass, chemo,

or radiation, then you will be subjected to those methods, but these physicians will also do the best that they can to add methods used in global healing traditions, including yoga and meditation.

- The term “holistic” just means “whole,” and in this context, it involves treating the whole person—not just a small part. It means looking at the physical but also looking at the mental, emotional and spiritual. It is embracing the individual in the world and environment in which they live, including the people that surround them and their connection to the planet.
- If you have a chair that has four legs on it, the chair needs those four legs to be balanced—or it will tip over. Think about the four legs as body, mind, emotion, and spirit. Each of us needs to do something in every category every day to remain balanced. Some people need a little more in one place than another, but it is all needed for wholeness, health, and healing.
- Global healing traditions are traditions that have been around for many thousands of years. An example is traditional Chinese medicine, which has been around for over 5,000 years. It has a philosophy and an education: To become a doctor of Chinese medicine, you must complete as rigorous a training program as any medical school training program.
- Another global healing tradition is Ayurvedic medicine, which comes from India and is also over 5,000 years old. You become an Ayurvedic physician when you train in India in that discipline. It focuses on nutrition and on keeping people well using massage and oils, yoga, and meditation.
- In the world of holistic integrative medicine, doctors are teachers who teach about prevention, health, and wellness. It is about being a healer. It is about being present with patients and partnering with patients. Healing a patient’s life requires getting to the underlying issues and working them through.

- Happiness, which many physicians are not even taught about in medical school, can no longer be ignored. In addition, death is part of the human process. That does not mean that physicians should not do everything they can to keep you healthy and well, but they should not view death as a failure.
- Emotional and physical pain—and even mental and spiritual pain—are not the enemies. Sometimes, pain is a teacher; sometimes, it is a lesson. Sometimes, it is a warning that something is out of balance.

Principles of Integrative Holistic Medicine

- Integrative holistic medicine physicians and practitioners believe that prevention is the best intervention. Prevention, getting to the underlying cause of disease, is what distinguishes this model from traditional Western medicine.
- When using holistic integrative medicine, physicians focus on optimal health, which is the conscious pursuit of the highest level of



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Ayurvedic medicine, which stems from India, involves the use of massage and oils to keep people well.

functioning that can be obtained—a balance between the physical, mental, emotional, spiritual, and environmental and social aspects of being human.

- It does not matter where you begin; everyone is in a different spot on the journey to optimal health. In addition, one size does not fit all; not everyone needs the same meditation program, yoga program, or pill. Physicians need to look at people as individuals and engage in personalized medicine, which focuses on the unique aspects of an individual—on the nature of the person.
- Holistic medicine physicians partner with their patients, get to the underlying cause, recognize the individuality of each patient, and embrace the wisdom found in all the global healing traditions.
- One of the deep core principles of integrative holistic medicine is about the fundamentals of life. Physicians recognize that all experiences in life, birth, joy, suffering, and even dying are profound opportunities for learning.
- Physicians who use the integrative holistic medicine model also know that they have an innate power to heal. In fact, all people have the ability to heal; we just have to tap into the wisdom of the body, the body's innate power, and bring that forth. We cannot tap into that—to fight an infection or cancer, for example—if we are stressed out because stress suppresses our immune system. One of the goals of integrative holistic physicians is to help people utilize these powers to put them into the right space for healing.
- Finally, love is the most powerful healer. One of the most important things that physicians can do for their patients, in partnership with their patients, is to meet each individual with kindness, acceptance, and grace—not judgment.

Questions to Consider

1. What is the philosophy of holistic integrative medicine?
2. How does holistic integrative medicine differ from conventional Western medical care?

You Are More Than Your Genes

Lecture 3

In this lecture, you will learn about some of the fascinating research that has been done on the human genome, and you will explore the new fields of nutrigenomics and pharmacogenomics. Even more importantly, you will learn that it is possible to turn genes on and off through nutrition and lifestyle change. Nutrients and the environment in which you live can influence your epigenome and, ultimately, your health. Throughout the rest of this course, you will be given the tools to make nutrition and lifestyle choices that can have positive and profound impacts on your genes.

Genes Plus Environment

- The first survey of the entire human genome, called the Human Genome Project, determined that the genome had far fewer genes than were anticipated, but the variation of the genes was far greater than expected—with over three million variations.
- Our phenotype—how we look—results from an interaction of our genes and our environment. This interaction occurs through what is called the epigenome.
- Human beings have 23 chromosomes, and they occur in pairs. One member of each pair comes from your father, and one comes from your mother.
- Our epigenome is a personal history of our life from conception to death, and the composition of this epigenome is the result of our genetic determinants—our lineage—and our environment.
- According to Randy Jirtle, an authority on the epigenome, certain genes appear more epigenetically sensitive than others, and it is clear in the fetus that these genes are capable of being environmentally marked.

- Researchers use a mouse called the Agouti mouse—which is yellow, fat, and has a high risk of cancer, diabetes, and obesity—to study these diseases. If a pregnant Agouti mouse is given nutrients such as zinc and the B vitamins known as folate and B12, the mom produces a completely normal offspring. The baby is thin, brown, and has no risk, or a much lower risk, of cancer, diabetes, and obesity, and the baby mouse lives a long life.
- This has profound implications: What we do not only affects our own epigenome, but it also affects the next generation. When a mom eats during pregnancy, she is imprinting the fetus with information—called epigenetic tags. There are many conditions that are associated with these tags, including type 2 diabetes, heart disease, autoimmune disease, Alzheimer’s disease, allergies, and even some cancers.
- All of these major medical conditions can be influenced by environmental factors. Our chances of developing any or all of these conditions can be increased or decreased by how we live our lives. In other words, your genes are not your destiny; you are more than your genes.
- A number of vitamins, minerals, and phytochemicals—which are chemicals that come from plants—have been shown to affect the epigenome. For example, niacin, zinc, iron, riboflavin, and resveratrol can affect the epigenome.
- We take in nutrients all day. The food that we eat is metabolized, and it is absorbed by our small intestine. Eventually, it is broken down, goes into our bloodstream, and enters the cells of our body. The nutrients, which are the breakdown products of whatever we ate, sit on top of the epigenome and tell the epigenome to turn specific genes on or off, expressing different kinds of proteins.

Genetic-Environmental Research

- When genetically identical twins grow up, they do not always have the same diseases. One may have cancer, for example, and the other may not.
- In 2008 in the *Archives of Internal Medicine*, a study was published that looked at a gene called the FTO obesity gene. Researchers studied a population that has this genetic variant to be obese: the Amish people. However, when they evaluated the community, they were not obese. The members of the Amish community were walking over 18,000 steps per day, so the obesity gene was trumped by physical activity.
- Numerous studies have shown that there are incredibly strong links between chronic stress and poor health. Stress is a recognized risk factor for a number of diseases, including diabetes, heart disease, and high blood pressure.
- Telomeres are DNA proteins that are essential to cell division. Our cells are dividing all the time, and we change our full body every seven years or so; we do not have the same cells we were born with. Without telomeres, we would not be able to make new cells, so we would die. Telomerase is the enzyme involved in this crucial mechanism.
- In one study, Dr. Elizabeth Blackburn evaluated the relationship between stress and aging on telomeres and telomerase to determine if stress impacts health by affecting the rate of cellular aging. She



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Even though genetically identical twins may appear to be the same person, they do not always contract the same diseases.

measured the telomere length and the telomerase enzyme in 58 premenopausal women and found that women who had the highest levels of perceived stress had the shortest telomeres. In essence, these high-stress women had a cell age that was 10 years older than their biological age.

Nutrigenomics and Pharmacogenomics

- An emerging field called nutrigenomics involves the study of the relationship between genes and nutrition.
- The ApoE is a type of genotype that is tested routinely in heart patients. We inherit one of these genes from each of our parents. The ApoE has three different types: ApoE2, ApoE3, and ApoE4. Most of us are born with the E3 variant. The E4 variant predicts the highest risk for heart disease and Alzheimer's disease. Those individuals with the E2 variant do better on a high-fat diet, but those with the E4 variant do better on a low-fat diet.
- There is not one diet that fits all because everyone is unique. However, we now have genetic information that is going to start to tell us what kind of nutrition recommendations that we should make.
- Nutritionists are being trained in this area because they are getting ready for what is called the nutrigenomics revolution, which would involve physicians making recommendations about what a person should eat and which supplements or drugs to take based on his or her specific genes.
- Another area of amazing promise is pharmacogenomics, which involves the study of the interaction between medication and genes. Physicians are already starting to put this information into clinical practice.
- Statins are drugs that lower cholesterol, and there is a genetic blood test that can tell you whether you are prone to have a problem with metabolism of statins. When certain people in the population take a

statin cholesterol-lowering drug, they get muscle aches, joint aches, and pain. If you are at risk for this problem, then you should try other medications that are not statin therapy.

Questions to Consider

1. What is the epigenome?
2. What are some potential lifestyle changes that can affect the epigenome?

Food Matters

Lecture 4

With the right food, we do not need medicine. Food is medicine because food is information, and what we eat can have profound effects on our physical body. The right foods send a signal to our genes to produce a protein that prevents heart disease, Alzheimer's disease, arthritis, and inflammation, or we can choose to eat the wrong foods—those that are high in white refined flour and sugar—sending a signal to our genes to produce proteins that result in arthritis, back pain, shoulder pain, heart disease, and memory loss.

The China Study

- The China Study, which was conducted by T. Colin Campbell, analyzed 50 diseases in rural China and compared the food in China with the food in the United States to attempt to explain the diseases.
 - Fat intake was twice as high in the United States as it was in China.
 - The intake of fiber, which is found in fruits and vegetables, was three times lower in the United States.
 - The consumption of animal protein—such as beef, pork, and lamb—was 90 percent higher in the United States.
 - Heart disease death rates were 16 times greater in the United States for men and five times greater for women in comparison to rural China.
 - In the United States, cancer, osteoporosis, diabetes, and high blood pressure were more prevalent than in rural China.
- Campbell's study shows that food is linked to positive and negative health outcomes and that what we eat matters.

The Science of Nutrition

- Cardiologists know that some foods can impact the ability of blood vessels to dilate. The fat in a high-fat meal gets broken down into large particles that float around the bloodstream and can block blood vessels. A high-fat meal keeps a blood vessel from dilating for as long as six hours.
- If you lower the amount of fat in someone's diet, you improve the blood flow to his or her heart muscle. On the other hand, if you take someone with good blood flow and place him or her on a diet involving large quantities of saturated fats—a diet of beef, pork, and lamb, for example—the blood flow to the heart muscle is diminished.
- Research repeatedly links red meat, processed meat, and cured meat to colon cancer. In a study that was conducted by the National Institutes of Health (NIH) in 2010, over 3,000 Americans between the ages of 50 and 71 were analyzed. The NIH identified about 2,700 cases of colon cancer and concluded that red meat and processed meat are positively associated with colorectal cancer.
- Research that was conducted in 2010 shows that women who eat meat—particularly red and cured meat—prior to their diagnosis of ovarian cancer have a disadvantage in their clinical outcome.
- There are also links between obesity and cancer. There are about 100,000 deaths per year from cancer that are related to being overweight, and that is related to having too much sugar and simple carbohydrates in the diet.
- The good news is that there is also a lot of research on the positive influence of food that tells us what we should be eating, how we should be eating, and how much we should be eating.
- *The Archives of Internal Medicine* has shown that whole fruits and vegetables—particularly green leafy vegetables—protect against

heart disease and stroke. Green leafy vegetables are high in calcium and magnesium and are very low in sugar.

- Research has shown that we can improve blood flow to the heart muscle with just lifestyle changes, such as diet, exercise, and support groups. In fact, plaque in vessels can be reversed in certain patients. They can turn on the right types of good proteins, such as the good HDL, and pull plaque out of their arteries.

The Mediterranean Diet

- The Mediterranean diet has gotten a lot of press over time because there are regions in the world where people do not have heart attacks. Epidemiologists conclude that the lack of heart attacks is related to the Mediterranean diet.
- Studies have shown that older people, 70 to 90 years of age, who follow a Mediterranean diet and simply walk about one mile per day enjoy a 50 percent lower rate of cardiac events and mortality.



The Mediterranean diet focuses on healthy fats, fruits, and vegetables.

- The Mediterranean diet is associated with a reduction in cancer and cardiovascular events and an improvement in mortality from eating beans, lentils, legumes, whole foods, fruits, and fish. The Mediterranean diet is so effective because it is about the type of fats and carbohydrates in the diet.
- The carbohydrates that are consumed in the Mediterranean diet are whole grains, including whole wheat bread and brown rice.
- There are two kinds of fats that are important. Polyunsaturated fats include omega-6 and omega-3, and monounsaturated fats include olive oil and nuts.
- In the Mediterranean diet, people are told to stay away from saturated fats, such as beef, pork, lamb, lard, cream, and butter. They are told to use canola oil, which is monounsaturated, and they are told to eat a lot of omega-3s, which are polyunsaturated.
- When you eat omega-3s, particularly in the form of fish, you are going to send a signal to your genes that is going to produce proteins that prevent blood from clotting and block inflammation—which is linked to heart disease, Alzheimer’s disease, and arthritis. This is one of the key ingredients of the Mediterranean diet’s success.
- Think about your food as medicine. Every day, you should look at what you are eating and possibly keep a food journal or diary.
- Take your dinner plate and split it in half. Fill half of your plate with something green, such as green leafy vegetables, broccoli, asparagus, or escarole. Then, take the other half of your plate and divide it in half again. One half of that should be filled with whole grains, such as brown rice, wild rice, beans, and lentils. On the small quarter of a plate that is left, include good fats, such as a handful of nuts, a tablespoon of nut butter, some olive oil, or a small piece of avocado. Then, pick your protein, such as tofu, wild salmon, or an omega-3 powerhouse food.

- SMASH is an acronym for foods that are high in omega-3: sardines, mackerel, anchovies, salmon, and herring.

Questions to Consider

1. What research supports the role of nutrition in the prevention of cardiovascular disease?
2. What does “food is information” mean?

Not All Foods Are Created Equal

Lecture 5

Research shows that food impacts our health, but not all foods are created equal. There are some unique properties of various foods that make them nutritional superstars. You should eat vegetables, grains, and legumes as whole foods; try not to process, refine, or filter them for the best effects. In addition, incorporate lean protein, preferably from the Earth, into your diet. Consume healthy forms of fat, such as olive oil, nuts, seeds, pumpkin, and flax. It is important to remember that how you cook a food can affect its nutritional content.

Whole Foods

- One of the nutrition superstars is whole foods, which are foods that are not processed, refined, or filtered.
- Whole foods are very high in phytonutrients, which mainly come from plants, vegetables, and fruits. They have beneficial effects on our body that are even greater than the effects of the vitamins, minerals, and micronutrients that we get when we eat a food.
- There are over 10,000 phytonutrients, which have antioxidant effects. They can boost the immune system and, therefore, prevent cancer. They are anti-inflammatory, and they can prevent heart disease and Alzheimer's disease. They are even antiviral and antibacterial; some of them behave like antibiotics. We typically find these foods in colored vegetables.
- The deeper the color of the food—the darker the berry or the redder the grape—the more phytonutrients it has. Vegetables, fruits, nuts, flax seeds, olive oil, and even chocolate are excellent sources of phytonutrients.

Refined Foods versus Whole Foods

- If the label on a particular type of food mentions that it is fortified with vitamins and minerals, that is actually a negative thing. Fortifying a food involves taking everything out of it. For example, if you take brown rice and decide to make white rice, you are stripping the rice of all of its good qualities.
- Refining food removes important vitamins and minerals. For example, 77 percent of thiamine, which can only be obtained through food, is removed; 76 percent of iron, which is needed to make red blood cells, is removed; 85 percent of magnesium, which is needed not only to keep our bowels moving but also to keep our heart healthy, is removed. When food is refined, copper, zinc, calcium, and everything that we need to have strong and healthy bones is also removed.
- One of the greatest things that whole foods give us is fiber. Soluble fiber is found in foods such as beans, peas, nuts, apples, and vegetables. Fiber is important in lowering cholesterol and blood sugar. It binds the fatty acids in the intestine and pulls them out of the body. Fiber also blocks the quick absorption of sugar.
- When adding fiber—ideally 35 grams per day—to your diet, a few categories are important.
 - Whole grains: Steel-cut oats are a perfect example of a whole grain, and psyllium is one of the most potent sources of soluble fiber.
 - Fruits: You should eat two to three whole fruits, including dark berries and apples, per day.
 - Legumes and beans: These carry a lot of fiber.
 - Vegetables: Green leafy vegetables have calcium and magnesium, do not have sugar, do not spike up your insulin, and contain lots of fiber.

- You have to gradually add fiber into your diet—especially if you are not used to eating it—because if you add a lot of fiber suddenly, you will experience a lot of gas and bloating.

Vegetables

- Broccoli contains sulforaphane, which is an anticancer food that eliminates toxins from our body.
- Green vegetables such as arugula, bok choy, brussels sprouts, mustard greens, kale, cauliflower, cabbage, collard greens, watercress, and radishes have similar effects to broccoli on your body.
- Spinach is very high in antioxidant activity, and research shows that it is good for the eyes.
- Mushrooms, such as shiitake, maitake, enoki, and oyster mushrooms, are medicinal. However, those small white button mushrooms can actually contain toxins. For best results, sauté your mushrooms in turmeric.
- Lycopene occurs in tomatoes and can prevent prostate cancer. It can even lower blood pressure and block platelets from sticking together, which is the first step to having a heart attack.



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Green vegetables that turn on the same enzymes in your body as broccoli include cauliflower, cabbage, and collard greens.

Berries

- Blueberries contain anthocyanosides, which protect the eye, give you the most potent antioxidant that is good for your heart, and block bacteria from sticking to the lining of your bladder.
- Ingesting cranberry is actually like taking an antibiotic. It contains hippuric acid, and just like the blueberry, it blocks *E. coli*—one of the most common pathogens for urinary tract infections—from sticking to the lining of the bladder.



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Buy berries that have thin skins—such as strawberries, blueberries, raspberries, and blackberries—organic.

Nuts

- Nuts are a source of fiber and protein. They also contain magnesium, zinc, calcium, and vitamin E—an antioxidant.
- Walnuts have over 16 polyphenols, which are phytonutrients with strong antioxidant ability. They help to protect our heart and brain.
- Do not eat too many nuts because they have a lot of calories. Instead, use them as a garnish; for example, put them on top of a salad.

Fats and Proteins

- Saturated fats are solid at room temperature and are found in beef, lard, cream, cheese, and butter.
- Unsaturated fats contain two categories. Monounsaturated fats typically come from the Earth and are found in olives, nuts, and seeds. Polyunsaturated fats contain two main groups: Omega-6s

comes from corn, corn oil, safflower oil, and sunflower oil, and omega-3s come from fish.

- The ideal omega-6 to omega-3 ratio is two to one. Olive oil has a ratio of around 13 to one, which is great for an oil. Avocado oil is even better for cooking than olive oil because you can cook avocado oil at high temperatures, but olive oil becomes toxic at high temperatures. The perfect oil is macadamia nut oil, which has a ratio of one to one. It also has a slightly higher heating point, so it can be used for cooking.
- Proteins that come from the Earth are things like edamame, nuts, and legumes. Proteins that come from animals are omega-3 eggs, low-fat yogurt, fish, chicken, and turkey.

Cooking Matters

- The way we prepare a food can lead to the production of bad chemicals, such as lipid peroxidases, advanced glycation end products (AGEs), and heterocyclic amines.
- AGEs make proteins more likely to rev up our immune system. They lead to inflammation, accelerate aging, and make heart disease and brain disease much worse.
- We ingest AGEs by cooking in high temperatures, and we inhibit them by cooking with moisture. When you can, boil your food for only a few minutes, poach, and use a steamer. The more you fry, broil, and roast, the more you increase the AGEs in your food.

Questions to Consider

1. Which fats are monounsaturated and polysaturated?
2. What is a phytonutrient?

Natural Approaches to Inflammation

Lecture 6

The foods that we eat can lead to, or prevent, inflammation, which is one of the final pathways for most of the common diseases. Inflammation is a crucial protective reaction; it is there to protect us so that healing can take place. In this lecture, you will learn some of the main causes of chronic inflammation. More importantly, you will learn how you can reverse the process—and even prevent it in the first place—by understanding the underlying causes.

Causes of Inflammation

- Inflammation is our body's normal response to an injury, an infection, stress, foreign substances, and anything that might be irritating us.
- In medicine, we use the suffix “-itis” to mean “inflammation”—for example, pharyngitis is an inflammation of the throat, or sore throat. The classic signs of inflammation are swelling, redness, pain, and warmth. The body turns on its defense mechanism to defend against a toxin or foreign invader.
- Cancer, Alzheimer’s disease, and heart disease are all linked to inflammation. In fact, most cardiologists today are less worried about cholesterol as it relates to blockage in the arteries than about inflammation. Inflammation is more important.
- Polluted air, chemical irritants, second-hand smoke, and pesticides are all seen by the body as foreign invaders. They turn on our immune system; they are foreign particles that the body is responding to. This irritation can lead to chronic inflammation of the lung and can even increase the risk of cancer.
- Ulcers are chronic infections that are caused by a bacterium called *Helicobacter pylori*. This bacterium sits in the stomach, produces inflammation, can cause ulcers, and can even cause stomach cancer.

- A sensitivity or allergy to a food causes an inflammatory response. An allergy is a quick reaction, and the immune response is that we produce a protein called IGE. A food sensitivity has a more gradual course that leads to chronic low-grade inflammation, and it involves an immune factor called IGG.
- Another common cause of inflammation is midline weight, which involves wearing your weight around the midline of your body. Those fat cells are actually an inflammatory organ, and they produce cytokines, which raise blood pressure, cause inflammation, and make a person diabetic.
- If you have chronic sleep disturbance or even just a few hours of lost sleep, the body turns on its defense system, which leads to inflammation.
- Sleep apnea affects those who snore and then stop breathing. This can also lead to chronic inflammation and weight gain.

Food and Inflammation

- What you eat can turn inflammation on, but more importantly, what you eat can turn inflammation off.
- There are eight major foods that contribute to inflammation.
 - The number one cause of inflammation is sugar, which exists in the form of corn syrup, dextrose, fructose, golden syrup, maltose, and sucrose. If you have any signs of inflammation or any problems linked to inflammation—such as heart disease, memory loss, and arthritis—eliminate sugar.
 - There are good oils that have a very good omega-6 to omega-3 ratio, and then there are oils that are very high in omega-6. Stand clear of oils that are high in omega-6, such as grape-seed oil, cottonseed oil, corn oil, safflower oil, and sunflower oil. These are industrial vegetable oils that are usually found in fast foods and processed foods.

- Trans fats are a modified form of fat that increase and oxidize the bad cholesterol, or LDL, which leads to the laying down of plaque in the vessel. They also lower the good cholesterol, or HDL. Trans fats are found in deep-fried foods, fast foods, and commercially prepared baked goods, and they usually appear on labels as “partially hydrogenated oil.”
- Cow’s milk also leads to inflammation. People who are lactose intolerant typically develop stomach distress, diarrhea, gas, and bloating, but milk is also a common cause of arthritis and skin rashes.
- Cured meats and red meats contain a substance called neu5Gc, which is a compound that the body sees as a foreign invader, so it produces antibodies and triggers an inflammatory response.



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Oils that are very high in omega-6 are usually found in fast foods and processed foods.

- Excess alcohol consumption is rampant in our culture and is linked to irritation and inflammation of the esophagus. Esophageal and laryngeal cancers are linked to alcohol consumption. High consumption of alcohol affects the liver as well—from cirrhosis to alcohol-induced hepatitis. Over time, chronic inflammation from alcohol can lead to tumor progression.
- Another cause of inflammation is the consumption of refined grains, such as white bread and white rice. Do not eat anything white.
- Artificial food additives, such as monosodium glutamate and aspartame trigger the inflammatory response. Do not buy anything in a package unless you can read the label and identify all of the ingredients.

Preventing Inflammation

- To prevent inflammation, eat whole foods: fish high in omega-3, kelp (seaweed), and whole fruits and vegetables. Use olive oil, avocado oil, and macadamia nut oil instead of oil made from corn.
- Drink filtered water, but do not drink water from plastic bottles because it is not good for the environment—or for your health.
- Tea is the second-most consumed beverage in the world next to water. Research on black tea shows that black tea dilates blood vessels, which is a good thing. Like broccoli, turmeric, and shitake mushrooms, green tea can protect against cancer. It is anti-inflammatory and can reduce cardiovascular disease.
- Herbs and spices, when used correctly, have powerful anti-inflammatory components.
- Tulsi, also called holy basil, is an Ayurvedic herb that comes from India and is pure anti-inflammatory.

- Turmeric contains a powerful nontoxic compound called curcumin, which is what makes mustard have a yellow color. Research studies have shown that turmeric is as good, on occasion, as hydrocortisone and Motrin for inflammation. Turmeric also has anticancer properties.
- Ginger is a spice that has powerful anti-inflammatory benefits. It also has the added benefit of helping with nausea—not only related to cancer and chemotherapy, but also related to pregnancy.
- Basil, which is a staple in the Italian diet, is anti-inflammatory—as is rosemary.

Questions to Consider

1. What are three causes of inflammation?
2. Name three anti-inflammatory foods.

Food Sensitivity and the Elimination Diet

Lecture 7

Illness can be connected to food in ways that you never thought about before. In this lecture, you will discover the six most common causes of food allergy and food sensitivity. You will learn how to eliminate these foods from your diet in a very scientific and practical way. You will also learn about some food options—such as drinking almond milk instead of cow's milk—that can lead to success with the elimination diet.

Food Allergies versus Sensitivities

- There are two types of reactions. An allergic reaction to a food happens quickly. It is a food allergy in which someone eats shellfish or a peanut, for example, and all of the sudden, they cannot breathe. The protein responsible for this is IGE.
- On the other hand, you may not recognize food sensitivity immediately. It is one of the causes of low-grade chronic inflammation. You keep taking in a food, and your body keeps seeing it as a foreign invader, and your body works constantly to clear the toxin from your system. Even though the reaction may not seem severe, the long-term consequences are enormous.
- Fatigue, trouble sleeping, mental foginess, mood changes, irritability, anger, skin irritation, and rashes are common signs and symptoms of food sensitivity.
- Arthritis, muscle stiffness, and joint pain can be caused by the protein in cow's milk; it's not just about having gas and bloating. Nasal congestion, post-nasal drip, sinus infections, and ear infections can also be related to food sensitivity.
- If you have any of these signs and symptoms, there is a good chance that you have food sensitivity. More importantly, research has shown that the symptoms of food sensitivity are most likely

connected to six common groups: dairy, gluten, corn, soy, peanuts, and egg.

The Elimination Diet

- The elimination diet is a dietary program that is designed to clear your body of foods that you may be allergic or sensitive to. For best results, you should stick with the diet—without exception—for two weeks. The tricky part is to not eat a group of foods either whole or as ingredients in other food; you must eliminate a group in its entirety.
- Start this program by eliminating all six common food irritants on day one. Before you start, you want to have a list of foods you can and cannot eat from your nutritionist, and you want to have the right foods in your house. Between days two and seven, you may start to feel like your symptoms are getting worse, but this is expected. As you clear your body of the toxins, sometimes they flare up. By about day eight, and somewhere between days eight and 14, your symptoms should disappear. If they do, then you know that one of those six food groups is causing your symptoms.
- To determine which of the six foods is causing your symptoms, on day 15, reintroduce one of those foods. Have a small amount for breakfast, some for lunch, and some for dinner. Then, stop consumption of that food after that day, and wait to see how your body reacts to the reintroduction of this food on days 16 and 17.
- You then continue cleaning everything out of your diet that you had eliminated over the course of two weeks by reintroducing them one at a time. Reintroduce a food, and wait for two days to monitor the response. Then, do not keep that food in your diet; keep it out until the elimination diet is over. This helps you identify which foods you are sensitive to. Many people are sensitive to more than one food.
- If you have sinus congestion, gas, and bloating in the abdomen, the target is usually dairy. The other big one is gluten. So, you can

just eliminate those two most common allergens for two weeks as a shortcut to the process.

Substitutions for Common Allergens

- As a substitution for cow's milk, try drinking rice milk, coconut milk, or almond milk. However, try to stay away from soy milk because soy can be a very common food sensitivity item as well.
- The process of finding substitutions for nongluten grains is a little more complicated than substituting for milk. Two of the best substitutions are brown rice and quinoa. Others include buckwheat, arrowroot, and millet.
- You can buy gluten-free bread, such as bread made from organic brown rice, and you can use rice flour, quinoa flour, and potato flour for baking. However, because potato is white, it is not the healthiest option. You can even use garbanzo beans and rice bran as substitutions.
- The other four items on the list of common allergens—corn, soy, eggs, and peanuts—are easier to avoid, but they are frequently hidden in various foods, so you should be aware of this and read food labels carefully.
- Be aware that baking powder frequently has cornstarch in it, and high fructose corn syrup comes from corn. In addition, the vinegar that is in condiments such as ketchup, mayonnaise, and mustard frequently comes from wheat or corn.



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Gluten-free products, such as gluten-free bread, are readily available in many supermarkets.

- Some breads are advertised as gluten-free, but they often contain oats, spelt, and rye. If you see the word “multigrain” on a product, it usually contains a mixture of things, and there is a good chance that it has gluten.

Tips for the Elimination Diet

- Make extra food at night so that you have some leftovers for the next day. If you are dedicating the time to cook and prepare healthy, anti-inflammatory foods when on the elimination diet, you should prepare extra.
- During this process, drink plenty of filtered water—but not water from plastic bottles. In addition, don’t exercise too much during this time. Your body is clearing toxins, and it needs to heal. Do your best to walk outside every day for about 10 minutes, but don’t do any heavy strength training or weight lifting, and don’t engage in prolonged periods of exercise.
- When you start this diet, you may experience some fatigue, you may get a headache, and your joints may ache a little, but this is only because your body is withdrawing from these foods and cleansing your body of toxins.
- When you start craving the foods you have eliminated, stick with the program. These symptoms don’t last long, so be strong.
- Get the guidance and support that you need. You have the ability to transform your life if you are able to eliminate allergens from your diet.

Questions to Consider

1. What are the top six food allergens?
2. What is the purpose of the elimination diet?

Vitamins and Supplements

Lecture 8

Vitamins, herbs, and supplements play an important role in our health. In this lecture, you are going to learn how to base your decision to take any natural product on good evidence and how to choose the best dietary supplements. There are supplements for the brain, heart, and gut. Most importantly, supplements are just supplements—they are not a replacement for proper nutrition and a healthy lifestyle. Before you start a supplement program, consult a physician.

Dietary Supplements

- Not everyone needs the same supplement. In addition, people do not need the same supplement all the time.
- We all need to be informed consumers when it comes to the natural products industry. Today, 52 percent of adults in the United States take some form of a dietary supplement, and 30 percent of U.S. children take dietary supplements on a regular basis. The natural products industry is a 23-billion-dollar industry.

The Regulation of Dietary Supplements

- In 1994, the Dietary Supplement Health and Education Act (DSHEA) was passed, ruling that products listed as dietary supplements are not required to undergo the same stringent approval as drugs. In addition, they do not require proof of safety and effectiveness.
- DSHEA also mandated that a supplement could not claim to diagnose, treat, cure, or prevent a disease, and every dietary supplement had to have a disclaimer on it stating that fact. Unfortunately, this did not stop people who wanted to make money, and products named BP Low, for example, appeared in the market with the assumption that it would lower your blood pressure—even if it couldn’t.

- Even after DSHEA was passed, there were many supplements on the market that had prescription medications in them. For example, in 2002, a supplement called PC-SPES was found to have a blood thinner called Coumadin and an antianxiety drug called Xanax in it. Clearly, there needed to be further legislation and regulation.
- In 2007, the good manufacturing practice (GMP) law was passed, requiring safeguards on manufacturing dietary supplements. It requires that dietary supplements are manufactured consistently in terms of their identity (that what is in the bottle is what it says is in the bottle), purity (that it does not contain added heavy metals, sawdust, or prescription medications, for example), strength, and composition.
- Later in 2007, the U.S. FDA mandated that if a product has a problem, it needs to be reported to them within 15 days and that every supplement bottle has to have on its label information about who makes it and where the report should be sent. This has resulted in many supplements being recalled.
- There are some companies that do independent testing of GMP guidelines. For example, ConsumerLab.com does both voluntary and nonvoluntary testing of dietary supplements. They are an independent body that gives out a lot of free information and puts their seal of approval on a bottle once they test the supplement.



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In the medical community, there is a lot of controversy about whether dietary supplements can cure people's ailments.

- The United States Pharmacopeia (USP) label, like the GMP label, implies that identity, strength, purity, and quality of the supplement has been evaluated. In other words, the product contains the ingredients it says it has.
- Another independent certification body is the National Science Foundation (NSF). They also certify the content in natural supplement bottles.
- Most importantly, when a supplement is tested by a reputable source, make sure that if you take that supplement, you are taking the one that was studied. If you take one that looks like it but is not the one that was tested, it may not give you the same result.
- In addition to ConsumerLab.com, you can get information about supplements on www.naturaldatabase.com and on the NIH's website.

The Benefits of Natural Products

- Probiotics are found in yogurt, kefir, and many other food items. A probiotic is a living organism that, when ingested in the right amounts, can have a healthy benefit on the host—a human being, in this case.
- Acidophilus is a common example of a probiotic. Lactobacillus is another one, and there are some patented probiotics that are on the market that are quite good.
- One of the most serious inflammatory diseases is ulcerative colitis, which can make someone's life miserable by causing dehydration, nausea, gas, bloating, and diarrhea. Probiotics improve flare-ups of ulcerative colitis.
- People who have gastroenteritis, or inflammation of the gastrointestinal (GI) tract, often experience diarrhea, which dehydrates them as a result of the loss of fluids. They lose potassium and magnesium, which is why they feel so terrible. If they take

probiotics, there is a significant reduction in the risk and duration of diarrhea.

- Antibiotics, when taken on a routine basis, can change the entire bacteria of your bowel—the flora of your intestinal tract—so much that a pathogen begins to grow, causing profound diarrhea. Probiotics can prevent antibiotic-induced diarrhea and help with the symptoms.
- In addition, studies have shown that giving probiotics to people along with any antibiotics that they are taking has the potential to decrease morbidity, health-care costs, and mortality. This effect has been proven in children as well as adults.
- Selenium, another natural supplement, was studied in the 1990s. Participants in a study that was published in the *Journal of the American Medical Association* were given 200 mcg of selenium per day in hopes that it could protect against skin cancer. Although the selenium did not seem to have any effect on skin cancer, the study showed that prostate cancer decreased by over 50 percent and colorectal cancer decreased by over 60 percent.
- Vitamin D—which is not a vitamin, but is a hormone—is needed for your bones and heart. It protects your muscles, and it helps with depression and symptoms of fibromyalgia, such as muscle aching. Low levels of vitamin D can lead to calcification on the valves of the heart.
- A 2008 study showed that women with breast cancer who were deficient in vitamin D—with levels less than 50 ng/ml—had a 94 percent greater chance of metastatic disease and a 73 percent greater chance of death than patients with levels over 50 ng/ml.
- Taking four grams of omega-3 fish oil will lower your triglycerides—which is the form of fat that comes from sugar and white foods—by 45 percent.

- Niacin is a B vitamin that is used to correct a very important cholesterol abnormality. It raises the good cholesterol, or HDL.

Questions to Consider

1. What is DSHEA?
2. What does GMP mean?

Herbal Remedies

Lecture 9

In this lecture, you are going to learn about herbal remedies. You will explore some of the ailments that they are used for and the evidence to support their use. Most pharmaceutical drugs come from botanicals, so herbal medicine is not alternative medicine. Herbs are powerful medicine, and when used in the correct formulations and doses, they can have a profound effect on health—from treating common, everyday ailments to more challenging chronic diseases.

Gastrointestinal Herbs

- Aloe vera is used to treat burns and wounds externally, but when taken internally, aloe vera is also used to treat the inflammation associated with mouth ulcers, mucositis—an inflammation of the lining of the mouth—from chemotherapy, and any irritation in the gastrointestinal tract, including colitis.
- The powdered aloe vera leaf is a potent laxative that works well to treat constipation. Because it is a strong laxative, use it with caution.
- Ginger is used to treat nausea and vomiting from pregnancy and chemotherapy or from any nausea in general. Ginger is the most extensively studied herb for nausea and vomiting.
- A review of over six clinical trials found that 1.5 grams per day of ginger is effective for treating pregnancy-induced nausea and vomiting. More importantly, research shows that ginger is safe—that there are no side effects or adverse events.
- A National Cancer Institute–funded study showed a 40 percent reduction in chemotherapy-induced nausea when people were given one half to one gram of ginger three days prior to chemotherapy and for the following week.

- Today, 25 million Americans suffer from heartburn, and one of the best herbal remedies for heartburn is licorice.
- Before you decide to take licorice for your heartburn, stop eating heartburn-causing foods, such as cooked tomato sauce, excess caffeine, chocolate, carbonated beverages, fried foods, alcohol, foods that are very high in fat, and full-fat dairy products. You should also ask your physician to test you for a bacteria that causes heartburn called *Helicobacter pylori*.
- Licorice raises blood pressure and lowers potassium, but the form of licorice that you should take for heartburn is labeled “DGL,” which is the form of licorice that does not raise your blood pressure. Take 600 to 800 milligrams about 20 minutes before your meal for up to six weeks or when needed.
- Peppermint is an herbal remedy for irritable bowel syndrome (IBS), which is a very common disorder that affects the large intestine. Cramping, pain, bloating, gas, diarrhea, and constipation are all signs of irritable bowel syndrome.
- Peppermint slows down the gastrointestinal tract. It slows down the movement of food from the oral cavity down to the colon and inhibits smooth muscle cell contraction. If the colon is not contracting or spasming, you have less pain.
- Make sure to buy peppermint as enteric coated tablets because if you take peppermint that's not enteric coated, it will cause heartburn.

Urogenital Herbs

- Cranberry is a natural antibiotic that helps to prevent bacteria from adhering to the lining of the bladder wall.
- In 2009, a study was published that focused on whether cranberries could reduce the frequency of recurrent urinary tract infections in women. The researchers found that women who drank four ounces

of cranberry juice two times per day or took tablets of cranberry extract in the amount of 400 to 800 milligrams per day had a reduction in their urinary tract infections.

- A common problem that men have is waking up at night—sometimes three, four, or five times per night—to urinate. Another symptom that men complain about is that their urinary stream is slow or sluggish—not forceful. These are signs of prostate enlargement, or prostate hypertrophy.
- The most studied herbal remedy for prostate enlargement is saw palmetto, which can be taken two times per day in 160-milligram doses. Research has shown that saw palmetto significantly improves symptoms in people who have mild to moderate enlargement of their prostate gland, which means that they get up to urinate less frequently at night and their urinary stream is stronger.

Herbs and Migraines

- Butterbur is a traditional European herb that has been used for years to treat allergies, but more recently, butterbur has been shown to significantly decrease the amount of migraine headaches.
- In a placebo-controlled study, people who were given 150 milligrams of butterbur over a four-month period had a statistically significant reduction in their migraine headaches in comparison to a placebo group.



Butterbur, which can be taken for migraine headaches, is a plant that has broad leaves and purple flowers.

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- Butterbur can have liver toxicity, which is why it's very important that, if it is the right herbal remedy for you, that you only use the herbal remedy that was studied—called Petadolex.
- Across 16 randomized controlled trials, butterbur did as well as prescription medications in reducing the number of migraine headaches.
- Studies have shown a 42 percent reduction in headaches in people taking just 300 to 400 milligrams of magnesium per day. Magnesium softens the stool if you are constipated, but if the stool becomes too soft, you have to cut back on it.
- In addition to butterbur in the form of Petadolex and magnesium, taking 400 milligrams per day of the B vitamin riboflavin can help reduce headaches.
- Omega-3 fish oil is anti-inflammatory, so you can take two to four grams per day. In addition, taking 300 milligrams per day CoQ10 has been shown to statistically reduce migraine headaches.
- Taking magnesium, omega-3 fish oil, and a low dose of riboflavin are the safest migraine-reducing choices if you are trying to become pregnant or are pregnant.

Herb-Drug Interactions

- Saint-John's-wort helps mild to moderate depression. However, if you're taking a medication—such as a birth control pill, heart medicine, or blood thinner—Saint-John's-wort can decrease the potency of the medication. Other medications will increase in their potency. Alcohol is amplified in the body when Saint-John's-wort is taken.
- The following four categories of prescription medications are the most common pharmaceutical drugs that have herb-drug interactions: blood thinners, sedatives, antidepressants, and diabetes medicine. If

you are taking any type of medication within these categories, consult your physician before starting any natural remedies.

Questions to Consider

1. Which herbal remedy should be considered for irritable bowel syndrome?
2. Are all aloe vera preparations equivalent?

Lowering Cholesterol Naturally

Lecture 10

The cholesterol-lowering drugs that are so prevalent in the market can reduce the risk of cardiovascular events, but many people are looking for a way to lower their cholesterol without the use of pharmaceuticals. In this lecture, you will learn about cholesterol and the different cholesterol particles. More importantly, you will learn how to impact cholesterol through nutrition, exercise, and supplements. Remember to consult your physician before starting any supplement regimen.

What Is Cholesterol?

- Cholesterol is a waxy substance that is found in the fats in your blood. Your body needs cholesterol to make healthy cells, but having high cholesterol can increase your risk of heart disease.
- Not all cholesterol is bad. In fact, we need to make some important hormones with our cholesterol, such as estrogen for women and testosterone for men.
- All the cholesterol we need is made by the liver. Some people have genetic disorders that lead to high cholesterol, but this is rare. For most of us, high cholesterol is related to our lifestyle. The food we eat, how much alcohol we drink, our physical activity, and even our stress levels play important roles in our cholesterol level.
- Your physician may order a standard blood test to check your cholesterol levels called a lipid panel or a lipid profile. Typical reports include four important numbers: total cholesterol, LDL cholesterol, HDL cholesterol, and triglycerides. These are the four basic components of your cholesterol panel.
- HDL, or high-density lipoprotein, is the good cholesterol. This cholesterol is responsible for pulling plaque out of the arteries.

- LDL, or low-density lipoprotein, is the bad cholesterol. This cholesterol causes plaque in the arteries.
- Having too much LDL (the “lousy” cholesterol) and not enough HDL (the “happy” cholesterol) is what leads to coronary artery disease or a blockage in arteries anywhere in our bodies.

The Truth about Triglycerides

- Triglycerides are a type of fat that circulate in our bloodstream. They store unused calories so that if we go for a long period of time without food, the triglycerides are able to release this energy when we need it.
- Being overweight can increase your triglycerides. Lack of physical activity can also increase triglyceride levels because exercise burns triglycerides. In addition, liquid calories—which are filled with sugar—including alcohol, fruit juice, and soda, contribute to high triglyceride levels. A diet that is high in carbohydrates, especially simple carbohydrates, increase your triglycerides.
- As triglycerides increase, HDL decreases, so if you can lower your triglyceride levels, you can raise the HDL in your body.
- You can take three simple steps—nutrition, exercise, and supplements—to lower your triglyceride levels. Sugar and simple carbohydrates raise the triglycerides. If the triglycerides are high, then the HDL is low.
- The foods that raise triglycerides include simple sugars (cookies, cakes, candy, and ice cream), liquid calories (alcohol, soda, and fruit juice), simple carbohydrates (white bread, white rice, and rice noodles), and starchy vegetables (potatoes and winter squash).
- The best foods to eat are the same foods that will lower your triglycerides, such as whole grains, lentils, and beans. Fruits that are low in sugar—such as apples, peaches, pears, plums, berries, oranges, and grapefruits—can also lower triglyceride levels.

You can also eat green leafy vegetables and omega-3s to lower your triglycerides.

- Two of the best supplements that can be used to lower triglycerides are omega-3 fish oil and the B vitamin niacin.
- Omega-3 fish oil has been shown to decrease triglycerides by 45 percent if you take four grams, or 4,000 milligrams, per day.
- Niacin is not only used to lower triglycerides, but it is also used to raise HDL. Niacin can lower triglycerides by over 50 percent if you take 2,000 milligrams per day.
- However, people with a history of intestinal ulcers, gout, or liver problems should not take niacin. In addition, not all brands of niacin are the same; no-flush niacin does not work to lower the triglycerides or raise the HDL. Niacin should be taken under your physician's guidance because your liver needs to be monitored when taking it.

Lowering the Bad Cholesterol

- Foods that will raise your LDL include saturated fat (beef, pork, lamb, and dark poultry) and full-fat dairy (whole milk, whole cheese, whole cottage cheese, full-fat yogurts, butter, and cream).
- To lower your LDL, substitute the meats you eat with vegetable protein—which has zero cholesterol—and if you consume dairy from a cow, make sure that it is organic and nonfat.
- Organic tofu is a great substitution for meat. Tofu comes from the soybean, so it has no cholesterol. Other options include seitan, which is a flavored wheat product, and tempeh, which is a textured vegetable protein.
- Nuts are a good source of protein, but they are high in calories, so when you eat nuts, use them only as a garnish. In addition, omega-3

eggs can be used to make egg-white omelets, and organic, nonfat yogurt is a great source of protein.

- Fiber can also be used to lower cholesterol. You can find fiber in whole foods such as steel-cut oats and psyllium seeds. Increasing your fiber slowly, you should eventually consume 35 grams of fiber per day.
- Shrimp is a fish that is extremely high in cholesterol. Instead, try to eat wild sockeye salmon or sardines. Both of these are better choices, but fish is still an animal product, and it still contains cholesterol.

Lowering Cholesterol Naturally with Supplements

- Artichoke extract has been shown to lower LDL by 15 percent when taken in a 500-milligram tablet three times per day.
- Taking approximately two grams of plant sterols per day will decrease your LDL by about 10 percent.



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Tofu is a great replacement for chicken in any recipe, and eliminating the chicken eliminates the cholesterol.

- EGCG is the active ingredient of green tea, and taking 500 milligrams of EGCG twice a day will lower your LDL by 13 percent. You can also drink about 60 to 100 ounces per day of organic green tea to get the same effect.
- Taking 300 milligrams of pantothenic acid three times per day can lower your cholesterol as much as 36 percent.
- Red yeast rice, the botanical involved in statin therapy, can be taken in 600-milligram tablets four times per day—two tablets in the morning and two at night for a total of 2,400 milligrams—to reduce cholesterol by 42 percent.
- If you have a history of not being able to take statins (called statin intolerance) or if you have muscle or joint aches, do not take red yeast rice as a supplement. Red yeast rice can also lower the enzyme CoQ10, so when taking red yeast rice, also take 100 milligrams per day of CoQ10.

Questions to Consider

1. What are HDL and LDL?
2. Which foods raise cholesterol, and which foods raise triglycerides?

Treating High Blood Pressure Naturally

Lecture 11

In addition to cholesterol, another major risk factor for heart disease and stroke is high blood pressure, which is also known as hypertension. High blood pressure is often referred to as “the silent killer” because most people are unaware that they have high blood pressure. In this lecture, you will learn about the natural ways to treat high blood pressure by addressing four key components: nutrition, exercise, supplements, and responses to stress and tension.

What Is Blood Pressure?

- Blood pressure is the force of blood exerted against the walls of the arteries in your body. It is measured in millimeters of mercury and is recorded as two numbers. The top number is called the systolic blood pressure, which is the number that assesses the pressure when the heart squeezes. The bottom number is the diastolic blood pressure, which is the number that assesses the pressure when the heart rests. Both numbers are equally important.
- Before the age of 55, it appears in the research that the diastolic blood pressure is a greater predictor of future cardiovascular events, or future risks. After the age of 55, the top number, the systolic blood pressure, predicts risk the best.
- A normal blood pressure is 120/80. If you have a blood pressure between 120 and 139 on the top or between 80 and 89 on the bottom, then you are considered to have prehypertension. If your blood pressure is 140/90 or above, you have high blood pressure.

Decreasing Blood Pressure Naturally

- The best way to decrease your blood pressure naturally is to decrease your weight. Eleven clinical trials have shown that for every one kilogram of weight that is lost, the systolic blood pressure

is decreased by 1.6 millimeters of mercury and the diastolic blood pressure is decreased by 1.1 millimeters of mercury.

- A body composition tells you how much fat you have on your body and how much muscle you have on your body. Ideally, women should have a body fat composition of less than 22 and men should have a body fat composition of less than 16.
- The best ways to decrease your weight are proper nutrition and exercise. Combining daily aerobic exercise (40 minutes to one hour per day) with strength training (three times per week) has been shown to decrease blood pressure by 10 to 15 millimeters of mercury on the top and five to 10 millimeters of mercury on the bottom.
- Exercise is medicine. It increases lean muscle mass, burns calories, and decreases your weight—which decreases your blood pressure. Exercise lowers your triglycerides, blood sugar, and LDL cholesterol. Exercise also helps mentally; it is a treatment for depression and anxiety.
- Alcohol raises blood pressure, and when you drink alcohol, you also tend to eat more. Alcohol is sugar and should be restricted.
- One cup of coffee per day, which has about 100 milligrams of caffeine, is the maximum that you can drink if you want to get your blood pressure down. Organic green tea is a much better choice, with only 20 milligrams of caffeine.
- Sodium, or salt, is one of the major issues with the standard American diet. The average American takes in about 5,000 milligrams of sodium per day, but the body only needs 500 milligrams. There is a direct relationship between sodium intake and blood pressure.
- Salt is in packaged and canned foods. Salt is also hidden in just about every item on a menu at a restaurant. Look for the sodium

content on the label of any packaged or canned foods that you buy, and keep your sodium content under 1,500 milligrams per day.

- Research shows that if you replace high omega-6 oils—such as corn oil, safflower oil, and sunflower oil—with extra virgin olive oil, you can lower your blood pressure by about eight millimeters of mercury.
- Garlic lowers blood pressure. Four cloves of fresh garlic every day will lower your systolic blood pressure by 10 points. You will get the same benefit as four cloves of garlic per day in 900 milligrams of aged garlic extract.
- Consuming about three grams per day of high-quality, dried wakame, or seaweed, will lower your blood pressure by 14 millimeters of mercury on the top.
- Drinking 30 grams of hydrolyzed whey protein in a smoothie every day can reduce your systolic blood pressure by 11 points.
- Lycopene, the active ingredient in tomatoes, has been proven to lower blood pressure. Enjoy fresh tomatoes or take a lycopene supplement.



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By exercising, you can decrease your weight, which will result in lower blood pressure.

Micronutrients and Supplements

- Magnesium—which we need for our bones, heart, and bowel functions—is a mineral that can be obtained by consuming green leafy vegetables, but 68 percent of U.S. adults consume less than the recommended daily allowance.

- Research shows that as the intracellular level of magnesium, or the red blood cell magnesium, decreases, blood pressure increases. Supplementing magnesium will lower your blood pressure about five millimeters of mercury on the top and about three on the bottom.
- If you decide to use magnesium as a supplement, there are three beneficial preparations: chelated magnesium, magnesium aspartate, and magnesium glycinate. Take about 500 milligrams per day of any of these. People with kidney problems should not take magnesium without a physician's guidance.
- People with low levels of vitamin D tend to have the highest blood pressure. The lower your 25-hydroxy vitamin D, the higher your blood pressure. Vitamin D supplementation—with or without a vitamin D deficiency—has been shown in both animals and humans (both men and women) to decrease blood pressure.
- Research has shown that vitamin D replacement decreases blood pressure approximately 13 points on the top. A 25-hydroxy vitamin D level that is above 55 is ideal and appears to protect against breast cancer in women. Vitamin D can be taken in high doses, such as about 10,000 international units per day.
- Another deficiency that is associated with high blood pressure is the deficiency of enzyme CoQ10. The lower the CoQ10, the higher the blood pressure. Research shows that taking 200 to 400 milligrams of CoQ10 per day can lower systolic blood pressure by 11 points.
- Adding more omega-3s (fish) and eliminating saturated fats can also help you lower your blood pressure. Research shows that four grams of omega-3 per day will lower blood pressure by around eight millimeters of mercury.
- In addition to micronutrients and supplements, dealing with the stress in your life in a calm manner can help lower your blood pressure. Stress causes blood pressure to rise, so the next time

you are experiencing stress or tension, take a deep breath and react calmly.

Questions to Consider

1. Limiting sodium to how many milligrams per day lowers blood pressure significantly?
2. A 10-kg weight loss will reduce systolic blood pressure by how many mm Hg?

Treating Diabetes Naturally

Lecture 12

In this lecture, you will learn about a spectrum of sugar, or metabolism, disorders that range from prediabetes to full-blown diabetes. You're not going to learn about the kind of diabetes that occurs early in life as a result of pancreatic failure; instead, you're going to learn about the kind of diabetes that results from lifestyle—including what kind of food you eat, how physically active you are, and how you respond to stress and tension. You will also discover the tools that can help you prevent and even reverse diabetes.

The Diabetes Spectrum

- Diabetes is one of the key risk factors for kidney disease, leading to dialysis, heart disease, and stroke. Diabetes affects every organ in the body.
- We need to think of the diagnosis of diabetes as the end result of a much longer continuum—starting with insulin resistance and metabolic syndrome before manifesting the disease known as diabetes. This is important because even before the blood tests show that you have diabetes, there are signs that can be attended to.
- One of the first signs that you are at risk for developing diabetes is the presence of insulin resistance. Insulin is a hormone that controls blood sugar and is produced by the pancreas. Stimuli such as insulin and even exercise carry blood sugar into the cells, where they can use it for energy.
- Insulin resistance occurs when the transport of sugar into the cell no longer works properly. The pancreas has to keep working harder and harder to produce more insulin, and eventually, the pancreas can't keep up. It becomes exhausted and can't produce enough insulin. This is when people develop insulin-requiring diabetes and need insulin injections.

- Insulin resistance is part of a larger syndrome called metabolic syndrome, which has four components: insulin resistance, high blood pressure, abnormalities in the cholesterol panel (low HDL and high triglycerides), and abdominal obesity (wearing your weight in the midline).
- Nearly 27 percent of adults in the United States are obese—that's 72 million Americans. By the end of the decade, it is predicted that the annual cost for diabetes and prediabetes alone will be 500 billion dollars.
- There are five key areas that people on the path to diabetes need to focus on: proper nutrition, physical activity, responses to stress and tension, sleep patterns, and environmental toxins.
- Most people don't realize that lack of sleep can lead to insulin resistance. Lack of sleep is a stress on the body, and stress raises blood sugar and makes insulin resistance worse. Research shows that people who tend to get five hours or less of sleep each night have a higher risk of developing diabetes.

Preventing and Reversing Diabetes: Nutrition

- Nutrition is the key to shifting the diabetes continuum. Sugar and carbohydrates are digested at different rates, and the rate of digestion is called the glycemic index. The higher the index, the faster the body converts food to sugar.



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Obesity is often associated with insulin resistance, which results in having problems controlling blood-sugar levels.

- Another way of measuring the conversion of food to sugar is called the glycemic load, which is an even more accurate assessment of the impact of food on blood sugar and, ultimately, on insulin levels.
- A food with a glycemic load of greater than 20 is high, and a food with a glycemic load of less than 10 is low. Foods that have a low glycemic index and a low glycemic load are the foods that are the best for everyone, but especially for someone who is overweight, prediabetic, or has diabetes.
- In general, you should not eat foods that spike up your insulin level. Insulin has been linked to cancers and leads to inflammation.
- Soluble fiber—which is found in oats, bran, beans, and lentils—lowers cholesterol and blood sugar. Green leafy vegetables have a very low glycemic load and low glycemic index. Cruciferous vegetables, such as cauliflower, broccoli, and cabbage, are all good choices. Other options include omega-3 eggs and omega-3 fish, such as salmon, mackerel, anchovies, sardines, and herring. Lean meat such as free-range chicken and turkey will not spike up your insulin.
- Choose fruits that have a low glycemic index, such as apples, berries, peaches, pears, plums, oranges, and grapefruit. On the other hand, dates and raisins are high in sugar.
- Nuts, such as walnuts and almonds, are good snacks—but only eat about 15 of any type of nut at any given time because of the many calories that nuts contain.
- Celery sticks and baby carrots are also good snacks. Carrots have a low glycemic load and are very high in fiber, which slows down the absorption of sugar and lowers blood sugar.
- Granola is incredibly high on the glycemic index, but you can substitute granola with a high-fiber cereal, a protein smoothie, an egg-white omelet, or some steel-cut oats.

- If you are trying to lower your blood sugar, you need to find healthier alternatives for cookies, cakes, candy, and ice cream. In addition, you should not drink soda, fruit juice, or alcohol. You also need to find substitutes for anything white—whether it's a bagel, bread, rice cakes, or potatoes.
- You can also use spices in a creative way. For example, add cinnamon—which has been shown to lower blood sugar—and a few walnuts to steel-cut oats for breakfast. Instead of drinking coffee with cream in it, start drinking organic green tea.
- Garlic and onions help bring down blood sugar. You should focus on eating green leafy vegetables with light amounts of olive oil and turmeric, an anti-inflammatory, on top.
- Fenugreek comes out of Ayurvedic medicine from India and can be used as a spice that lowers blood sugar. There are also properties in vinegar that have been shown to lower blood sugar.

Preventing and Reversing Diabetes: Physical Activity

- On average, Americans spend six hours per day in front of a television or computer, so make sure that you are making time for exercise—which builds muscle, decreases insulin resistance, decreases blood pressure, improves cholesterol, and improves your sense of well-being.
- Make a commitment with a friend to start exercising together, and hold each other responsible for your exercise. You can also attend a dance class, such as a Nia class, which is a combination of dance and Tai Chi.
- One of the best added benefits of exercise is that it helps you sleep better. Use a pedometer, a small device that counts the number of steps that you take, and work toward the goal of taking 10,000 steps each day.

Questions to Consider

1. What is the glycemic index?
2. Name three lifestyle changes that can impact insulin resistance, metabolic syndrome, and diabetes.

Stress and the Mind-Body Connection

Lecture 13

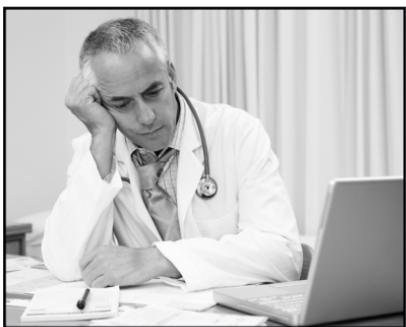
In this lecture, you will learn about the stress response and the three key stress hormones, which are adrenaline, aldosterone, and cortisol. You will also learn that there are 1,400 chemical reactions that occur when you are under stress. In addition, you will discover some compelling research that addresses how stress can affect your health. Some of this research clearly demonstrates that stress—both acute stress and chronic stress—will make you sick.

The Pervasive Nature of Stress

- The American Institute of Stress reports that 75 to 90 percent of all visits to health-care providers result from stress-related disorders.
- Stress is a state one experiences when there is a mismatch between perceived demands and our ability to cope. In other words, stress is experienced when people don't feel like they can do everything that is expected of them.
- Stress has been extensively studied in the military, and a very insightful model of stress was developed during World War II to understand what happens to soldiers when they are on the battlefield, exposed to hundreds—if not thousands—of stressful situations. For some of us, our work or home environment can sometimes feel like a war zone, and our ability to perform at our best can be seriously impacted in similar ways.
- People who think that stress is good are typically confusing stress with challenge. At first, challenge improves our performance, but as the amount of work continues and our challenges in life increase, our ability to perform our best can be compromised.

Stress and the Body

- When under stress, the body goes through several physiological changes that can be measured and quantified, including an increase in heart rate, blood sugar, breathing rate, and blood pressure.
- The autonomic, or automatic, nervous system has two components: the sympathetic nervous system, which is the stimulating nervous system, and the parasympathetic nervous system, which is the system that makes you calm and relaxed.
- When your sympathetic nervous system is activated, your blood becomes stickier and more prone to clot. You also produce hormones—a few of which raise your blood pressure, such as renin and angiotensin. In addition, your insulin resistance increases, so your fasting insulin increases. Furthermore, cholesterol and blood pressure rise, and arteries constrict.
- There are over 1,400 chemical reactions that occur in our bodies as a result of stress. There are three key stress hormones that support our bodies in emergency situations: adrenaline, aldosterone, and cortisol.
- Adrenaline is a hormone that is produced by the adrenal gland, which sits on top of the kidneys. Adrenaline is produced during high-stress or exciting situations and is part of your body's acute stress response—called the fight-or-flight reaction.



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Physicians are aware that stress has negative emotional, mental, and physical effects on the human body.

- When you produce adrenaline, your heart rate increases, your blood vessels constrict, and your airways dilate—all of which bring more blood flow to your muscles and more oxygen to your lungs.
- Aldosterone is essential to life because it regulates electrolytes, which include elements such as sodium and potassium. Aldosterone is also secreted by the adrenal gland and causes the reabsorption of sodium, which is needed in stressful situations, into the bloodstream.
- Cortisol is also produced by the adrenal gland, and you need cortisol to release sugar into your bloodstream under stress because you need sugar in your muscles when they are being used.
- Cortisol is associated with another hormone called DHEA, which can be thought of as the happy hormone. When cortisol increases, DHEA decreases.
- These three hormones play an important role in our survival. The key is that they are triggered in emergency situations, which arise quickly and hopefully subside just as quickly.
- However, if we never turn our stress hormones off, our blood pressure increases, and we end up with ulcers in our stomach and are more prone to infections and even cancer. The male hormone testosterone decreases, and women have irregular menstrual cycles.

Emotional and Mental Effects of Stress

- Stress not only causes physical changes in our bodies, but it also causes emotional and mental changes. Research shows that people under stress have cognitive inhibition, causing them to not make the best choices. Stress causes us to lose focus; it affects our mental clarity.
- Stress affects our ability to relax and sleep, and when we feel as though we cannot cope with all of the items on our agenda, stress even affects our self-esteem.

- Stress also leads to anger, which increases the risk of a heart attack by 230 percent. Anger is one of the most lethal emotions for the heart.
- There has been a lot of research on the impact of stress in both acute and chronic situations. Research that assessed heart patients one month after the terrorist attacks of September 11, 2001, showed that there was a 2.3-fold increase in ventricular tachyarrhythmias, which are the bad arrhythmias that cause sudden death.
- Research by Dr. Janice Kiecolt-Glaser in the area of chronic stress shows that caregiving is a good thing, but if you deplete yourself and make yourself physically, emotionally, and mentally exhausted as a result of giving care to another, it will affect your immune system.
- Dr. Kiecolt-Glaser's work shows that if a physician administers the flu vaccine to caregivers who are depleted and exhausted, they may not even mount the response to the flu vaccine—meaning that they do not get the antibodies to protect them. Perhaps they were under so much stress that they could not produce antibodies.
- Chronic stress is an interesting area of research. High cortisol levels and low DHEA levels are associated with accelerated aging, impaired memory and ability to learn, and even osteoporosis. In other words, chronic stress will cause bone loss. There is another sign of aging that comes with chronic stress: a reduction in muscle mass.
- Under stress, immune function is affected and blood sugar increases. Stress also makes diabetes much worse. Furthermore, high levels of cortisol makes people gain weight.

Questions to Consider

1. Name three stress hormones.
2. Name one mental condition and two physical conditions that are caused by stress.

Turning Stress into Strength

Lecture 14

In this lecture, you will be introduced to biological interventions that can help you turn stress into strength. Stress is almost always an emotional reaction to a situation, and it impacts your ability to think clearly, respond appropriately, and perform at your best. Your stress level impacts not only how you feel at the end of the day, but it also impacts your health and even your relationships. This lecture focuses on the power of positive emotions, and you will learn a powerful technique to neutralize stress called heart-focused breathing.

The Effects of Perception

- Frequently, you can't control the world around you. It is the initiating events that occur that we cannot control, but we can control our perception of those events—which leads to the physical response that involves releasing the stress hormones.
- Stress is not the situation; it is your mental and emotional reactions to the situation.
- In a research study on how people's perceptions of the world affect their health, students were asked to watch a movie about Mother Teresa's activities, including administering to the sick and taking care of the poor. A protein that protects the body from infection, called IgA, was measured.
- In about 92 percent of the students, IgA levels increased after watching the movie about Mother Teresa. In other words, their immune systems were positively affected. However, in about eight percent of the students, IgA levels decreased after watching the movie.

- The students were then asked to write a story about a picture of a couple on a park bench. All they could see from the picture was the backs of a man and a woman sitting on a park bench.
- The students whose IgA levels had increased came up with stories about proposals and marriage. However, the other eight percent, whose immune system had decreased after watching the Mother Teresa movie, came up with stories about distrust, manipulation, and abandonment. In other words, these students saw everything negatively. They even claimed to dislike Mother Teresa.
- When the researchers looked at who were the sickest students over the previous year, it was those students who had the negative response to the Mother Teresa movie that were sick all the time. The researchers concluded that perception was the key.

Reacting to Stress

- We may not be able to change various aspects of our environment, but we can change how we react to, and perceive, our environment.
- If you find yourself experiencing negative thoughts and having negative emotions, it is important to know how to shift your thoughts, thereby shifting the consequences of the stress hormones.
- Research has shown that people who generally have positive thoughts—the optimists of the world—have increased longevity.
- Positive emotions reduce morbidity from various diseases, and they result in us having more cognitive flexibility—more creativity. Having positive emotions cause us to be better at problem solving and more innovative. Positive emotions even improve our job performance.
- Not just thinking about a positive emotion, but actually feeling a positive emotion is what has a positive effect on your body.

- People who see the world negatively should try keeping a gratefulness journal. At night, they should write down things that they are grateful for so that they start feeling love and getting the physiologic benefits from having positive emotions.
- When you are in a stressful situation or are thinking negative thoughts, start by neutralizing the negative thoughts and feelings. Take a time-out—which involves sitting down and taking a few deep breaths—before you say something or do something that you are going to regret.

Heart-Focused Breathing

- Breathing controls our autonomic nervous system. When we take a deep breath in, our heart rate increases, and when we exhale, our heart rate decreases. However, if we breathe in a cyclical, rhythmical way, it stabilizes our autonomic nervous system.
- To engage in heart-focused breathing, the first thing you need to do is to take a time-out. Remove yourself from the stressful situation.
- Most of us breathe from the upper third of our lungs. Take a deep breath—what is called a yogic breath in yoga terms—for five seconds in and five seconds out. As soon as you start the breath, it interrupts the body's stress response, so you should already start to feel more relaxed.
- Next, draw your focus down to your heart; imagine that you are breathing in and out through your heart. This may feel strange at first, but in a few minutes, it will become more natural. This is called heart breathing. Keep breathing for five seconds in and five seconds out.
- If you are having trouble doing this for the first time, you may want to place your right hand over your heart, and if it is comfortable, place your left hand over your right hand, and begin to breathe in and out.

- You may also find that closing your eyes will make this breathing technique easier. With practice, you will be able to do it with your eyes opened or closed.
- If you have a problem that you are trying to solve but cannot get the solution, engage in some heart-focused breathing, but also think about something that elicits a positive emotion for you while you are breathing. Don't just think about unconditional love or appreciation; actually feel the gratefulness.
- Adding the power of positive emotion can improve your cognition, increase your mental flexibility, and help you make decisions. One of the easiest ways to do this is to remember a special place or someone you love or appreciate.
- After adding the power of positive emotion—by thinking about your child, grandchild, or puppy, for example—hold that feeling of appreciation or love for about 20 seconds. Then, radiate that love to yourself and to all those around you.
- When you catch your mind wandering away and find that you cannot retain your focus, do not be upset. Instead, always return your focus to the breathing. Then, reconnect with your feelings of caring, love, and appreciation.
- If you have a problem that you have not been able to solve with your mind, your heart might be able to solve it for you if you engage in heart-focused breathing.



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If you are feeling stressed, simply close your eyes and breathe in for five seconds and out for five seconds.

Questions to Consider

1. Explain how stress can be described as a person's mental and emotional reactions to a situation.
2. What is the quickest way to neutralize the stress response?

Meditation, Yoga, and Guided Imagery

Lecture 15

More hospitals and medical clinics than ever before are educating their patients about the benefits of meditation, yoga, and guided imagery and are using these tools to lower blood pressure, decrease anxiety, decrease blood sugar, and even improve surgical outcomes in their patients. In this lecture, you will explore some of the research on these mind-body techniques and look at how they are shifting the paradigm of Western medicine and revolutionizing the way doctors and hospitals care for their patients.

The Benefits of Meditation

- The negative effects of stress on our bodies are endless. If we do not do something to change our response to stress, the end result is high blood pressure, diabetes, high cholesterol, and even heart attack and stroke. Relaxation practices such as meditation and yoga can help you react better to stress.
- Meditation is the skillful, sustained, applied use of attention. The attention can be on your breath—breathing in and breathing out—or it can be on a word, but regardless of what you choose to focus on, your attention is focused.
- You may think that sitting quietly would be easy, but try to do it for five minutes and focus on only one thing. You will find that your mind jumps around from thought to thought. It takes practice to control your mind.
- A meditation practice may be formal or informal. The two most common forms of formal meditation that are used in health care are mindfulness-based stress reduction, which comes out of the Buddhist tradition, and transcendental meditation, which comes out of the Vedic tradition.

- Meditation can also be performed as an informal practice. You can informally practice meditation at any time any day. Whenever you get a free moment, take five longer, deeper breaths—five seconds in and five seconds out.
- You want to have a balanced autonomic nervous system, and techniques such as transcendental meditation, mindfulness, yoga, and others impact the autonomic nervous system, stopping the stress process.

Research on Meditation

- In 1995, a study that was published in the *Journal of Hypertension* was conducted of 127 African Americans with very high, difficult-to-control blood pressure. The patients that were randomized to the meditation group were taught transcendental meditation. They were given a mantra, and they practiced meditation for 20 minutes twice a day. These individuals were able to drop their systolic blood pressure by 10.7 millimeters of mercury.
- Research also shows that people who learn to meditate have a statistically significant reduction in anxiety. They feel less stressed, less anxious, and less worried. Transcendental meditation has even been shown to decrease insulin resistance.
- When people begin to meditate, there is a reduction in addictive behaviors, such as cigarette smoking and alcohol use. We are just starting to understand the biochemistry of the brain, which might explain these effects, through functional MRI imaging.

The Benefits of Yoga

- The word “yoga” means “yoke” or “union,” which refers to the true integration, or union, of body, mind, and spirit. Yoga has been around for thousands of years; it is an ancient form of optimal living that is a very large part of Ayurvedic medicine.
- Yoga is a lifestyle approach that ties together physical, mental, emotional, and spiritual aspects of healing. The most common

aspects of yoga are stretching and meditation. The yoga postures are called asanas.

- There are many misconceptions about yoga: It is not only for the flexible or fit, it is not a religion, and you do not have to be in good health to do it. You might want to modify some of the poses and stretches because you don't want to do any that might hurt you, but there are many poses and stretches that everyone can do—including just sitting in a chair.
- Yoga enhances relaxation and increases parasympathetic tone. In other words, it puts you in a state of relaxation. It decreases the sympathetic nervous system, lowers blood pressure, and improves serum lipids, cholesterol, and triglycerides.
- Yoga can benefit any ailment that you might have, including anxiety, arthritis, asthma, fibromyalgia, headaches, and high blood pressure.
- You are not expected to learn yoga right away. With your physician's permission, you might want to buy a gentle yoga tape and start to try some simple exercises—or you might go to a yoga class. There are integrative medicine centers all over the world that offer yoga and meditation. However, you can probably do the breathing exercises right away.

Research on Mantra Repetition

- Mantras have been extensively studied. They offer an easy way to stop your mind from jumping around from one thought to another.



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Research shows that relaxation practices—such as meditation and yoga—are effective at managing the stress response.

In addition, your mind worries about things that happened in the past and everything that will happen in the future.

- A mantra is a sacred word, chant, or sound that is repeated over and over again. The goal of a mantra is to cultivate inner peace. It could be the repetition of a word such as “shalom,” “Rama,” or any other word from another spiritual tradition. In its most literal sense, the word “mantra” means “to free from the mind.”
- Heart rate variability is the beat-to-beat change in our heart’s rate, and it is an indicator of nervous system function. Research shows that low heart rate variability is predictive of having a heart attack and sudden death.
- The breathing technique that you have been introduced to can improve heart rate variability. Research conducted at the Scripps Center for Integrative Medicine showed that heart rate variability can be improved in people with congestive heart failure by using breathing techniques and associated mantras.
- Jill Bormann studied the power of mantra in people who have post-traumatic stress disorder (PTSD). Her research showed statistically significant reductions in all the major variables related to post-traumatic stress disorder when participants consistently practiced a mantra.
- When you are feeling angry, anxious, upset, or afraid, repeating a mantra can help calm you down. It is also a great technique if you have trouble falling asleep.

Guided Imagery

- Guided imagery is a program of directed thoughts that guide your imagination to a relaxed, focused state. It is based on the concept that your body and mind are connected. Using all of your senses, your body seems to respond as though what you are imagining is real.

- Studies have shown that guided imagery can statistically reduce stress and anxiety. Some physicians use guided imagery with patients before and after surgery because research shows a reduction in pain medicine, surgical complications, and recovery time in the hospital.

Questions to Consider

1. Name three health benefits of yoga and meditation.
2. Where has guided imagery proven to be of value in health care?

Natural Approaches to Mental Health

Lecture 16

In this lecture, you will explore some of the research on antidepressant medication and learn about what people can do to improve their mental health naturally. Research clearly demonstrates that a diet of low-glycemic foods, whole grains, and omega-3 fatty acids is associated with a lower rate of depression and bipolar disorder. Depression can also be improved by replacing missing nutrients, such as vitamin D and magnesium, and by adding supplements, such as SAM-e and Saint-John's-wort. In addition, people with depression should get out into the sunlight and exercise.

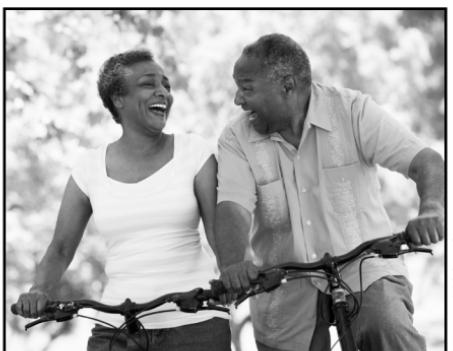
Macronutrition and Well-Being

- The human brain needs a balance of nutrients to maintain a positive mood, and if it does not get all of the nutrients it requires, it does not work correctly.
- The human brain is fueled by molecules, which come from our diet, and just as in the case with the rest of our body, some of the foods we eat promote brain health while others may actually cause harm.
- Modern psychiatry uses some molecules to alter brain function—mainly in the form of medication, such as antidepressants. However, in general, modern psychiatry tends to ignore the molecules that we eat every day.
- The micronutrients that are important in brain function include the B vitamins (folate and B12), calcium and chromium, minerals like magnesium and zinc, and antioxidants like vitamin E and selenium.
- Altering the micronutrients that are found in our food supply can have an effect on our brain's health. Processing food removes essential vitamins and nutrients from it, so make sure that you are eating whole foods. Folic acid, which is essential to brain health, is found in whole grains.

- Trans fats, processed vegetable oils, alcohol, and sugar impair a very important enzyme called delta-6 desaturase, which forms omega-3 fatty acids. The blocking of this enzyme by trans fats, processed vegetable oils, alcohol, and sugar causes the body to not be able to make essential omega-3s. Mounting evidence now links omega-3 deficiency in humans to a number of disorders, including depression and bipolar disorder.
- The Avon Longitudinal Study of Parents and Children demonstrated that a diet of lots of vegetables, fruit, fish, and grains was associated with a lower rate of depression and anxiety.
- A prospective study of over 10,000 adults was conducted to assess the links between the Mediterranean diet and depression. The Mediterranean diet is high in fruit, legumes, beans, lentils, green leafy vegetables, and fish, is low in saturated fat, and uses the good source of oil—olive oil. Of the people that were followed, the more fruits, nuts, legumes, and monounsaturated fats that were consumed, the less depression there was.
- There also appears to be a link between depression and bipolar disorder to diets with a high glycemic index, which are diets that are high in simple sugars and simple carbohydrates. Of the 691 women that were studied, 23 were diagnosed with bipolar disorder. In the *Journal of Affective Disorders*, researchers concluded that bipolar disorder was linked to diets with a high glycemic index.
- Food sensitivity causes a number of symptoms, including gas, bloating, arthritis, joint pain, skin rashes, and even mood changes. Food sensitivity has also been implicated in neurologic disorders of unknown cause.
- Gluten sensitivity is known to cause neurologic problems—particularly seizures in people who otherwise have no medical problems. According to a study published in *The Lancet* in 1996, gluten sensitivity is a contributing factor in schizophrenia, bipolar disorder, and anxiety.

Micronutrition and Well-Being

- When it comes to mental well-being, micronutrients, including vitamins and minerals, appear to be equally as important as macronutrients—the proteins and fats that are found in the foods that we eat.
- The problem of being deficient in magnesium, which comes mainly from green leafy vegetables, is widespread. A study that evaluated the link between diet and depression in over 5,000 people found an inverse correlation between magnesium intake in the diet and depression scores.
- Vitamin D, which is very important to bone health, affects so many different mechanisms and systems in our body. A 2005 study showed that low levels of 25-hydroxy vitamin D are significantly associated with a higher depression score. Another study found that psychiatric patients had significantly lower levels of vitamin D than a control group.
- Folate, a B vitamin, is one of the most important vitamins for treating depression. Folate can be used to treat depression with or without antidepressants. When folate is taken with an antidepressant medication such as Prozac, research shows that there is an improvement in depression beyond the effect of the antidepressant alone.
- Exercise is another treatment for depression. The problem is that many depressed people do not feel like exercising. An hour per day of exercise is recommended for



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Riding bicycles outside is a great exercise activity that can help people who are depressed.

people with or without depression, but a person who is depressed should at least start with 15 or 20 minutes of exercise per day and slowly increase the time.

- SAM-e is a potent antidepressant that should be taken under a physician's guidance because the dose has to be increased slowly over time—starting at about 200 milligrams per day and possibly increasing to 800 milligrams per day. One of the side effects of SAM-e is that it can produce a manic state, so people that have bipolar disorder—which is a combination of depression and mania—or a family history of bipolar disorder should not take SAM-e.
- Saint-John's-wort is almost as common an herbal remedy for mild to moderate depression as Prozac and Paxil are pharmaceutical remedies. The research shows that Saint-John's-wort might not be as effective for severe depression.
- For mild to moderate depression, 900 milligrams per day of Saint-John's-wort is a good option. However, depending on the preparation, Saint-John's-wort can interact with a long list of medications, so consult an integrative holistic physician before taking it.
- Nothing is better for depression than exercising in the sunlight. There are some people that live in areas where they do not get a lot of sun—particularly in the winter—and light therapy can help.
- In Canada, 100 patients with depression in the winter months—called seasonal affective disorder (SAD)—were treated with either Prozac or exposure to light. Depression improved equally in both groups, but those receiving light therapy had a faster response to that improvement. The authors concluded that light therapy is as good as the standard antidepressant approach with fewer side effects and much less overall risk.

Questions to Consider

1. Name two nonpharmaceutical approaches to depression.
2. Name two micronutrients that are linked to depression.

Biofield Therapies

Lecture 17

Biofield therapies, which are also referred to as energy medicine, are very controversial in the world of medicine. Although we do not yet have the technology that is capable of measuring the body's biofield, almost every global healing tradition uses biofield medicine in some form. There is ample evidence that, whatever the underlying mechanisms—many yet to be determined—biofield therapies have a positive impact on health. These treatments, including acupuncture, Tai Chi, Qigong, homeopathy, and Healing Touch, need to be an integral part of Western medicine.

The Healing Power of Touch and Energy

- Biofield medicine, or energy medicine, is also sometimes called vibrational medicine because it is believed that in the living body, each electron, atom, chemical, and molecule has a vibratory frequency—as does our body as a whole. Energy medicine seeks to understand this vibratory energy and to interact with this energy in some way to facilitate healing.
- The healing power of touch and energy dates back to Hippocrates, the Greek physician and father of modern medicine. Equally as wise as Hippocrates, Pythagoras, a Greek philosopher and mathematician, referred to the biofield as a vital energy that could produce cures.
- Many cultures have a name for this vital force, or energy field. In China, it is called Chi; in India, as part of Ayurvedic medicine, it is called Prana. In Japan, it is referred to as Ki, and in Polynesia, it is called Mana.
- According to biofield practitioners, the energy system has three key components: energy centers (chakras), energy tracts (meridians), and the energy field (aura).

- The aura surrounds the entire body, and biofield practitioners believe that when people look at pictures of saints and see halos, it is actually an aura.
- The meridians, or energy tracts, run all along the body—up and down the arms and legs—and these energy tracts are where acupuncturists place their needles.

The Concept of Chakras

- There are seven major chakras, or energy centers, in the body. The first chakra is at the spine's base and is called the root chakra. The second chakra is right below the umbilicus and is called the tontien. The third is located at the solar plexus. The fourth is the heart. The fifth is located at the throat. The sixth is in the center of the forehead and is called the third eye. The seventh chakra sits at the crown at the top of the head. There are smaller chakras at every joint in the body and in the hands and feet.
- Biofield practitioners believe that each chakra is connected with a function, which can be physical (as it is for the first chakra), emotional (as it is for the second), or mental (as it is for the third). In addition, each chakra is connected to a body gland.
- The function of the heart chakra for biofield practitioners is the concept of love and forgiveness. When people have illnesses related to the heart chakra, it is usually related to love, loss, and forgiveness.
- The fifth chakra sits at the throat, specifically in the thyroid gland. Because the throat is considered the area of expression, when biofield practitioners see someone with a thyroid problem, they start by asking, “Are you expressing yourself?”

Energy-Based Therapy: Acupuncture

- Over 2,500 years old, acupuncture is a key component of traditional Chinese medicine. Acupuncture is based on important energy concepts—most notably, the concept of yin and yang, which

explores the important coexistence and necessary balance of opposites not only in the universe but also within each individual.

- In traditional Chinese medicine, it is believed that Chi circulates through the energy tracts and that illness manifests as the result of a blockage or deficiency in one of the tracts. Acupuncture techniques attempt to maintain the balance and reduce the illness by restoring the flow of the Chi through the manipulation of acupuncture points and meridians.
- In 1998, the National Institutes of Health produced a consensus statement endorsing the use of acupuncture for a number of conditions, including elbow tendonitis, plantar fasciitis, muscle spasm, nausea, high blood pressure, infertility, asthma, and addiction.

Energy-Based Therapy: Tai Chi and Qigong

- Other aspects of traditional Chinese medicine are Tai Chi and Qigong, which work on the body's energy system and consist of deep relaxation techniques—including breathing exercises, self-massage, and acupoint stimulation—that involve gentle, fluid movements that are coordinated with the breath to release both physical and emotional stress.
- These exercises leave people feeling relaxed yet revitalized because, according to traditional Chinese medicine, Tai Chi and



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In addition to acupuncture, homeopathy, and Healing Touch therapies, Tai Chi and Qigong work on the body's energy system.

Qigong exercises promote the flow of energy, or Chi, through the body.

- Taylor Piliae conducted a study to look at whether Tai Chi improved balance, muscle strength, endurance, and flexibility in people with cardiac risk factors and found statistically significant improvement in all of these areas. Tai Chi has also been shown to decrease blood pressure and improve heart rate variability.

Energy-Based Therapy: Homeopathy

- Homeopathy is a natural science that uses plants, minerals, and animal materials in very small doses to stimulate a sick person's disease defenses. "Homos" in Greek means "similar," and "pathos" means "suffering."
- Homeopathy is based on the theory that like cures like; therefore, an energized medicine that mimics a person's symptom will assist in the body's healing process and relieve the symptoms.
- For example, ipecac syrup is used to cause vomiting. It is used in the emergency room if someone has swallowed a poison. However, in the homeopathy world, ipecac is diluted and is used to treat nausea as opposed to induce nausea.
- Homeopathy has wonderful treatments that are safe and that you can use in your home. For example, arnica could be used for any injury or accident. Chamomile is great for children who are cranky—maybe from teeth pain or earaches. Rhus tox is great for sunburns, and calculus can be used for vertigo. All of these are over-the-counter treatments that are standardized and go through FDA approval.

Energy-Based Therapy: Healing Touch

- An energy-based treatment called Healing Touch uses touch to influence the human energy system. As with acupuncture, Healing Touch practitioners believe that disruption in the human energy

system is viewed as a blockage of energy flow that needs to be relieved.

- Developed by a nurse named Janet Mentgen, Healing Touch has been extensively endorsed by the American Holistic Nurses Association and is available in many hospitals throughout the United States. Healing Touch helps to relieve fear, decrease pain, and decrease anxiety in patients before and after surgery.
- A study of Marines with post-traumatic stress disorder showed that Healing Touch and guided imagery have a statistically significant reduction in their symptoms.

Questions to Consider

1. What are the three main components of the biofield?
2. Name two global healing traditions that treat the human biofield.

The Power of Love

Lecture 18

People have all types of relationships in their lives that show them who they are. These relationships begin as children with their parents, and as adults, people have work partners, colleagues, and friends. In this lecture, you will begin to explore the notion of whether relationships impact health. You will look at relationships with parents, spouses and partners, and even larger social networks to conclude that healthy relationships, social connections—to family, friends, and spiritual communities—and optimism are essential ingredients to good health.

Relationships with Parents

- The Harvard Mastery of Stress Study, in which 126 male Harvard students were studied for 35 years, looked at whether parental relationships had an effect on disease in midlife. Participants who identified their relationships with their parents as strained had a 100 percent incidence of significant health risk—including coronary disease, cancer, hypertension, ulcers, and alcohol abuse—35 years later. Amazingly, participants whose relationships with their parents were warm and close cut this risk from 100 percent to 47 percent.
- Researchers reasoned that the results can be explained because we learn everything from our parents, including nutrition, exercise habits, coping styles, and conflict resolution. Our parents also give us our spiritual values and spiritual practices.
- A study conducted over 50 years at Johns Hopkins University concluded that cancer rates correlated closely with the degree of closeness to a parent.
- The Adverse Childhood Experiences (ACE) Study, which was conducted by a physician named Vincent Felitti on adverse childhood events, found that the more trauma a child faces—such as fighting in the home, hitting among parents, parents being in jail,

and sexual abuse—the higher the risk of major illness in midlife and the higher the risk of drug and alcohol abuse.

Relationships with Spouses and Partners

- In a study that was reported in *The American Journal of Medicine*, about 10,000 men who were identified with three or more cardiac risk factors were asked about how they perceived their wife's love. Five years later, those who had responded that their wife showed them love had a 50 percent lower rate of angina—the manifestation of coronary artery disease—onset than those who had responded that their wife did not show them love.
- In 1992, a study that was reported in the *Journal of the American Medical Association* asked 1,400 men and women whose actual coronary anatomy was known whether they were married or had a confidant. People who were not married and had no close confidant had three times the death rate of the other groups over five years. If people have a close connection with someone, they often have much less stress.
- A study of over 9,000 British civil servants that looked at the relationship between unhappy marriages and heart disease was conducted over a period of 12 years. Researchers concluded that unhappy marriages (which often contain a great deal of stress) led to 34 percent more coronary events—regardless of variables such as gender and social status.



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Studies have shown that people who have a close connection with another person often have much less stress.

- There are many factors that contribute to a good relationship versus a bad one, including being optimistic. A group of couples was studied over a two-year period, and researchers found that optimism is clearly linked to happier and more satisfied romantic relationships. They concluded that this was due to greater cooperative problem solving.
- Optimists see the good in their partner; they are not focusing on the little things that sometimes can become annoying. Research shows that optimists have a 55 percent lower risk of death from all causes and a 23 percent lower risk of cardiovascular death.

The Impact of Social Networks on Health

- In the 1950s and 1960s, epidemiologists discovered that a group of Italians that had moved from a small town in Italy to Roseto, Pennsylvania, were not having heart attacks at the same rate as people found in the surrounding communities. However, those family members who moved away from Roseto developed heart disease at the same rate as whatever community they moved to.
- Epidemiologists attributed the protection from heart disease to the social network—the household and the community—and called this phenomenon the Roseto effect. It was common for households in Roseto to contain three generations, and there was a high degree of religiosity and traditional family values. After the 1970s, when children began to move away, there was a breakdown of these multigenerational households and an increase in heart attack prevalence, possibly as a result of increased stress.
- A researcher named Nancy Frasure-Smith conducted a study that looked at social support and depression. She studied 880 people who had already had a heart attack and found that even in people who were severely depressed, the effect of the depression on their cardiac death rates was negated if they felt a good sense of social support.

- The Alameda County Study was a 17-year study of 7,000 men and women that found that people who lack social contact—those who do not have friends, relatives, or social groups—had a 3.1-fold higher death rate. This study controlled for such variables as age, sex, smoking, eating, and alcohol.
- In a study that was conducted in 1997, 276 healthy people were asked to have the rhinovirus placed in their nose, and those with the least number of social connections were four times more likely to get the cold virus infection.
- A study of over 700 older adults looked at an important spiritual principle—that it is better to give than to receive—by pairing the adults with younger children to read, color, or have some sort of interaction. The researchers found that those who gave love and support to others had significantly fewer health issues.
- David Speigel conducted a study in which he created a support group to help women adjust to their diagnosis of breast cancer. The women with breast cancer were asked to participate in a 90-minute group session once a week for one year. The women in the support group showed less depression, anger, and anxiety, but they also lived twice as long as women in the control group.
- A similar study was done that involved patients with melanoma, a very malignant form of skin cancer. Patients were randomized to six weeks of group support versus a control and were studied for five years. Researchers found 13 recurrences of melanoma in the control group versus seven in the group that went to group support and 10 deaths in the control group versus only three in the support group.

Questions to Consider

1. How are unhappy relationships linked to coronary disease?
2. Can the impact of depression on health be negated by social connection?

Spirituality in Health

Lecture 19

As Florence Nightingale said, “The needs of the spirit are as crucial to health as those individual organs which make up the body.” In this lecture, you will explore what research has revealed about the relationship between spirituality and health. To treat the whole person—body, mind, emotions, and spirit—and to guide patients to find inner peace, integrative holistic medicine physicians use such techniques as guided imagery, meditation, yoga, breathing techniques, repetitive prayer, mantras, and Healing Touch.

The Connection between Spirituality and Health

- Spirituality is a sense of connection with the source of ultimate meaning. Frequently, spirituality includes connection with oneself, with others, with nature, or with a higher power. This connection helps an individual make sense of his or her life.
- For many people, spirituality is truly a quest for meaning and wholeness. Whether we want to admit it or not, science cannot answer all the questions; the human heart has a hidden want that science cannot supply.
- We can think of religion as a way of life. Religion includes a community and connection to others, has a philosophy, and is frequently associated with service. Religion also has traditions, practices, and rituals.
- Spirituality may or may not involve formal religion, but spirituality is almost always included in religious practices.
- In 2001, the Mayo Clinic reported that 90 percent of people believe in a higher being, 94 percent of people regard their spiritual and physical health as equally important, and 96 percent of family practice physicians believe that spiritual well-being is a factor in

health. More and more research shows a strong connection between spirituality and health.

- In 2000, a meta-analysis of 42 studies involving nearly 126,000 people was published in the *Journal of Health Psychology* that found that highly religious people had 29 percent higher odds of survival compared with less religious people. The authors were unable to attribute this finding to any confounding variables—or even to publication bias.
- Another study that looked at religion and mortality followed 5,286 adults for 28 years and was published in the *American Journal of Public Health*. Those who attended religious services at least once per week had a 23 percent reduction in their mortality. This study adjusted for variables such as age, sex, ethnicity, education, body mass index, and health practices.
- Data from the Mayo Clinic show that religious people have lower blood pressure, are more likely to comply with their medications, are more likely to exercise more often and eat healthier foods, and even have healthier habits—including giving up cigarettes and alcohol. In addition, they are more likely to use preventative health services. They also found that religious individuals are more accepting of death. They have less depression and anxiety, and they are less likely to abuse drugs. The research even showed that they were less likely to commit suicide.
- A 23-year prospective study that was conducted with 10,059 male Israeli civil servants found that Orthodox Jewish men had a 20 percent decreased risk of a fatal heart attack or heart disease when compared with nonreligious men. The researchers that conducted this study adjusted for age, blood pressure, cholesterol, smoking, diabetes, and mass index—all the baseline risks.
- Another study that was conducted in Israel demonstrated that secular Jews had a higher chance of having a first heart attack when compared with Orthodox Jews. As in the first study, age, ethnicity,

education, smoking, and physical exercise were all controlled for, so the authors concluded that there was something about the connection to religion and spirituality that led to health.

- People who are religious or spiritual experience health advantages partly because they have a very strong social support network. People who are spiritual also tend to have increased hope, more contentment, and more peace, and they also tend to be more optimistic. The combination of all of these factors results in the negation of the stress hormones.
- It is possible that people who are spiritual or religious have less medical problems because they turn their problems over to a higher power. When they do that, they remove the burden from themselves.

Addressing Depression and Hopelessness

- Depression has a 40 percent higher coronary artery disease rate and a 60 percent higher death rate. Depression is often found in conjunction with hopelessness.
- People who come into a hospital and are depressed and feeling hopeless—especially people who already have documented coronary artery disease—are less likely to do well with surgery. They have more post-surgical complications, including a two-fold increase risk in outpatient mortality and a five-fold increase in death after a first heart attack.



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Depression materializes in people who lose the peace and rhythm of life and who lack meaning and purpose in life.

- When people feel hopeless and give up, they are less likely to comply with those things that will improve their heart rate variability and make them healthy. If someone is feeling hopeless, telling them to exercise and eat well is probably not going to work.
- When someone goes through the trauma of a big surgery, they appear to be terrified and shocked afterward. When the physician tries to talk to these patients, they often blindly stare back at them. In other words, the person who had the surgery is simply not there. They are experiencing emotional trauma.
- In these situations, Native Americans might say, “Call your spirit back.” The act of calling your spirit back to you involves reconnecting with what is important in your life. It is about finding hope, establishing community, changing your perspective on any health challenges, and ultimately, finding inner peace.
- In addition to guided imagery, meditation, yoga, breathing techniques, repetitive prayer, mantras, and Healing Touch, there are some other equally important aspects of spirituality that integrative holistic medicine physicians use to address depression and hopelessness—including practicing forgiveness and gratitude and experiencing the power of positive thinking. When all of these techniques are combined, physicians are not just healing the physical body—they are integrating body, mind, emotions, and spirit. The physical, mental, and emotional aspects of healing cannot be separated.

Questions to Consider

1. What is the difference between spirituality and religion?
2. What are two ways in which a spiritual crisis may present itself?

Components of Spiritual Wellness

Lecture 20

In previous lectures, you have encountered the devastating medical implications of depression, hopelessness, and even lack of social connection, but you have also learned that religion, spirituality, and social connection of all types can have a positive impact on health. In this lecture, you will be introduced to some of the components of spirituality—including forgiveness, positive thoughts, and gratitude—and you will learn some techniques to help you live a more spirited life. Forgiveness, positive thinking, and gratitude are key ingredients to healing the body, mind, and spirit, and they make for powerful medicine.

Learning to Forgive

- Learning to forgive is essential to spiritual health. Forgiveness is the very heart of spiritual counseling because it is the basis of the recovery of the true self. Even psychotherapy encourages learning to forgive.
- Sometimes people have to learn to forgive their parents, partners, and spouses. People have lists of people that they need to forgive, and the biggest forgiveness is forgiveness of oneself. Forgiveness is truly the essence of emotional as well as spiritual healing.
- Dr. Fred Luskin conducted a study at Stanford University called the Stanford Forgiveness Project, which showed that—in addition to giving us an intense feeling of peace—forgiveness teaches us to take hurt less personally and to take responsibility for how we feel.
- When we forgive, we become a hero—not a victim—in the story of our life. Forgiveness is for you; it is not for the offender. Forgiveness is about taking back your power. Forgiveness is about your healing, not about the people who hurt you.

- Forgiveness does not involve denying or minimizing the hurt; it is not about accepting unkind behavior. It is not even about forgetting that something painful happened. Forgiveness is not about reconciling with the offender.
- Dr. Luskin's research points out that forgivers have decreased blood pressure, less muscle tension, and a slower heart rate. His research also shows that people who forgive have fewer illnesses and fewer chronic conditions. Forgivers are more optimistic, less angry, and less stressed. In the Stanford study, the ability to forgive led to people feeling healthier and happier.
- To help patients forgive, physicians have to start by appealing to their rational mind. Unrepressed anger, guilt, and grief interfere with optimal well-being. Anger increases the risk of a heart attack 230 percent.

The Power of Positive Thinking

- Our thoughts can make us well, or they can make us sick. Thoughts are physical; they are alive, and they have substance—even if you do not see them. You can hurt yourself and others with your thoughts.
- Thoughts are powerful, and they influence how you feel, so you need to think about what you are thinking about. When you have negative, hurtful, hateful thoughts, you are creating the same types of negative feelings in yourself.
- The negative thoughts of hate, anger, jealousy, and envy are all problems that are associated with stress. The solution, which seems to be simple but is not, is to think positive thoughts. Positive thoughts lead to positive deeds, which lead to positive actions. Start thinking positive, nonjudgmental thoughts and start feeling positive emotions because these positive thoughts and feelings can improve your health.

- Research shows that positive thinking increases lifespan. Positive thinkers have lower rates of depression and stress, greater resistance to the common cold, reduced risk of death from cardiovascular disease, and better coping skills during hardships and times of stress.
- One of the reasons that positive thinking is so powerful is because positive outlook enables you to cope better with stressful situations, which reduces your stress hormones and the negative impact that they have on your body.
- You can start the journey of thinking positively by identifying areas that you want to change—by thinking about your thoughts. For example, if you want to become more optimistic and engage in more positive thinking, look at the situations in which you are typically negative and look at the people you interact with when you are in those negative spaces. In other words, look at who your friends are.
- Choose at least one area of your life that you are negative about, and try to approach it differently. For example, start your day by thinking about being happy to be at your job because, after all, you could always be in a worse situation. You could be heading to the hospital for surgery instead. Then, throughout the day, evaluate yourself. Stop and think about what you are thinking and what is going on in your mind. If you find that your thoughts are mainly negative, try to find a way to put a positive spin on them.



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You can improve your health by thinking positive thoughts that bring about positive emotions.

- Stop playing tapes of negative phrases and concepts over and over in your mind. You have done your best; let the past go. Do not think that you cannot do something or that you do not know how to do something because you have never done it before. Instead, look at it as an opportunity to learn something new. Find creative ways to tackle the problems and challenges in your life.

Practicing an Attitude of Gratitude

- Robert Emmons at the University of California, Davis, conducted research on gratitude and found that individuals who keep a gratitude journal on a weekly basis are healthier, exercise more, have less physical problems, and feel better overall. Grateful people report higher levels of positive emotions, greater life satisfaction, and optimism.
- Furthermore, people with a strong disposition toward gratitude have the capacity to be more empathetic and to take the perspective of others. They are also more generous.
- Keeping a gratitude journal is a great way to consciously remember and recall the things that have occurred during the day and to bring the good things to the focus, shifting your thinking to the positive. Every night, write down five things that you are grateful for in your journal. Then, write a few words about it.
- You need to practice an attitude of gratitude. It is good for your health. It changes your perception, and perception is everything.

Questions to Consider

1. Name three components of spiritual wellness.
2. Forgiveness is associated with what health benefits?

Applying the Lessons of Natural Healing

Lecture 21

In this lecture, you are going to take what you have learned so far in this course and apply it to an actual person named Nancy. In short, you will pretend to be a holistic integrative medicine physician. You will give Nancy the powerful tools that she needs to strengthen her soil—including proper nutrition and an exercise plan. In addition, you will give her powerful stress-reduction tools and a reminder to connect with her community. Before Nancy leaves your imaginary office, make sure that she knows that you are part of her healing team.

A Case Study

- Imagine yourself as a holistic integrative medicine physician. A woman named Nancy comes in to your office to see you. She is 58 years old, and she tells you that she has a new diagnosis of diabetes, high cholesterol, and high blood pressure.
- When you ask Nancy what made her want to come in to see you, she says, “I have never been on medication before. Now, I am taking three pills: one for high blood pressure, one for diabetes, and one for high cholesterol. Is there some other way than taking all of these medications?”
- Holistic integrative medicine physicians teach to treat the whole person—body, mind, emotions, and spirit. They believe that the emotional, mental, and spiritual aspects of healing cannot be separated from the physical. They also believe that food, daily exercise, and meditation are medicine. Furthermore, they believe in the healing power of connection and touch.
- With these principles in mind, you can begin to put together all the different pieces of Nancy’s story. However, before doing that, start with a physical exam.

- You find that Nancy is overweight, so you are safe to assume that her being overweight is contributing to her diabetes and high blood pressure. Her body mass index is 30, but the goal for women is less than 22.
- Nancy is wearing her weight around her midline, in the form of abdominal fat. She is shaped like an apple instead of a pear, and this shape is associated with a higher risk of heart disease. Nancy's blood pressure is 140/90, which is high because 120/80 is normal.
- Nancy's laboratory tests confirm that she does have diabetes and that her cholesterol is high. In fact, her good cholesterol, the HDL, is low, and when this is the case, the triglycerides are often high, and that is exactly what Nancy has. In addition, Nancy's LDL, the bad cholesterol, is high.
- Nancy's blood tests also show that her vitamin D level is low—so low that she is deficient. A blood test for inflammation is called an hs-CRP, and Nancy's blood test shows that she is, in fact, inflamed.
- After identifying that Nancy is overweight, has diabetes, and has signs of inflammation, you might decide to draw Nancy a picture of a tree and label three sick leaves on the branches of the tree as diabetes, high cholesterol, and high blood pressure. You might point out to Nancy that Western medicine typically goes right up to the sick leaves and either cuts them off through surgery, bypasses them through surgery, or applies pharmaceutical therapy—but that is not your approach. You might then explain to Nancy that just as the health of the tree depends on the quality of its soil, her own health depends on the soil she lives in.
- In order to strengthen Nancy's soil, you need to take a deeper look, so you should ask Nancy to tell you her story. Nancy says she is a corporate executive. She was born in Wisconsin and was raised on a farm. She describes her childhood as very happy. She was raised Catholic, and she describes herself as spiritual, but she adds that she has had no time for church because of her grueling work schedule.

- Nancy is not married and has never been married. She has no children. She tells you that she has three close friends but no pets, partner, or significant other.
- After listening to Nancy's story, you have the opportunity to ask her a few questions. You start by doing a nutrition assessment, and you discover that Nancy loves simple carbohydrates and eats a lot of sugar. She also tells you that she usually misses lunch, but she does drink at least three cups of coffee—with cream and sugar—per day. She eats less than three servings of fruits and vegetables per day and admits that her major proteins are beef and chicken.
- Nancy informs you that she has never had a food allergy, but she craves and loves dairy. By listening to Nancy, you also learn that she has gas and bloating, and sometimes it alternates with diarrhea and constipation. She describes pain in all of her joints—but especially in her hands. You have to add an additional sick leaf to Nancy's tree because she is telling you that she has arthritis.
- Nancy tells you that she drinks two glasses of red wine per night to unwind. Her aerobic exercise is less than one hour per week, and she does no strength training. In addition, Nancy has no formal stress reduction practice.
- After asking Nancy to fill out some questionnaires, you find that Nancy scored high in three areas: depression, social



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Unsweetened green tea is a great alternative to alcohol or coffee because it lowers cholesterol.

isolation, and perceived stress. You can now add another leaf to her tree: depression.

Putting It All Together

- The top three contributing factors to the sick leaves on Nancy's tree are her diet, lack of exercise, and stress. Start by addressing her diet; recommend a low-sugar or low-glycemic diet with no saturated fat. Specifically, you can recommend the anti-inflammatory Mediterranean diet. Eating whole foods will lower her cholesterol and blood sugar.
- If she is concerned about the amount of protein that she will get after cutting out the saturated fat that is found in the beef and chicken she frequently eats, you can recommend a protein smoothie that has soy protein, almond milk, and even omega-3 fish oil to lower her triglycerides. Also recommend adding a little bit of fiber, a handful of organic berries, and some liquid vitamin D (which will also help with depression) to her smoothie every day.
- To address Nancy's arthritis and inflammation, you should recommend that she cut back on her sugar and red meat consumption, exercise, and reduce the amount of stress she is experiencing. Because of her arthritis, gas, and bloating, Nancy probably has a sensitivity to dairy, so she should substitute cow's milk for soy milk, almond milk, or rice milk. She should also work to decrease her consumption of alcohol and caffeine by drinking water or tea instead.
- The reason that Nancy wants to be healthy is because she has to take care of her elderly parents. This is her anchor—her reason to live. Recommend repetitive prayer as a stress management tool for her. Restructure her weekend to include walking with friends and perhaps even going back to church.

Questions to Consider

1. Name three natural techniques to decrease weight and improve diabetes and high blood pressure.
2. What are some components of a mind, body, and spirit holistic integrative assessment?

Ecology and Health

Lecture 22

Ecology is the study of all interconnected systems on the planet. In its broadest definition, what is personal is universal. In this lecture, you will learn about the findings of the Millennium Ecosystem Assessment and how climate change, the industrialization of food, and the liberal use of synthetic chemicals and plastics are altering the health of humans and the health of our planet. You will also get some glimpses into some of the steps that we can take to start improving both our health and our planet's health.

The Millennium Ecosystem Assessment

- The Millennium Ecosystem Assessment was called for by United Nations Secretary-General Kofi Annan in 2000. Over 2,000 authors and reviewers worldwide contributed their knowledge, time, and insight to this document. The objective was to assess the consequences of ecosystem change for human well-being and then to establish the scientific basis for action needed to enhance the conservation and sustainable use of ecosystems and their contributions to human well-being.
- The Millennium Ecosystem Assessment Report cited the following.
 - Twenty-five percent of mammals and 30 percent of amphibians are threatened with extinction.
 - Two-thirds of major marine fisheries are fully exploited, overexploited, or even depleted.
 - Ninety percent of the total weight of the ocean's largest predators has disappeared.
 - One billion people lack access to fresh, clean water.

- The report concluded that human activity is putting a colossal strain on the Earth's ecosystems. As humans, we can no longer ignore the fact that our health is intimately linked to the health of the planet.

Planetary Changes and Human Health

- The intragovernmental panel on climate change published a report in 2007. In the United States, the panel predicts that Chicago will experience 25 percent more frequent heat waves and that Los Angeles will experience a four- to eight-fold increase in heat wave days by the end of the century. Heat stress is bad for humans and can lead to large death tolls.
- Climate change is not just about heat. The panel also stated that the movement of homes to areas where we have to rely on automobiles and the use of the agricultural industry of land has resulted in air quality disruption.
- Between 1960 and 1990, the number of people working outside of their counties increased by over 200 percent. Although it seems like a good intention to move out of cities to be surrounded by more green land and trees, this has resulted in vehicle miles traveled increasing by 250 percent from 1960 to 1997.
- The average American driver spends 443 hours each year behind the wheel of a car, which is equivalent to about 11 weeks of work. Urban outdoor air pollution is estimated to cause 1.3 million deaths worldwide per year, and those individuals living in middle-income countries are disproportionately experiencing this burden.
- Air pollution is one of the largest contributors to cardiovascular disease. Studies of mice show that even animals on a high-fat diet do alright in terms of plaque formation, but they get sick and form more plaque—nearly double the amount—if they are given a high-fat diet combined with air pollution.
- In 1996, the Atlanta Olympic Games were taking place in the downtown area, and a decision was made to limit automobile use

in the area. Automobile use was reduced by 22.5 percent, and subsequently, hospital admissions for asthma in the area decreased by 41 percent.

- Another contributor to poor air quality is the agricultural industry. In 2006, The Food and Agriculture Organization of the United Nations stated that livestock production contributed 18 percent of world greenhouse gas emissions—which is more than transportation. More recent research suggests that the livestock contribution may be as high as 51 percent of all greenhouse emissions.
- Another interesting study in 2006 at the University of Chicago concluded that a person switching from a typical American diet to a vegan diet—a diet without animal meat, eggs, or even milk—with the same number of calories would prevent the emission of 1,485 kilograms of carbon dioxide. The difference obtained by that change exceeds that of an individual switching from a Toyota Camry to a hybrid Toyota Prius.



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If many people switched to a vegan diet—one without animal meat, eggs, or milk—it would have a profound impact on greenhouse gas emissions.

- The livestock industry may also be affecting human health in another way. Very frequently, animals are kept on feedlots, which are confined quarters, instead of being able to graze freely in the grass. Because of this, they are routinely given antibiotics to prevent infection—not to treat sick animals. This is a true misuse of antibiotics.
- Antibiotics are a true medical miracle and are to be used when needed in the correct way. People should take antibiotics when they need them, but the use of antibiotics is becoming increasingly liberal.
- The agricultural industry uses approximately 71 percent of the antibiotics produced in the United States, and there is a strong link between antibiotics used in agriculture and antibiotic-resistant bacteria.
- A report from 2000 looked at an antibiotic-resistant salmonella outbreak that occurred in the United Kingdom. It traced the outbreak to a dairy farm where a particular antibiotic was used the month before the outbreak. The use of the antibiotic in the dairy resulted in resistant infections in humans.
- The American Society for Microbiology, the American Public Health Association, and the American Medical Association have called for substantial restrictions on antibiotic use in animal food production. They are calling for an end to all nontherapeutic uses of antibiotics in livestock.
- The other problem is that animals are being fed corn and other grains that are high in omega-6. These grains raise the omega-6 to omega-3 ratio. Because of this, meat—primarily red meat—is recognized as being proinflammatory.

Environmental Toxins

- In 2009, the Centers for Disease Control and Prevention (CDC) published the fourth national report on human exposure to

environmental chemicals. The CDC measured 212 chemicals in people's blood or urine, 75 of which have never been measured in the U.S. population before. These new chemicals include arsenic, environmental phenols, and bisphenol A.

- Bisphenol A (BPA) is an industrial chemical that has been used to make plastics and resins since the 1960s. These plastics are often used in containers that store our food and beverages, such as canned foods and baby formula cans. The health concern is that the BPA that lines cans and bottles can seep into our food.
- The American Chemistry Council is an association that represents plastic manufacturers, and they say that BPA poses no threat to human health. However, the U.S. Department of Health and Human Services and the Food and Drug Administration say that they have some concerns about the possible health effects of BPA.
- The Environmental Working Group is raising consumers' level of consciousness about this issue, and they are placing educational information in the hands of consumers to help them make clearer decisions.

Questions to Consider

1. Name two ways in which human health is linked to the planet's health.
2. How is the agriculture industry affecting human health?

Healthy People, Healthy Planet

Lecture 23

In the previous lecture, you learned about some of the key factors that affect the health of humans and the health of the planet. This lecture will teach you how to take action. As an individual, you can choose to become vegan instead of eating dairy and red meat. You can also choose to filter your water instead of buying plastic water bottles. There are also changes that are happening at a larger level—both institutionally and nationally. When you make the right choices for your own health, you are also making choices that are right for planet Earth.

Acting Locally

- There are many steps that you can take immediately that will impact not only your own health, but also the health of the planet.
- One of the first things that you can do is buy organic fruits and vegetables whenever possible. Over 450 pesticides and herbicides are used on nonorganic products. Nonorganic products may be irradiated, and they have nitrates. Furthermore, the seeds of nonorganic products may even be genetically modified.
- Farmers that keep using soil over and over again deplete it of its nutrients. However, organic farmers practice crop rotation, which gives the soil more time to replenish its nutrients after producing crops. An added advantage of buying organic produce is to support organic farmers.
- A 2006 study revealed detectable metabolites of organophosphate pesticide residues in children eating a conventional diet. When these children were taken off of their conventional diet and placed on an organic diet, there were no detectable metabolites.
- In addition to buying organic whenever possible, do your best to avoid eating meat and dairy. These foods are high in saturated fat,

which contributes to heart disease and inflammation. In addition, the industrialized reduction of livestock leads to increased greenhouse gas admissions.

- When you go to the supermarket, look for eggs that are free range and omega-3. If you choose to eat poultry, look for poultry that is free range and free of antibiotics and hormones—especially if you have small children. Ideally, buy organic eggs and poultry.
- If you choose to eat fish, make sure it is wild caught, such as wild sockeye salmon or wild trout. The more fat that is on the fish, the more toxins that are in the fat.
- In a study that was published in *Science* in 2004, researchers found that farm-raised Atlantic salmon had significantly higher levels of 13 toxins when compared with wild Pacific salmon. The study also measured toxin levels in the salmon chow, a mixture of ground-up fish and oil that was fed to the farm-raised salmon. They found a strong correlation between the toxicities of the chow and the salmon and concluded that the toxins were being passed into the salmon from their food.
- Fish farms use chemicals as disinfectants to kill bacteria. They use herbicides to prevent the overgrowth of vegetation in ponds, vaccines to fight certain diseases, and drugs—usually combined in the feed—to treat diseases and parasites.

Personal Changes

- Policy change plays a large role in changing the planet for the better, but individuals can also effect change very quickly. You can start by becoming vegan because vegan food is the best food that you can eat for the planet.
- Start figuring out which plastic bottles that you use contain BPA. If your bottle has a label, look underneath the bottle, and if you see the recycle number seven, it contains BPA.

- In addition, most aluminum cans are lined with BPA, so whenever possible, filter your water and select stainless-steel canisters.
- Don't put hot foods in plastic because if you do, the toxins from the plastic will seep into your food. Instead, use glass or porcelain. For the same reason, do not microwave plastic.
- One of the biggest sources of plastic is in the environment. Plastic constitutes 90 percent of all trash floating in the world's oceans. In some areas of the ocean, the amount of plastic outweighs the amount of plankton by a ratio of six to one. The truth is that, despite recycling, many of the plastic bottles that you use end up in the water.
- The Pacific garbage patch is a trash vortex that spins around; it is a gyre of ocean litter that is located in the North Pacific Ocean. The exact size of the vortex is unknown, but estimates range from an area the size of the state of Texas to one larger than the continental United States.



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Plastic is bad for the environment and for your health, and even if you recycle plastic, you could be contributing to pollution.

- Not only is plastic bad for our health and for the planet, but plastic is also bad for animals. The albatross are dying because they are eating the plastic that human beings discard, including plastic bottle caps.
- Each year, it takes 17 billion barrels of oil and produces 2.5 billion tons of carbon dioxide pollution to produce the 30 billion plastic bottles Americans use. It also takes three times the amount of water to produce a bottle as it does to fill it. Additionally, there is a high cost associated with the transportation of those heavy bottles.
- Another simple thing that you can do to help yourself and the planet is to walk or bike instead of drive. Walking is medicine; it can improve your weight, cholesterol, depression, and even sleep.

Institutional and National Changes

- In 1998, Denmark eliminated nontherapeutic antibiotic use in livestock. In the World Health Organization review of this intervention, a dramatic decrease in resistant bacteria was observed in animals, meat, and humans. In addition, eliminating the routine use of these antibiotics in livestock reduced human health risk without significantly harming the animals' health—and even the farmers' income did not suffer.
- For many years, hospitals would burn all of their waste in incinerators, and all of that material was being released into the atmosphere. Health Care Without Harm decided to take on this issue: In 1988, there were 6,200 medical waste incinerators in the United States, and by 2003, that number was down to 115.
- Health Care Without Harm is also behind the global ban of mercury. The Philippines, Argentina, Mexico, and other countries all over the globe are no longer using mercury—particularly mercury thermometers—because of their effort.
- In addition, Health Care Without Harm is working with hospitals to eliminate the use of PVC, which is a vinyl plastic that creates

a number of environmental and health risks. Many health-care facilities around the world are switching to safer, more cost-effective medical devices that do not contain PVC.

- As a result of the Healthy Food in Health Care initiative, more than 350 hospitals have pledged to supply healthy, sustainable food to their patients and employees. Hospitals are making a commitment to use antibiotic-free meat and poultry and milk that is free of bovine growth hormone. Whenever possible, they are trying to offer foods that are certified organic. They are even trying to buy coffee that is fair trade, and they are filtering their water.

Questions to Consider

1. What is the difference between organic and nonorganic produce?
2. What potential toxin is found in plastic?

You Are Your Own Best Medicine

Lecture 24

Throughout this course, you have learned about a new paradigm of health that supports the notion that prevention is the best intervention. The new paradigm treats the whole person—body, mind, emotions, and spirit—reaches the underlying cause of disease, and strengthens the soil in which a person lives. You have learned how the science of natural healing gives you powerful tools to achieve optimal health. In this lecture, you will learn that the secret ingredient is actually you—because you are your own best medicine.

What Makes People Heal?

- Jerome Frank was a physician, psychotherapy researcher, folk healer, and even an antinuclear activist. In 1961, he wrote a book called *Persuasion and Healing*. Dr. Frank's work sought to answer the question: What makes people heal? The following conclusions resulted from his work.
- Dr. Frank believed that healing requires the patient and physician to share the belief that healing will occur. Healing also requires an emotionally charged setting, a confiding relationship, and some kind of ritual surrounding the healing event. In addition, Dr. Frank said that healing requires hope.
- The word “placebo” is used to describe any form of treatment in which patients are led to believe that they are experiencing a beneficial procedure or receiving a curative agent when, in reality, they are being given something that has no known healing properties.
- A study was published in the *Journal of Affective Disorders* to evaluate the impact of the psychotherapist on treating patients with depression. Their objective was not to evaluate the depression treatment as much as the psychotherapist. People were placed into

two groups: One group received a placebo, and the second group received an active drug. The difference was the therapist. Those people who had a caring, empathetic therapist—even though they received the placebo—did better than the individuals who had a less caring therapist and received an active drug.

- A similar study was conducted to evaluate the impact of a physician's empathy on the ability to control patients' diabetes and cholesterol. Physicians were ranked as having high, moderate, or low empathy. Those physicians who were ranked as having the highest empathy had the most success controlling their patients' diabetes and cholesterol.
- Dr. Irving Kirsch, Director of the Program in Placebo Studies at Harvard Medical School, believes that all responses are based on expectancy. In essence, what we expect will indeed occur.



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There is great power in believing that you will heal—and in others believing that you will heal.

- In 2002, a study was published in which 17 men with major depression were randomized to receive either an active placebo or the antidepressant medication Prozac. PET scans of the brain were performed to look at brain activity and to evaluate different brain patterns associated with different emotions and psychiatric illnesses. The patients were scanned before and after the study. Similar brain changes were seen in the placebo and medication group.
- These studies demonstrate the power of ritual and expectation to bring about healing.
- Sometimes, patients express unfounded beliefs to their physicians that they will develop an illness or die as a result of a medication or treatment. These beliefs lead to what is known as a nocebo reaction or response, which refers to the harmful, unpleasant, or undesirable effects that occur after a patient receives a medication or treatment. A nocebo response is caused by the subject's pessimistic beliefs and expectations that the placebo will produce negative consequences.
- The Framingham Heart Study—directed by the National Heart, Lung, and Blood Institute and Boston University—enrolled 5,290 men and women from Framingham, Massachusetts, between the ages of 30 and 62. The purpose of this research was to follow these patients over a long period of time in order to identify factors associated with coronary artery disease. The researchers were surprised to find that women who believed they were prone to heart disease at the start of the study were almost four times more likely to die as those with similar risk factors who did not hold this belief.
- Belief is not simply thought; it goes much deeper than that, and it is much more complex. Belief can best be defined as the certainty that comes from accepting what we think is true in our minds as well as what we feel to be true in our hearts. Belief is at the very core of our being.
- The women in the Framingham Heart Study were convinced that they would get heart disease, and they focused on what they

believed to be true—that they would get heart disease. Could it be that they actually manifested this reality? Is it possible that we create the things in life that mirror our own thoughts and feelings? More importantly, what happens if we change that thinking and bring in a new perspective?

- Affirmations provide a way to change your thinking. An affirmation is a declaration that something is true. It is not about just saying words; it is about knowing with your mind and believing in your heart that what you are saying is true. For example, the declaration “I am healed” is a positive affirmation. It is not a declaration in the past tense or in the future tense; instead, the healing is happening in the present moment.
- In 2007, David Creswell conducted a study to evaluate the effect of affirmations through expressive writing in breast cancer survivors. When the essays written by the women were analyzed, the author concluded that women whose writings were affirmative experienced fewer negative symptoms and a better health outcome.

What Have You Learned?

- Throughout this course, you have explored the big picture that connects the health of the planet to the choices that you make every day as an individual.
- You have uncovered the importance of tiny molecules such as vitamin D to your body and mind.
- You have learned about nutrition, exercise, meditation, and service.
- You have examined the evidence that supports the health benefits of love, forgiveness, and connection.
- You have observed the power of thought. Thoughts truly can make us sick, but they can also make us well.

- There are many paths to healing, and the path may be different for each person.
- You have the power to be your own best medicine.
- Hopefully, this course has provided you with all of the necessary tools, science, and wisdom to start your healing journey. Information leads to knowledge, but practice leads to transformation.

Questions to Consider

1. What is a placebo?
2. How are belief and expectation linked to health?

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