Potbelly Syndrome Glossary

If you find any errors, please contact me at:
russ AT potbellysyndrome DOT com.

A

Abdominal Fat. Fat in and around your belly. Includes visceral and subcutaneous fat.

Abdominal Sagittal Diameter (ASD). The distance from the back to the highest part of the abdomen of a person lying on his or her back. Should be less than 10 inches.

ACE Inhibitors. Drugs that lower blood pressure by relaxing our arteries. ACE inhibitors may also lower cortisol levels.

ACTH. Adrenocorticotropic hormone. It is produced by the pituitary gland, and it stimulates the production of cortisol.

Acute. Sharp; severe; something that happens for a limited period of time.

Acute Myocardial Infarction (AMI). See *Heart Attack.*

Acute Phase Proteins (APPs). Proteins produced by the liver during an acute phase response. The most famous of these is C-reactive protein (CRP), a marker for inflammation.

Acute Phase Response (APR). The body's response to injury or infection. APRs produce inflammatory substances to kill germs and then they produce anti-inflammatory substances to protect us from the inflammatory ones. Sometimes called *acute phase reaction*.

Acute Phase. A short, intense phase of a disease; not chronic.

Adaptogen. A substance that that is supposed to help us adjust to stress. Some "adaptogens," such as *Rhodiola rosea*, are said to lower cortisol levels.

Adenovirus. Common virus, widely used in genetic transfer experiments. It causes obesity in animals and humans.

Adiposity. Fatness.

Adrenal Glands. Glands that produce many hormones, including cortisol, aldosterone, epinephrine, and norepinephine.

Adventitial layer. See *tunica externa*.

Afternoon Cortisol Level. Your cortisol level measured eight hours after a morning cortisol measurement. It should be less than half of your morning level.

AIDS. Acquired immunodeficiency syndrome. It is caused by the human immunodeficiency virus (HIV) and is characterized by high cortisol levels and a breakdown of the body's immune defenses.

Albumin. A protein that acts as a carrier for numerous substances in the blood. A marker for chronic subtle hypercortisolism.

Albuminuria. Excessive albumin in the urine. May be a sign of kidney disease.

Aldosterone. Hormone that raises blood pressure by making you lose potassium and retain water and sodium. Cortisol can activate aldosterone receptors and raise blood pressure the same way.

Alpha blockers. Medicines that reduce blood pressure by inhibiting signals from the brain to our arteries.

Amenorrhea. Loss of periods. Symptom of hypercortisolism.

Amino acids. The building-blocks for proteins. There are 20 of them.

Aneurysm. Balloon-like bulge in an artery. Linked to *Chlamydophila pneumoniae* infections.

Angiopathy. Disease of the blood vessels that occurs when someone has diabetes for a long time. *Macroangiopathy* is a disease of the large vessels and *microangiopathy* is a disease of the small vessels.

Angiotensin Converting Enzyme (ACE) Inhibitor. Lowers blood pressure by relaxing blood vessels.

Angiotensin Converting Enzyme (ACE). Converts angiotensin I to angiotensin II.

Angiotensin I. A building block for angiotensin II.

Angiotensin II. Raises blood pressure by constricting arteries.

Angiotensinogen. Building block for substances that raise your blood pressure.

Anorexia Nervosa. An eating disorder.

Antibiotic. Medicine that kills bacteria, but not viruses.

Antibodies. Proteins that the body makes to protect itself from germs. There are several kinds, and the levels of the different kinds of antibodies can give your doctor a good idea of what germs you are infected with. Antibodies do not give a very accurate indication of how badly we are infected by intracellular germs. Also called immunoglobulins (IgA, IgE, etc.).

Anti-Chlamydial Protocols. Complex treatments for Chlamydial infections. The best known are the Vanderbilt and Wheldon protocols.

Anticortisol. A substance that resists the production or activity of cortisol.

Anti-Inflammatory. Something that reduces inflammation. Cortisol is the most important anti-inflammatory substance produced by the body.

Anti-stressors. Love, trust, laughter, and other things that reduce or neutralize the effects of stressors.

Anxiolytics. Medicine used to treat anxiety.

Aorta. The largest artery in the body.

Appestat. The system that regulates your appetite.

Appetite Set point weight. The weight that your appestat tries to keep you at. It appears to be set by the balance of cortisol and leptin in your blood; cortisol makes you hungry and leptin keeps you from feeling hungry.

Arrhythmias. Irregular heartbeats including atrial and ventricular fibrillations.

Arteriosclerosis. Hardening of the arteries. Usually found with *atherosclerosis*. Infections and inflammation play a role in causing arteriosclerosis.

Artery. A blood vessel that carries blood away from the heart and to other parts of the body.

Atheroma. A sore filled with pus. This term is often used when describing sores in arteries.

Atherosclerosis. A common form of arteriosclerosis in which foam cells full of cholesterol crawl into our arteries and die. The dead foam cells form streaks and cores of pus in the walls of arteries. As the process continues, the arteries to the heart may narrow, cutting down the flow of oxygen-rich blood and nutrients to the heart.

Atrial Fibrillation. Uncoordinated contractions that occur in one or both of the upper chambers of the heart, resulting in rapid and irregular heart and pulse rates. A type of *arrhythmia*. Atrial fibrillations have been linked to *Chlamydophila pneumoniae* infections.

Atrophy. Wasting away or shrinkage of tissue. Atrophy of muscles is a common sign of hypercortisolism.

B

Bacterium: A microscopic organism composed of a single cell. Many bacteria cause disease.

Baroreceptor System. One of at least five systems the body has evolved to regulate blood pressure. Baroreceptor nerves tell the brain how high our blood pressure is, and then the brain sends signals through *effector* nerves to raise or lower blood pressure.

Basal Metabolic Rate. The rate at which your body burns fuel when it is at rest.

Beta Blocker. Medicine that lowers blood pressure by reducing nerve impulses to the heart and blood vessels.

Beta Cells. Cells in the pancreas that secrete insulin into the bloodstream to regulate the amount of glucose in the blood.

Beta Glucan. A substance found in the cell walls of bacteria, fungi, seeds and yeasts. Supposedly stimulates macrophages to kill germs more effectively, but the research is pretty thin. There are many kinds of beta glucan. Some of the health benefits attributed to oats may be caused by the high beta glucan content of oats.

Binge Eating. An eating disorder.

Biofeedback. The use of electronic devices to monitor body activities. Biofeedback techniques are used widely to teach relaxation and stress-reduction.

Blood Pressure. The force of the blood on the walls of arteries. Two levels of blood pressure are measured; systolic and diastolic. In a blood pressure reading of 120/80 (spoken as "120 over 80"), 120 is the systolic pressure and 80 is the diastolic pressure.

Blood Pressure, Diastolic. The blood pressure that exists when the heart rests between beats.

Blood Pressure, Systolic. The pressure which occurs each time the heart pushes blood into the arteries. It is the sum of the forward and reflected pressure waves.

BMI. See *body mass index*.

Body Mass Index (BMI). The BMI formula is your weight in kilograms divided by your height in meters squared. (BMI = kg/m2).

Buffalo Hump. A fat deposit on the upper back. A large buffalo hump is one of the stigmata associated with hypercortisolism, especially Cushing's syndrome. Salmon swimming upstream to spawn have very high cortisol levels, and they develop pronounced humps on their backs. The high cortisol levels eventually kill the salmon.

Bulimia Nervosa. An eating disorder.

C

Caffeine. A bug-poison produced by coffee, tea, and other plants.

Calcium Channel Blocker. A drug used to lower blood pressure.

Calorie. Unit of measurement for energy. Carbohydrates and protein produce about 4 calories per gram when burned, while fat yields about 9 calories per gram.

Capillary. The smallest blood vessels. Capillary walls are so thin that oxygen, glucose, cytokines, and hormones can pass through them and enter our cells.

Carbohydrate, Complex. Starches and fiber. Complex carbohydrates can be found in whole-grain breads, cereals, pasta, and rice. They are also found in peas, beans, corn, fruits, and vegetables.

Carbohydrate. Sugars, starches, and fiber. The body can convert carbohydrates and protein, but not fat, to a sugar (glucose) and a starch (glycogen).

Carbohydrate, Simple. Sugars and refined flour.

Cardiopulmonary System. The heart and lungs.

Cardiovascular Disease (CVD). Disease, most commonly atherosclerosis, of the heart or blood vessels. Strongly linked to infections and inflammation. *Chlamydophila pneumoniae* appears to cause many or most cases of CVD.

Cardiovascular System. The heart and blood vessels (arteries, veins, and capillaries). Also called the circulatory system.

Carotid Arteries. Arteries that carry blood up through the neck to the brain. *Chlamydophila pneumoniae* is often found in carotid arteries.

Cataract. Clouding of the lens of the eye. In people with diabetes, this condition is sometimes referred to as a "sugar cataract." Cataracts can be caused by excess cortisol.

Catastrophizing. The habit of talking or thinking ourselves into a feeling of impending doom. The "payoff" for this behavior is a flood of stress hormones.

Catecholamines. The best known catecholamines are the famous fight or flight hormones epinephrine and norepinephrine. These were formerly called *adrenaline* and *noradrenaline*.

Causa Vera. The true cause of something--often very hard to distinguish from intermediate causes. I (Farris) believe infections are the *causa vera* of most cases of obesity, type 2 diabetes, and heart disease.

CDC. The U.S. Centers for Disease Control and Prevention. Their website is http://www.cdc.gov/.

Cell. Small, watery, compartment filled with chemicals; the basic subunit of any living thing.

Cell-wall deficient bacteria. Bacteria, especially *Mycoplasma* species, that lack cell walls.

Cerebrovascular Disease. Similar to cardiovascular disease, except that it is all in your head.

Chlamydia pneumoniae. Old name for *Chlamydophila pneumoniae* (CPN).

Chlamydia trachomatis. Sexually-transmitted bacterium typically found in the eyes and/or the genitals. Worldwide, this is the most common source of blindness. It is a distant cousin of, and is often confused with, *Chlamydophila pneumoniae*.

***Chlamydophila pneumoniae* (CPN)**. A bacterium that causes damage to lungs, arteries, and nerves. Also called *Chlamydia pneumoniae*, *Chlamydia* TWAR, and just plain TWAR.

Cholesterol. A soft, waxy substance that is an important component of all cell membranes. Cholesterol is vital to the proper growth and functioning of our nervous system, muscles, skin, liver, intestines, and heart. The body uses cholesterol to

make hormones, bile acid, and vitamin D.

The body makes enough cholesterol to meet its needs. When you eat foods with a lot of cholesterol, such as butter and egg yolks, the body reduces its production of cholesterol. Consequently, the amount of cholesterol in your food has little effect on the amount of cholesterol in your blood. Cortisol raises cholesterol levels.

Cholesterol is transported through the blood in the form of a *lipoprotein*.

Drugs called *statins* are used to lower cholesterol levels. People with very high or very low levels of cholesterol have high mortality rates.

Chronic. Of long duration. Diabetes and tuberculosis are chronic diseases.

Chronic-Acute. Something that normally happens quickly that persists for a long time. Acute phase responses (APRs), for example, appear quickly after and infection but often last for decades. APRs produce inflammatory cells and chemicals, and cortisol, for as long as they last.

Chronic subtle hypercortisolism. Technical name for the version of the metabolic syndrome that Dr. Mårin and I call potbelly syndrome.

Circadian Rhythm. Daily variations in the level of a hormone or other substance. Also called *diurnal rhythm*. A flattened cortisol rhythm is a characteristic of many diseases.

Clarithromycin. An antibiotic used to combat Chlamydial and other infections. It had a miraculous effect on me the first time it was used, but my germs quickly adapted to it because I was not using it as part of an anti-Chlamydial protocol.

Clem. Fictional character used in thought experiments in *The Potbelly Syndrome*.

Congestive Heart Failure. Heart failure caused by loss of pumping power by the heart, resulting in fluids collecting in the body.

Coronary Heart Disease (CHD). Disease, most commonly atherosclerosis, of the arteries supplying blood to the heart. Also called *coronary disease* or just *heart disease*.

Corticotrophin-Releasing Hormone. See CRH.

Cortisol. A hormone that is produced by the outer shells (cortices) of the adrenal glands. It is important in the regulation

of blood pressure, blood sugar, and immunity. Cortisol is normally released in 16-20 pulses per day of about 1 milligram each. An excess of cortisol (*hypercortisolism*) is associated with Cushing's syndrome, hypertension, obesity, diabetes, heart disease, and many other disorders.

Cortisol Cycle, Flattened. Cortisol curve that is higher than normal in the evening and night time, resulting in increased exposure to cortisol. Cortisol may or may not be low in the morning.

Cortisol Metabolites. The chemicals produced when cortisol is broken down by bodily processes.

Cortisol Sensitivity. The degree to which the body responds to a given amount of cortisol. People who are extra sensitive to cortisol tend to have more cortisol receptors on their cells than other people. Consequently, they break cortisol down to its metabolites very quickly. This has the effect of lowering blood cortisol levels while it increases urinary cortisol levels.

Cortisol System. One of at least five systems the body has evolved to regulate blood pressure.

Cortisol-release threshold. The total amount of background and transient stress required to trigger the release of a pulse of cortisol.

Cortisol-to-Cortisone-to-Cortisol Conversions. Some kidney and colon cells convert cortisol to a relatively harmless hormone called "cortisone." Some liver and fat cells reconvert cortisone back to cortisol.

CPN. See *Chlamydophila pneumoniae*.

Cpnhelp. A group of people working to combat CPN infections. Their website is http://www.cpnhelp.org.

C-Reactive Protein. See *CRP*.

CRH. *Corticotrophin-releasing hormone*. A hormone released by the hypothalamus when the total of background and transient stressors exceeds a threshold level in the body. CRH makes people feel bad and it ruins their appetite. It also leads to the production of cortisol, however, and cortisol makes people feel better and it increases their appetites. CRH is sometimes called *corticotrophin-releasing factor* (CRF).

CRP. *C-reactive protein.* An acute phase protein that is an excellent marker for inflammations and infections.

Cushing's Syndrome (CS). Disease caused by very high cortisol levels. Patients have distinctive features (stigmata) that include a large potbelly, a round "moon" face, a "buffalo hump," and purple stretch marks (stria). Cortisol-like medicines cause most cases of CS, but it can also be caused by tumors. There is a condition called pseudo-Cushing's syndrome in which the patient has all of the features of CS, but no cause can be found. Extreme alcoholism can cause pseudo-Cushing's syndrome.

Cushing's syndrome is rare, but subclinical Cushing's syndrome (SCCS) is fairly common. SCCS and potbelly syndrome are very similar.

Cushing's Syndrome, Iatrogenic. Cushing's syndrome caused by medical treatments.

Cushingoid Habitus. The distinctive round-faced, potbellied look of a person with frank Cushing's syndrome.

CVD. See *Cardiovascular disease*.

CWD. See cell-wall deficient bacteria.

Cytokine. A protein that regulates cellular interaction and cellular functions. Cytokines drive the proliferation, growth, and maturation of certain cells. Cytokines are produced by immune and other cells. The cytokines produced by monocytes and macrophages are sometimes called *monokines*.

Cytokine Cascade. The rapid increase in inflammatory cytokines that occurs shortly after an infection begins. Part of an acute phase response.

Cytokine Storm. A cytokine cascade that gets out of control. It can inflame every cell in the body in a few days. Cortisol normally prevents cytokine cascades from turning into cytokine storms.

Cytokine, primary. Any of the following three cytokines: interleukin 1 (IL-1), interleukin-6 (IL-6), and tumor necrosis factor-alpha (TNF-a). All three stimulate cortisol production.

Cytokines, inflammatory. Cytokines that tend to increase inflammation. The primary cytokines IL-1, IL-6, and TNF-a are inflammatory.

Cytomegalovirus (CMV). One of the most common of the human herpes viruses. Most people have no idea that they are infected with CMV, but it can cause serious illnesses in newborns

and patients with immune deficiencies. Also known as human herpes virus 5 (HHV-5).

D

Depression. Mental state common in people with hypercortisolism.

Depression-cortisol loop. Depression raises cortisol levels, and high cortisol levels cause depression. It appears that there is a depression-cortisol loop that keeps people depressed after the initial cause of their depression has passed.

Dermopathy. Skin problems. Common in people with hypercortisolism.

Dexamethasone (DEX). A cortisol-like medicine. It suppresses cortisol production.

Dexamethasone Test. A test to see how well your HPA loop can regulate your cortisol levels. You will be given a dexamethasone pill to take at midnight, and your cortisol level will be measured at 0800 in the morning.

The standard dexamethasone test uses 1mg of dex. Some experts think that this is too much, and nearly every one passes the standard dex test. When the amount of dex is reduced, subtle problems in cortisol regulation are often found in people who had passed the standard test. This is explained in more detail in chapter 15 of *The Potbelly Syndrome*.

DHEA (dehydroepiandrosterone). Sometimes called an anticortisol hormone, but its real purpose and effects are unknown.

Diabetes. A disease that occurs when the body is not able to use sugar as it should. The body turns some foods into glucose (a form of sugar). Insulin enables glucose to enter muscle and liver cells where it will be burned to provide energy for the body. Diabetes occurs when the body cannot use glucose because (1) there is not enough insulin or (2) the insulin has been blocked by a condition called *insulin resistance*. The two main types of diabetes are type 1 (insulin-dependent) and type 2 (noninsulin-dependent). Diabetes is discussed at length in Chapter 13 of *The Potbelly Syndrome*.

Diabetes Mellitus. Diabetes.

Diabetes, Complications of. Damage to the retina of the eye (retinopathy), the blood vessels (angiopathy), the nervous

system (neuropathy), and the kidneys (nephropathy). Keeping blood glucose levels close to the normal, nondiabetic range may help prevent or delay some of the harmful effects of diabetes.

Diabetes, Gestational. Diabetes that can occur when a woman is pregnant.

Diabetes, Signs and Symptoms of. People with untreated or undiagnosed diabetes are thirsty and have to urinate often because glucose builds to a high level in their blood and the kidneys are trying to flush out the excess. People with untreated diabetes are hungry and tired a lot because insulin resistance or an insulin shortage interferes with their ability to use glucose. People with type 1 diabetes tend to lose weight, while people with type 2 diabetes tend to gain weight. Other symptoms of diabetes are blurred vision, itching, and slow healing of sores.

Diabetes, Standard Therapy. For most people with type 1 diabetes and some people with type 2 diabetes, the standard therapy consists of daily self-monitoring of blood glucose, one or two insulin injections each day, and a standard program of nutrition and exercise. The main objective in this form of treatment is to avoid very high and very low glucose levels. Also called *conventional therapy*.

Diabetes, Steroid-Induced. Diabetes caused by cortisol-like medicines. It is similar to type 2 diabetes, and it usually disappears when the cortisol-like medicines are discontinued.

Diabetes, Type 1. The pancreas makes little or no insulin because the insulin-producing beta cells have been destroyed. This type of diabetes usually appears suddenly. It is most commonly in younger people under age 30. Treatment consists of daily insulin injections or use of an insulin pump, a planned diet and regular exercise, and daily self-monitoring of blood glucose. This disease is also called *insulin-dependent diabetes mellitus* (IDDM).

Diabetes, Type 2. In this form of diabetes, the pancreas makes insulin, but it is ineffective because of insulin resistance. Type 2 diabetes develops gradually, most often in people over 40 years of age. It accounts for 95% of all cases of diabetes. It is often called *noninsulin-dependent diabetes mellitus* (NIDDM),

Diet. What a person eats.

Diet, Calorie-Restriction. A diet that provides less energy than the dieter will use during the period of the diet. Advocates of these diets believe the dieter will burn enough of his own fat to

make up the difference in energy. This happens to some extent, but the body becomes more and more efficient as energy intake is reduced. Consequently, food intake must be reduced to very low levels before any appreciable amount of fat is burned.

Most overweight people have insulin resistance and high levels of insulin. Calorie restriction diets raise cortisol levels and the extra cortisol makes the body more insulin resistant, and the insulin resistance raises glucose and insulin levels. As long as glucose and insulin levels are high, the body will tend to store more fat than it burns.

When glucose levels are low and cortisol and insulin levels remain high, as they are in many calorie restriction diets, the body may start to pull proteins out of our muscles and nerve cells. The proteins will be converted to glucose and burned before any appreciable amount of fat is burned.

Diet, High Protein. Calorie-restriction diets are spectacularly unsuccessful at helping people lose weight and keep it off. Other diets, where you get enough calories, but low or high amounts of this or that, are still being tested. In high protein diets, insulin levels drop and the body begins to burn less glucose and more fat. Consequently, these diets are much more effective at reducing weight. Are they safer? There isn't enough data available to say. I would like to see a study that looked at the cortisol levels of people on high protein diets, but I haven't found any yet.

Diplopia. Double vision. Excess cortisol may create deposits of fat in our eye sockets, and the extra fat will change the shape of our eyes and cause vision problems. A symptom of Cushing’s syndrome.

Diuretics. Water pills. Medicines used to lower blood pressure.

Diurnal cycle. The daily rise and fall of the level of a substance. Cortisol levels should be relatively high in the morning and low in the evening.

Diurnal cycle, flattened. Daily cycle of a substance that does not have the normal peaks or valleys. Flattened diurnal cycles of cortisol are found in many disorders.

Dyslipidemia. Improper levels of fats and cholesterol in the blood. "Improper" almost always means "high" (hyperlipidemia).

Dysmetabolic Syndrome X (DSX). The U.S. Centers for Disease Control (CDC) settled on the name *Dysmetabolic Syndrome X*, and this is the name that will be used for insurance

purposes. It is also the name used in our definition of the third stage of potbelly syndrome. The term seems to have died an early death, however, and even the CDC generally uses the term metabolic syndrome instead of DSX. See dysmetabolic syndromes and metabolic syndrome.

Dysmetabolic Syndromes. Any of the dozens of expanded versions of Reaven's Syndrome X (RSX). Like RSX, all of the dysmetabolic syndromes have insulin resistance as their central feature, and most of them include high LDL cholesterol, low HDL cholesterol, and high blood pressure. Unlike RSX, most of the dysmetabolic syndromes include abdominal/visceral obesity.

Chronic subtle hypercortisolism is the technical name for the dysmetabolic syndrome that Dr. Mårin and I call potbelly syndrome.

Dysphoria. An unpleasant sensation, the opposite of euphoria. People who have metabolic syndrome often feel dysphoric. Eating sugar usually relieves feelings of dysphoria briefly. This is explained further in *The Potbelly Syndrome*.

E

Easter Egging. A method of troubleshooting electronics equipment by randomly replacing parts until the equipment works again. Very inefficient and expensive. The medical equivalent is giving a patient one medicine after another until he gets better or dies.

Eating disorders. I (Farris) have always thought it was peculiar that anorexia nervosa, bulimia nervosa, and the binge eating have always been considered medical problems, but overeating has always been considered a character defect. Overeating is discussed at several places in *The Potbelly Syndrome*, and it is explained thoroughly on page 86.

Ebola Virus. A virus that dissolves organs and tissues into a bloody mess. Fatal in about 80% of all cases, but there are not very many cases of it.

Endocrine Glands. Glands that secrete hormones into the bloodstream. The adrenal glands secrete cortisol, aldosterone, epinephrine, norepinephine, and other hormones. The pancreas secretes insulin so the body can use sugar for energy.

Endocrinologist. A doctor who diagnoses and treats endocrine problems. Hypercortisolism and diabetes are endocrine problems.

Endocrinology. The study of endocrine glands.

Endogenous. Grown or made inside the body. Cortisol made by a person's own adrenal cortices is an *endogenous* corticosteroid. Cortisol-like medicines are *exogenous* corticosteroids.

Endothelial cells. Delicate cells that line the insides of organs and arteries They control the flow of nutrients and hormones to the smooth muscle cells that line our blood vessels. Endothelial cells are very susceptible to infection by *Chlamydophila pneumoniae*.

Endothelial dysfunction. The inability of endothelial cells to control the growth and activity of the smooth muscle cells in our arteries.

Endotoxin. A poison contained in the cell walls of bacteria; it is released when a bacterium dies. When bacteria are killed by antibiotics, endotoxins cause can cause a *Herxheimer reaction*.

Enzyme. A protein that promotes chemical processes without itself being altered.

Epidemiology. The study of who has what diseases.

Epidural lipomatosis. Fat deposits in the spine that may cause pain or paralysis. Symptom of hypercortisolism.

Epigastric pains. Stomach pains. Symptom of hypercortisolism.

Euphoria. A pleasant feeling some people get when they take cortisol-like medicines.

Eustress. Stress that is positive and healthy, such as the exercise you get by walking your grandkids down to the corner to buy them ice-cream.

Exercise. Physical activity done with the intention of improving or maintaining physical fitness or health. Pleasant exercise that does not injure the body lowers cortisol levels and reduces insulin resistance. Extreme exercises that damage the body raise cortisol levels. In fact, just thinking about extreme exercises raises cortisol levels.

Exogenous. Things produced outside of the body such as cortisol-like medicines.

Exopthalmia. Bulging eyes. Sometimes caused by deposits of fat in the eye sockets. A symptom of hypercortisolism.

F

Fasting Blood Glucose Test. A blood sample is taken in a lab or doctor's office. The test is usually done in the morning before the person has eaten. The normal, nondiabetic range for blood glucose is from 70 to 110 mg/dl. If the level is over 140 mg/dl, it often indicated that the person has diabetes (except for newborns and some pregnant women).

Fat. Efficient substance for storing energy. Fats help the body use some vitamins and keep the skin healthy. Fat is stored in the form of triglycerides.

Fat cells. Cells that convert glucose and fatty acids to triglycerides (fat) for long-term storage. When food is scarce, fat cells release fatty acids and glycerol into the blood for fuel. Fat cells do not become insulin resistant. Since glucose and insulin levels tend to be high in people who are insulin resistant, their fat cells work overtime to convert their extra glucose to fat.

Fat Storage. When glucose and insulin levels are high, our fat cells store fat in the form of triglycerides. Cortisol tends to make the fat stick to our waists. Leptin tends to reduce the ability of fat cells to hold triglycerides.

Fat Utilization. When glucose and insulin levels are low, the body breaks triglycerides down into fatty acids and an alcohol called *glycerol*. The glycerol is broken down again to make a small amount of glucose. As long as insulin and glucose levels stay low, the body burns the fatty acids. The burning fats produce acidic waste products called ketones, and if the body has to survive on fatty acids for very long we may develop *ketoacidosis*.

Fat, Subcutaneous. Fat under your skin; fat you can squeeze between your fingers.

Fats, Saturated. Saturated fats are solid at room temperature. Examples include butter, lard, meat fat, solid shortening, palm oil, and coconut oil. The body uses some kinds of saturated fats to make cholesterol when needed.

Fats, Unsaturated. Saturated fats are liquid at room temperature. Examples include oils from olives, peanuts, corn, cottonseeds, sunflower seeds, safflower seeds, and soybeans. The body does not use these fats to produce cholesterol. Some of these fats are highly inflammatory and suppress the immune system.

Fat-Storage Index. An index that I (Farris) made up for a thought experiment to illustrate how changes in cortisol and

leptin could be expected to affect a person's ability to store fat. It is calculated by dividing a person's morning blood cortisol level in µg/dL by his leptin level in ng/ml. For example, a person with a cortisol level of 10 µg/dL and a leptin level of 10 ng/ml would have a fat-storage index of 1.0 (FSI = 10/10 = 1.0). The higher the index number is, the more efficiently a person will store fat. Calorie restriction diets will raise a person's fat-storage index and make him store fat more efficiently.

Fat-Storage Set point. The weight at which the forces that make us fat and the forces that keep us lean balance each other; the weight at which you burn fuel at the same rate you are taking it in. For most purposes, it is the weight at which cortisol and leptin balance each other.

Fatty Acids. Fat molecules. When insulin levels are low, or there is not enough glucose to use for energy, the body burns fatty acids for energy. The body then makes ketone bodies, waste products that cause the acid level in the blood to rise. This in turn may lead to ketoacidosis, a serious problem. The body can make fatty acids out of glucose, but fatty acids can never be reconverted back to glucose.

Fatty Degeneration of the Liver. See *steatosis*.

Fatty Infiltration of Liver cells. See *steatosis*.

Fatty Infiltration of muscle cells. See *steatosis*.

FDA. The U.S. Food and Drug Administration. Their website is http://www.fda.gov/.

Feedback Loop. In a control system, part of the output may be returned to the input to regulate the output.

Feedback Loop, Negative. Formed when part of the output of a system is used to reduce the input. For example, part of the heat from your furnace heats the thermostat in your house, and the thermostat turns the furnace off at a certain temperature. In the HPA feedback loops, cortisol reduces the production of CRH and ACTH, which in turn reduce cortisol production. Negative feedback loops tend to resist changes in the output of the systems they control.

Feedback Loop, Positive. Formed when part of the output is used to increase the input. Positive feedback loops tend to increase changes in the output of the systems they control.

Fitness vs. Health. In *The Exercise Myth*, Dr. Solomon explains that fitness and health are not the same thing. Fitness has to do

with your ability to work or play; health has to do with how well you feel and how likely your are to continue living. Generally you need to be healthy to be fit, but you do not need to be fit to be healthy. Exercise contributes a lot to fitness, but very little to health.

Foam Cells. Cells other than fat cells that are stuffed with fat. The foam cells of greatest interest in this book are diseased macrophages that fill themselves up with cholesterol and then die in our arteries, thus causing atherosclerosis.

Freedom of Information Coordinator. Government official whose duty it is to delay as long as possible a Government agency's compliance with the Freedom of Information Act.

G

Germ. Any bacterium, virus, or other microorganism.

Glaucoma. Eye disease associated with increased pressure within the eye. Glaucoma can damage the optic nerve and cause impaired vision and blindness. Symptom of hypercortisolism.

Glucocorticoids. A group of hormones that affect carbohydrate metabolism. They also play a role in fat and protein metabolism, maintenance of blood pressure, and the functioning of the central nervous system. Cortisol is the most important glucocorticoid.

Glucose. The simplest sugar; the sugar used by your cells for energy. Table sugar (sucrose) and fruit sugar (fructose) are converted to glucose by the body.

Glucose intolerance. The inability of the body to maintain an optimal glucose level after consuming carbohydrates. This condition often precedes diabetes.

Glucose Tolerance Test. This test is given in the morning before the patient has eaten. A first sample of blood is taken from the person. Then the person drinks a liquid that has glucose in it. After one hour, a second blood sample is drawn. Sometimes a third sample will be taken an hour later. The object is to see how well the body deals with a surge of glucose.

Glucose. Simplest form of sugar. The body makes glucose from proteins and carbohydrates, but mostly from carbohydrates. Glucose is the main source of energy for most cells, but cells cannot use it without the help of insulin. It is sometimes called *dextrose*.

Gluttony. Pejorative term for *hyperphagia*.

Glycogen. A starch produced by the body and stored in the liver and muscles for future use. Glycogen is made from glucose, and it can be converted back to glucose when needed. The body can only store enough glycogen to fuel the body for a few hours, and then the body must start breaking down proteins or triglycerides for fuel.

Glycosylated Hemoglobin (HbA1c) Test. When a person's blood sugar level has been high for a long time, a substance called HbA1c accumulates in the blood. By measuring the HbA1c levels, a doctor can get a pretty good idea of how much of a problem someone has had with high blood sugar during the two or three months before the test.

Gonadotropins. Hormones that stimulate the production of sex hormones by the ovaries and the testicles. Gonadotropins are suppressed by cortisol.

Growth Hormone (GH). See *human growth hormone*.

H

HbA1c. See *hemoglobin A1c*.

HDL. The so-called "good" cholesterol. See *lipoprotein, high-density*.

Heart Attack. An interruption of blood flow to the heart that is severe enough to cause death to part of the heart muscle. This happens when the blood supply to the area is interrupted because of narrowed or blocked blood vessels. Also called a *myocardial infarction* (MI) or an *acute myocardial infarction* (AMI)

Heart Disease. Usually refers to *coronary heart disease*.

***Helicobacter pylori* (Hp)**. Hp is a bacterium that causes ulcers and stomach cancer. It is suspected of causing atherosclerosis in some people. It is associated with diabetes and it may cause weight gain or loss depending upon other health factors. It is also a cause of bad breath.

Hemoglobin A1c. A substance that indicates the severity of a patient's diabetes. See *Glycosylated Hemoglobin (HbA1c) Test*.

Herpes Simplex Viruses (HSV1 and HSV2). HSV1 commonly infects the region around the mouth. HSV2 commonly infects the region around the genitals. HSV1 and HSV2 are middle-path germs that never leaves us, and they have been implicated in

causing atherosclerosis. They are two of the eight known human herpes viruses.

Herxheimer reaction. When bacteria are killed by antibiotics, they sometimes release endotoxins from their cell walls, and the endotoxins make us sick for a few hours or days. Many people believe that Herxheimer reactions can last for months or years, but I think they are wrong. What I think happens is that cortisol levels drop after antibiotic treatments, and the lowered cortisol levels "unmask" inflammation that was unnoticed as long as cortisol levels were high.

High Blood Pressure. Greater than normal force pushing against arterial walls. High blood pressure strains the heart; harms the arteries; and increases the risk of heart attack, stroke, and kidney problems. The causes and consequences of high blood pressure are discussed in Chapter 6 of *The Potbelly Syndrome*. Also called *hypertension*.

Hirsutism. Hairiness. Hairiness in women is often a symptom of hypercortisolism.

HIV. Human immunodeficiency virus. The virus that causes AIDS. High cortisol levels are a normal part of HIV infections.

HMO. Health maintenance organization.

Hormones. Chemicals secreted by some cells to tell other cells what to do. Cortisol and insulin are the hormones of greatest interest in *The Potbelly Syndrome*.

HPA Axis. Hypothalamus-pituitary-adrenal axis. The adrenal glands produce cortisol. The hypothalamus and the pituitary gland regulate how much cortisol is produced.

HPT Axis. Hypothalamus-pituitary-thyroid axis. The thyroid gland produces thyroid hormones T3 and T4. The hypothalamus and pituitary gland regulate the amount of thyroid hormones to be produced. Cortisol suppresses the production of T3 and T4.

Human Growth Hormone (HGH). Hormone with some anticortisol qualities. When we mature, HGH levels drop. HGH counteracts some of the effects of cortisol, but cortisol suppresses HGH production. Often called just growth hormone (GH).

Hunger Index (HI). An index that I (Farris) made up for a thought experiment to illustrate how changes in cortisol and leptin affect our appetites. It is calculated by dividing a person's morning blood cortisol level in µg/dL by his leptin level in ng/ml.

For example, a person with a cortisol level of 10 µg/dL and a leptin level of 10 ng/ml would have a hunger index of 1.0 (HI = 10/10 = 1.0). The higher the index number is, the hungrier a person will be. Calorie restriction diets, not surprisingly, raise our hunger indexes.

Hypercholesterolemia. High cholesterol. Symptom of hypercortisolism.

Hypercortisolism. Too much cortisol in the blood. Mild to intermediate hypercortisolism can be caused by infections or ordinary stress. Severe hypercortisolism is usually caused by tumors or cortisol-like medicines. The signs and symptoms of hypercortisolism are summarized in Chapters 7 and 14 of *The Potbelly Syndrome*.

Hyperglycemia. Too much glucose in the blood. It occurs when the body does not have enough insulin, or it cannot use the insulin it does have (insulin resistance). Since cortisol causes insulin resistance, hyperglycemia may be a sign of hypercortisolism. Signs of hyperglycemia are a thirst, a dry mouth, and a need to urinate often. Severe hyperglycemia is a symptom of diabetes.

Hyperinsulinism. Too much insulin in the blood. A frequent marker for dysmetabolic syndromes. Also called *hyperinsulinemia*.

Hyperlipidemia. High levels of fats (lipids) in the blood. Sign of hypercortisolism. Also called *Hyperlipemia*.

Hyperplasia. Proliferation of cells. *Chlamydophila pneumoniae* infections cause hyperplasia of smooth muscle cells in our arteries. This is an important cause of arteriosclerosis.

Hypertension. Excessive force pressing against arterial walls. Chapter 6 of The Potbelly Syndrome discusses the causes and consequences of hypertension. Cortisol is one of those causes.

Hypertension, Essential. The most common form of hypertension. Also called primary hypertension. "Essential" generally means "caused by God only knows what!"

Hypertension, Gestational. Hypertension that occurs during pregnancy. Also called *maternal* hypertension.

Hypertension, Secondary. About 5% of all cases of hypertension are found to be secondary to some other condition. Gestational hypertension is a form of secondary hypertension.

Hypertriglyceridemia. Too much triglyceride in the blood. A sign of hypercortisolism.

Hypertrophy. Excessive growth. *Chlamydophila pneumoniae* infections cause hypertrophy of the smooth muscles in our arteries. This contributes to arteriosclerosis.

Hypocortisolism. Low cortisol levels. This is probably as common a problem as hypercortisolism, but I will have to leave it to someone else to deal with. Extreme hypocortisolism is called Addison's Disease.

Hypoglycemia. Too little glucose in the blood. A person with hypoglycemia may feel nervous, shaky, weak, or sweaty, and have a headache, blurred vision, and hunger. Insulin resistance may give a person many of the symptoms of hypoglycemia even though his glucose level is normal or high. Taking small amounts of sugar, sweet juice, or food with sugar will usually help hypoclycemics feel better within a few minutes.

Hypokalemic Alkalosis. Loss of potassium accompanied with an alkaloid condition of the blood. A sign of hypercortisolism.

Hypotension. Low blood pressure or a sudden drop in blood pressure. A person rising quickly from a sitting or reclining position may have a sudden fall in blood pressure, causing dizziness or fainting.

Hypothalamus. Part of the brain that regulates cortisol and thyroid levels. Part of the HPA and HPT axes.

Hypothalamus-pituitary-adrenal axis. See *HPA axis*.

Hypothalamus-pituitary-thyroid axis. See *HPT axis*.

Hypoxia. Not enough oxygen in the blood. Hypoxia stimulates cortisol production.

I

Iatrogenic. An abnormal condition produced in a patient by inappropriate or erroneous treatment.

IDDM. Insulin-Dependent Diabetes. See Diabetes, Type 1.

IGT. See *impaired glucose tolerance*.

IL-1 and IL-6. *See interleukin-1* and *interleukin-6*.

Immune Suppressors. Agents that weaken the immune system and make us more susceptible to infections. Cortisol is a very

powerful immune suppressor. *Chlamydophila pneumoniae* and cytomegalovirus both suppress the immune system.

Immune System. The cells and organs that defend the body against infection.

Immunosuppressive Drugs. Drugs that block the body's ability to fight infections. Most cortisol-like medicines suppress the immune system.

Impaired Glucose Tolerance (IGT). Glucose levels higher than normal but not high enough to be called diabetes. People with the potbelly syndrome frequently have IGT. The test to determine whether a person has IGT is the *glucose tolerance test*. IGT used to be called *pre-diabetes*, *borderline diabetes*, *subclinical diabetes*, or *latent diabetes*.

In vitro. "In glass." Used to identify laboratory experiments performed outside of a living organism.

Incidentaloma. Tumor on the adrenal gland, often discovered by accident during medical procedures. Many people with incidentalomas have subclinical Cushing's syndrome (SCCS).

Infection. Invasion of a host by a germ, with the subsequent multiplication and establishment of the germ. The body initiates an acute phase response to combat each infection. An infection may or may not lead to disease.

Infection-cortisol loop. Infections raise cortisol levels, and cortisol suppresses the immune system. The suppressed immunity allows more infections to develop. Consequently, we develop a vicious cycle that causes us to accumulate more infections as we get older.

Infection-cortisol model. The model of chronic illness described throughout The Potbelly Syndrome, and illustrated in a very simplified form at: http://www.potbellysyndrome.com.

Infectious burden. The number of infections we have at any time. Our infectious burden grows as we get older.

Inflammation. Redness, warmth, swelling, pain, and loss of function produced in response to injury or infection. It is caused by inflammatory cells and cytokines. Inflammation increases blood flow though affected tissues.

Insomnia. The inability to sleep enough to maintain health.

Insulin. A hormone that helps the body use glucose for energy. It is produced by the beta cells in the pancreas. When the body

cannot make enough insulin on its own, a person with diabetes must inject insulin made from other sources.

Insulin Resistance. The inability of liver and muscle cells to respond to insulin the way they should. This prevents cells from using glucose effectively. Insulin resistance is linked to high blood pressure and high levels of fat in the blood.

One of cortisol's main functions is to produce a condition called counterregulation that resists the action of insulin. This causes glucose and insulin levels both to rise. There is always a little cortisol in the blood, so there is always a little counterregulation. Counterregulation increases and decreases during the day with stress, hunger, and infection.

When counterregulation is chronically high, it is called insulin resistance. When you are insulin resistant, your metabolism is disrupted and you burn more fat and less glucose. You might think that burning more fat is a good thing, but it isn't. When you are insulin resistant you will make far more fat than you can burn.

Burning too much fat year after year will "poison" your muscle and liver cells in such a way that they remain insulin resistant even when you reduce your cortisol levels. This condition is called metabolic syndrome.

Counterregulation, insulin resistance, and metabolic syndrome are all arrows pointing straight at obesity and type 2 diabetes.

Pleasant, enjoyable exercise reduces cortisol, counterregulation, and insulin resistance, so many people find that they feel great if they can get their walking shoes on and drag their butts out the door for a long, pleasant walk. Just don't walk to a donut shop. I have found little evidence that exercise counteracts metabolic syndrome.

Insulin Resistance Syndrome. One of the many names used for dysmetabolic syndromes.

Insulin-Dependent Diabetes Mellitus (IDDM). See *Diabetes, Type 1*.

Interleukin 1 (IL-1). Inflammatory cytokine, one of the *primary cytokines* that raise cortisol levels.

Interleukin 6 (IL-6). Inflammatory cytokine, one of the *primary cytokines* that raise cortisol levels.

Intima. Inner layer of a blood vessel. See *tunica intima*.

Intracellular Germs. Germs that live and reproduce inside of cells. Generally, the immune system can only kill intracellular germs by killing the cells in which they live, however some antibiotics can kill these germs without killing the cells.

Irritable Bowel Syndrome (IBS). The symptoms of IBS include abdominal pain and alternating constipation and diarrhea. It afflicts about one in five Americans. IBS is associated with activation of the immune system, high urinary cortisol levels, stress, conflict, and emotional upsets. It has also been linked to the consumption of wheat, rye, barley, chocolate, milk products, alcohol, coffee, tea, and colas. My IBS symptoms have disappeared for several months each time that I have been treated for my *Chlamydophila pneumoniae* infection.

Ischemia, Myocardial. Insufficient blood supply to the heart muscle caused by a decreased capacity of the coronary vessels.

Ischemic Heart Disease (IHD). Ischemic (blocked-artery) heart disease.

J

Ju Ju. West African term for magic. Can be good or bad.

K

Ketoacidosis. In type 1 diabetes, if the level of insulin is too low for a long period of time, the body begins to break down its stores of fat for energy. This causes the body to release acids (ketones) into the blood. The result is called ketoacidosis, a severe condition that may put a person into a coma if not treated right away. Dieters who starve their bodies enough to burn large quantities of fat may also develop ketoacidosis.

Ketoconazole. A prescription antifungal medicine that reduces cortisol production. Very dangerous.

Kidneys. Two organs in the lower back that act as filters to remove wastes and poisons from the blood. They also control the level of some substances in blood such as hydrogen, sodium, potassium, and phosphate. The kidneys are important in the regulation of blood pressure, and they can be damaged by high blood pressure. Kidney disease is called *Nephropathy*.

Kwashiorkor. See *protein-energy malnutrition* (PEM).

L

LDL. The so-called "bad" cholesterol. See *lipoprotein, low-density*.

Left Ventricular Hypertrophy (LVH). Thickening of the muscles on the left side of the heart. Often caused by chronic high blood pressure. Reduces the heart's ability to pump efficiently, and it contributes to the development of atrial fibrillations and other arrhythmias.

Leptin. An anti-cortisol hormone produced by fat cells. It helps to regulate appetite and fat-storage. Leptin is also a stress hormone that appears to protect us from severe infections.

Leptin Resistance. Condition where your cells, including brain cells, do not respond properly to leptin.

Leptin System. One of at least five systems the body has evolved to regulate blood pressure.

Lesion. An injury or sore.

Lipids. Fats, including cholesterol and triglycerides.

Lipoatrophy. The loss of fatty tissues from places where it should be; a form of lipodystrophy. The sunken cheeks often seen on AIDS patients are examples of lipoatrophy.

Lipodystrophy. The accumulation of fat where it is not desirable, or the loss of fat from places where it is desirable.

Lipoprotein. Protein-coated package that carries fat and cholesterol through the bloodstream. The low-density lipoproteins (LDLs) and high-density lipoproteins (HDLs) are the most famous.

Lipoprotein Profile Test. A measurement of your total, HDL-, and LDL-cholesterol levels. It also measures your triglyceride levels.

Lipoprotein, High-Density (HDL). HDL carries cholesterol *away* from body cells and *to* the liver. The liver breaks HDL down into bile which is used to digest your food. HDL is often called the "good" cholesterol.

Lipoprotein, Low-Density, (LDL). LDL carries cholesterol to the tissues of the body, including the arteries. LDL is often called the "bad" cholesterol. Macrophages infected with *Chlamydophila pneumoniae* or cytomegalovirus ingest LDL, turn into foam cells,

then crawl into our arteries and die. When millions of foam cells have died in one spot, we have atherosclerosis.

Lipostat. The systems that regulate fat storage. Also called the ponderostat and the fat-o-stat. Lipostats are discussed further in Chapter 9 of *The Potbelly Syndrome*.

Liver. A large organ that helps to regulate blood sugar levels. It produces acute phase proteins (APPs) to help us survive infections and inflammations. The liver is one of the first organs affected by insulin resistance, and prolonged insulin resistance leads to steatosis.

Lyme disease. A chronic disease caused by the *Borrelia burgdorferi* bacterium.

Lyme-literate. A term used in the Lyme disease community to describe doctors who understand Lyme disease. I look forward to the time when there will be more CPN-literate doctors.

Lymph. A fluid that carries white blood cells (WBCs) through the body, bathes body tissues, and drains into the lymphatic vessels. Lymph is moved through the lymphatic system by the contraction and relaxation of our muscles. If we don't use our muscles, our lymph does not move and our immune system is weakened quite a bit. We don’t need to exercise hard, but we need to exercise a lot to get the full benefit from the immune cells in our lymph system. This is why walking is good for us out of all proportion to the calories burned.

Lymph Nodes. Small bean-shaped organs of the immune system, distributed widely throughout the body and linked by lymphatic vessels. Lymph nodes are the homes for many immune cells. Lymph fluid is pumped through our lymph glands when we exercise.

Lymphatic Vessels. A network of channels, similar to blood vessels, which transport lymph through the immune organs and nodes. The outflow from the lymphatic vessels dumps into blood veins near our necks.

Lymphocytes. Small white blood cells (WBCs) produced in the lymphoid organs.

Lymphocytopenia. Shortage of white blood cells, often accompanied by the destruction of lymphoid tissues. Symptom of hypercortisolism.

Lymphoid Organs. The organs of the immune system, where lymphocytes develop and congregate. They include the appendix,

bone marrow, thymus, lymph nodes, spleen, tonsils, and various other clusters of lymphoid tissue. The blood vessels and lymphatic vessels can also be considered lymphoid organs.

M

Macrophages. Large white blood cells that begin life as monocytes. They are often infected with *Chlamydophila pneumoniae* and cytomegalovirus. When healthy, macrophages convert LDL to HDL. When infected, they are unable to process cholesterol, and the unprocessed cholesterol they ingest accumulates inside them until they turn into foam cells and die. Atherosclerotic plaques contain millions of foam cells.

Macrovascular Disease. A disease of the large blood vessels that often occurs when a person has diabetes for a long time. Similar to, if not the same as, atherosclerosis.

Malaise. A feeling of general discomfort or uneasiness. Often the first indication of an infection or other disease. Cortisol reduces the feeling of malaise, but at a cost to our health.

Marasmus. See protein-energy malnutrition (PEM).

Marginally Supraoptimal Glucocorticoid Activity. A carefully chosen phrase describing the cause of potbelly syndrome.

Media. Middle layer of a blood vessel. See *Tunica Media*.

MedLine. Former name of the medical database that is accessible though the PubMed website at http://www.pubmed.gov.

Medline Plus. A central location for U.S. Government-provided health and medical information, including information on vitamins, supplements, and medicines. You can reach it at http://www.nlm.nih.gov/medlineplus/medlineplus.html. Medline Plus also provides a daily listing of important research findings, all written in plain English. You can reach it at http://www.nlm.nih.gov/medlineplus/newsbydate.html

Melatonin. Hormone regulating sleep and some immune functions.

MeSH terms. Every time you use the PubMed search engine, it makes its best guess at what it is you really want to learn. To do this, it uses a huge collection of Medical Subject Heading (MeSH) terms that are hierarchically related to each other. This collection

of MeSH terms is in effect a giant medical dictionary and you can use it at: http://www.ncbi.nlm.nih.gov/sites/entrez?db=mesh

MeSH definitions are very technical, and their arrangement is for the computer's benefit, not ours, but still it is a valuable tool if you are trying to learn the language of medicine.

Metabolic syndrome. A cluster of metabolic problems given many names and many descriptions. Potbelly syndrome is the version of the metabolic syndrome that I (Farris) think is most accurate and useful. Metabolic syndrome is discussed at length elsewhere on this website and in *The Potbelly Syndrome*, especially Chapters 7, 8, and 16.

Metabolic Syndrome X. One of the many names given to versions of the dysmetabolic syndrome.

Metabolism. Processing food to stay alive. It is a two-part process. One part is called catabolism-when the body uses food for energy. The other is called anabolism-when the body uses food to build or mend cells. Insulin is necessary for the metabolism of food. Cortisol accelerates catabolic processes.

Microalbuminuria. See *Albuminuria*.

Microvascular Disease. Disease of the smallest blood vessels that develops when someone has diabetes for a long time. The walls of the vessels become thick but weak, and therefore they bleed, leak protein, and slow the flow of blood through the body. Some cells, for example, the ones in the center of the eye, may be damaged because the cannot get enough blood through these tiny, damage blood vessels.

Middle Path Germs. Germs that can't kill us right away, but which we can't quite get rid of. Infections caused by these germs flood the body with cortisol and other dangerous chemicals. Different species of middle-path germs, such as CMV and CPN, often work together.

Midnight Cortisol Test. A test of your blood cortisol level at midnight. A relatively new and very important test for people who may have mild hypercortisolism. It isn’t used much because your doctors don’t know about it yet.

Miss M.G. A patient with Cushing's syndrome, first described by Harvey Cushing in 1912.

Miss Meribelle. Completely fictional character used to make a thought experiment more interesting.

Monocytes. Large white blood cells that turn into macrophages. Monocytes are often infected with *Chlamydophila pneumoniae*, and they turn into infected macrophages. Monocytes actually protect *C. pneumoniae* from some antibiotics. Consequently, patients may experience a brief period of good health following a course of these antibiotics, but the good effects of the antibiotics only last until the *C. pneumoniae* organisms hiding in monocytes re-establish themselves throughout the body.

Moon-Shaped face. One of the Cushingoid stigmata.

Morbidity Rate. The number of people who are sick or have a disease compared with the number who are well.

Morning Cortisol. Your cortisol level in the morning. It is a very unreliable indication of whether or not you have hypercortisolism.

Mortality Rate. The death rate; the number of people who die of a certain disease compared with the total number of people. Mortality is most often stated as deaths per 1,000, per 10,000, or per 100,000 persons.

Mother Nature. A compact term for "the sum of all of the natural and historical forces that make the world what it is, and which make us what we are." As I point out in *The Potbelly Syndrome*, it is very hard to fool Mother Nature.

MRFIT. The Multiple Risk Factor Intervention Trial conducted by the U.S. National Heart Lung and Blood Institute (NHLBI). The study found that men who exercised, watched their diet, and quit smoking were more likely to die than those who did not. Subjects of the MRFIT study were not checked for *Chlamydophila pneumoniae* or cytomegalovirus infections.

Myocardial Atrophy. Shrinkage of the heart muscles. May result in congestive heart failure or sudden death. A symptom of hypercortisolism.

Myocardial Infarction (MI). See *Heart Attack*.

Myopathy. A disease of the muscles.

Myopathy, Steroid. A disease of the muscles caused by steroids. Cortisol, of course, is a steroid.

N

Necrosis of Bone, Aseptic. Death of bone not caused by an infection. A sign of hypercortisolism.

Nephropathy. Damage to the filters in the kidneys. People who have had diabetes for a long time are likely to have kidney damage.

Neuropathy. Disease of the nervous system. Diabetic neuropathy can cut off all feeling to the legs and feet.

Neurosis. Emotional or thinking disorder, not as severe as a psychosis. Many people with hypercortisolism have mental as well as physical problems.

NHLBI. U.S. National Heart, Lung, and Blood Institute. One of the 17 institutes that make up the National Institutes of Health

Nicotine. One of several bug poisons produced by tobacco plants.

NIDDK. U.S. National Institute of Diabetes and Digestive and Kidney Diseases. One of the 17 institutes that make up the U.S. National Institutes of Health.

NIDDM. Noninsulin-Dependent Diabetes Mellitus. See Diabetes, Type 2.

Night-Eating Syndrome (NES). Powerful urge to eat at night. A symptom of hypercortisolism.

NIH. The U.S. National Institutes of Health. Their website can be searched via http://search.nih.gov/index.html. Most of the definitions in this glossary were adapted from NIH sources.

Noninsulin-Dependent Diabetes Mellitus (NIDDM). See *diabetes, type 2*.

Noradreniline system. One of at least five systems the body has evolved to regulate blood pressure.

O

Obesity. When people have 20 percent (or more) of extra body fat for their age, height, sex, and bone structure, they are said to be obese. This is a poor definition because it does not define where the extra weight is located.

Obesity, Abdominal. A large abound of fat around the waist. Includes visceral and subcutaneous fat.

Obesity, Diffuse. Subcutaneous fat diffused over much of the body. This is generally not a symptom of hypercortisolism, but it can be if thyroid hormones T3 and T4 are suppressed by cortisol.

Obesity, Visceral. An excess of fat contained inside the abdominal muscles. It is the earliest and most visible symptom of hypercortisolism, metabolic syndrome, and potbelly syndrome. This is the fat that is most dangerous to our health. Visceral fat is part of abdominal fat.

Opportunistic Infection. An infection in an immunosuppressed person caused by an organism that does not usually trouble people with healthy immune systems. Opportunistic infections are common in patients with Cushing's syndrome.

ORD. U.S. Office of Rare Diseases, part of the U.S. National Institutes of Health (NIH).

Orthomolecular medicine. Using the "right" (ortho) molecules to correct health problems. This often entails the use of very large doses of vitamins or other naturally occurring substances normally present in the body, frequently for the treatment of mental disorders. Compare with *toximolecular*.

Osteoarthritis. A form of arthritis in which the joints deteriorate. Often caused by hypercortisolism.

Osteonecrosis. Death of bone, especially at the hip joint, that leads to severe arthritis. Often caused by hypercortisolism.

Osteoporosis. Loss of bone. Vertebral fractures caused by osteoporosis often occur in people with hypercortisolism.

Overfeeding. A term used in obesity research to describe getting people to eat more food than they normally would. Overfeeding reduces subjects insulin resistance and it makes them more active. These two factors explain why it is that overfed subjects find it as difficult to gain weight as it is for underfed subjects to lose weight. Remember--your weight is controlled by your fat-storage and appetite set points, not by your wishes, or by the wishes of experimenters.

P

Palliative Care. Treating symptoms. Compare with *strategic medicine*.

Palpitation. Arrhythmias of the heart such as atrial fibrillations.

Pancreas. Organ that helps regulate glucose levels by producing more or less insulin. The pancreas also makes glucagon, a hormone that works just the opposite of insulin.

Parasite. A plant or animal that lives, grows and feeds on or in another living organism.

PCR. Polymerase chain reaction; a technique for identifying the DNA molecules of germs. PCR tests often indicate that a person's monocytes are infected with *Chlamydophila pneumoniae* even when antibody tests indicate that the person is not infected.

Periodontal Disease. Gum disease.

Peripheral vascular resistance (PVR). The steady-state resistance to blood flow caused by turbulence in small blood vessels. Cortisol shrinks blood vessels and increases PVR.

Phagocyte. A *white blood cell* capable of ingesting (i.e., phagocytosing) foreign particles and microorganisms. Phagocytes include *monocytes, macrophages,* and *neutrophils.*

Phosphatidylserine (PS, PPDS). Used by body builders who believe it lowers cortisol levels.

Pituitary Gland. The "master gland" located between the eyes. It regulates growth, metabolism, maturation, and reproduction. It is part of the HPA and HPT axes. Also known as the *hypophysis*.

Plasma. The watery portion of the blood, in which the blood cells are suspended; the plasma contains minerals, nutrients, regulatory substances, gases, and proteins.

Platelets. Small, flat cellular fragments critical for clotting blood.

Polydipsia. A great thirst that lasts for long periods of time. A sign of diabetes and hypercortisolism.

Polyphagia. Great hunger. A sign of diabetes and hypercortisolism.

Polyunsaturated Fats. See Fats, Polyunsaturated

Polyuria. Having to urinate often. A common sign of diabetes and hypercortisolism.

Potbelly. If I need to tell you what a potbelly is, then you don't need this book.

Potbelly Syndrome. A set of disorders closely associated with potbellies.

Potbelly Syndrome Stages. Reaven's Syndrome X (RSX), subclinical Cushing's syndrome (SCCS) Dysmetabolic Syndrome X (MSX), and Type 2 diabetes. Cushing's syndrome (CS) is the

most severe form of hypercortisolism, but it is not counted as a stage of the potbelly syndrome because it is seldom caused by infections or ordinary stresses.

Preeclampsia. Extreme form of *gestational hypertension*. Two signs of this condition are high blood pressure and swelling because the body cells are holding extra water.

Pressure wave. A wave that is produced by blood forced into the aorta by the contraction of the left ventricle of the heart. When arteries branch into smaller arteries, part of the forward wave is reflected back towards the heart. Pressure waves--and blood pressure--are greatly reduced by soft, flexible, healthy arteries. Pressure waves are reflected back towards the heart by smaller arteries.

Procaine hydrochloride. A prescription drug said to be an anticortisol medication.

Protein. One of the three main classes of food. Proteins are made of amino acids, which are the building blocks of cells. The cells need proteins both to grow and to repair themselves. Protein is abundant red meat, pork, fish, poultry, and eggs. Proteins are needed to make hormones, enzymes, and antibodies that are essential to the functioning and regulation of the body. The other main classes of foods are carbohydrates and fats.

Protein-energy malnutrition (PEM). Severe deficiency of proteins. It is often associated with a severe deficiency of food of any kind. The two forms of PEM are kwashiorkor or Marasmus. Children with PEM often have tiny limbs and large potbellies. They also have cortisol levels that are about four times as high as those found in healthy young children.

Proteinuria. Too much protein in the urine. This may be a sign of kidney damage.

Pseudotumor cerebri. High pressure inside of the head, accompanied by headaches. The symptoms resemble those caused by some brain tumors, but no tumors can be found. One of the signs of hypercortisolism.

Psychopathy. Mental illness.

PubMed. A U.S. Government-operated medical database and search engine at: http://www.pubmed.gov/.

Purpura. Purplish or brownish red discoloration, easily visible through the epidermis, caused by hemorrhage into the tissues. A symptom of hypercortisolism.

R

RBC. See *red blood cells*.

Reaven's Syndrome X. A set metabolic disorders including high blood pressure, high insulin levels, and high levels of fat in the blood. When Gerald Reaven, M.D., defined Syndrome X, he specifically omitted obesity to distinguish the effects of Syndrome X from plain old obesity. Obesity, however, usually follows Syndrome X very quickly. It is the first stage of potbelly syndrome , and the first detectable stage of Cushing's Syndrome.

I (Farris) highly recommend Dr. Reaven's book, *Syndrome X*.

Receptor. A protein usually found on the surface of a *neuron* or other cell that recognizes and binds to neurotransmitters or other chemical messengers.

Receptors, Cortisol. Areas on the outer part of a cell that allow the cell to bind with cortisol from the blood. People with a lot of cortisol receptors are more sensitive to cortisol.

Reciprocal causation. Medical term for positive feedback loops.

Red Blood Cells. Cells that carry oxygen from the lungs to all of the other cells in the body.

Reference range. The "normal" range for a substance in your blood, saliva, or urine. The NIH reference for morning blood cortisol is 5 to 25 micrograms per deciliter (µg/dL), but people with morning cortisol levels anywhere near 25 µg/dL are probably in big trouble. Your afternoon cortisol level should be less than half of your morning level.

Renal. Having to do with the kidneys.

Renin. Substance created in the kidneys that converts angiotensinogen into angiotensin I.

Renin-angiotensin system (slow). One of at least five systems the body has evolved to regulate blood pressure. This is your normal, hour-by-hour and day-by-day blood pressure control system

Rhodiola Rosea. One of several "adaptogenic" herbs advertised to reduce cortisol. The cortisol-lowering qualities of these herbs, if any, is pretty slight.

Risk Factor. Something that increases a person's chance of having a disease. People with creases in their earlobes are more

likely to have heart attacks than people without, so earlobe creases are a risk factor for heart attacks. This does not mean that the creases cause heart disease--instead, it suggests that some third thing that causes earlobe creases also causes heart attacks. From that, it follows that heart attacks are risk factors for earlobe creases.

You can substitute *obesity*, *cholesterol*, or *inactivity* for *earlobe creases* in the discussion above without changing the meaning.

RU 486 (mifepristone). Best known as the "morning after pill" that induces abortions. It blocks some of the actions of cortisol.

S

Saturated Fat. See *Fats, Saturated*.

SCCS. See *subclinical Cushing's syndrome*.

Schwerpunkt. In military terminology, the "center upon which everything else depends."

Schwerpunkt-Disorder. The central disorder from which spring all of the signs and symptoms of a disease or syndrome. The schwerpunkt-disorder is not necessarily the initial cause of the disease or syndrome. The diseases described in *The Potbelly Syndrome* are caused by infections, but the infections are not the schwerpunkt for the simple reason that they are too hard to kill right now. Cortisol is the central disorder from which most of the other disorders spring.

The object of medical planning should be to reduce or eliminate the patient's *schwerpunkt-disorder*.

Scrapie. This disease is better known as Mad Cow Disease, and it causes obesity in animals as well as madness. It is caused by small protein-like particles called prions. When humans are exposed to scrapie prions they develop dementia and die, sometimes from insomnia. Sheep infected with scrapie produce five times as much cortisol as healthy sheep do.

Sepsis. “Sepsis” means “infection,” but the term is usually reserved for systemic infections. Sepsis can be caused by many different bacteria, and it is not always possible to identify the culprit. Sepsis is accompanied by high cortisol levels and severe insulin resistance.

Septic shock. Shock due to circulatory insufficiency. It is usually caused by gram-negative bacteria, but it can be caused by other

micro-organisms in the blood, including (rarely) gram-positive organisms. It is often fatal, and cortisol levels are sometimes 20-fold higher than normal.

Sex Steroids. Steroid hormones such as estrogen, progesterone, and testosterone.

Sialic Acid. Like CRP, sialic acid is an excellent marker for inflammation.

Side Effects. Problems that occur when treatment affects healthy cells.

Signs. Markers for diseases that can be detected by special tests or instruments, but which cannot be seen or felt by the patient. Compare *symptoms*.

Sleep Apnea. Interruptions in our breathing that occur during our sleep. These interruptions lower our oxygen levels and raise our cortisol levels.

Sloth. Pejorative term for the fatigue and lethargy that accompany many chronic illnesses. Fatigue and lethargy are symptoms, not causes, of disease.

Sodium chloride. Regular table salt. Too much or too little will raise cortisol levels, but it is almost impossible to know how much is too much or too little.

Statins. Medicines that lower cholesterol levels. I hope everyone will visit http://www.spacedoc.net before taking one of these medicines.

Steatosis. The accumulation of fat in liver and muscle cells. Steatosis "poisons" cells in such a way that they remain insulin resistant even when cortisol levels have been reduced. A sign of hypercortisolism. Also called *fatty degeneration* and *fatty infiltration*.

Steroid Psychosis. Depression and other mental problems caused by cortisol or cortisol-like medicines. Roughly half of all people with Cushing's syndrome have mental problems.

Stigmata. Visible marks of a disease. Cushingoid stigmata include a moon-shaped face, fat deposits on back of the neck and other places, and purple stretch marks.

Strategic Medicine. This is "holistic" medicine described in military terms. See also Schwerpunkt-Disorders, Strategic Objectives, Supporting Objectives, and Tactical Options.

Strategic Objective. In medicine, strategic objectives are those that will reduce or eliminate the schwerpunkt-disorder and give the greatest improvement in health.

Strategic Thinking. Focusing on long-term objectives, i.e., trying to reduce high blood pressure by reducing arteriosclerosis instead of flooding patients with antihypertensives.

Strategist. Someone who thinks in terms of long-term objectives.

Strategy. A set of coordinated, long-term objectives, supporting objectives, and tactical options.

Stress. A name commonly used for either a stressor or a stress. Technically, a stress is the reaction to a stressor, i.e., a paper cup shows stress when it is stepped on by your foot, which is a stressor.

Stress Addict or Stress Junkie. Someone who enjoys the momentary excitement of stress to such an extent that his behavior and beliefs impair his health and the quality of his life. I (Farris) suspect that these people are addicted to stress hormones. The lives of stress junkies tend to be chaotic and short.

Stress Signals. Nerve or chemical signals that tell the hypothalamus something stressful is happening. The inflammatory cytokines IL-1, IL-2, and TNF-alpha are important stress signals. The hypothalamus cannot distinguish between real and phony stress signals—if it could, scary movies wouldn't be half as much fun.

Stress Spike. A very brief transient stressor.

Stress, Background. Same as a background stressor.

Stress, Phony. Stress caused by our imaginations. Those of us who are stress junkies have large repertoires of behaviors and beliefs that cause phony stress.

Stress, Transient. Same as a transient stressor.

Stresses and Stressors. A *stress* is the effect that a *stressor* has on something. When a bus rolls across a bridge it pushes down on the bridge. The bus is the stressor and the "pushing down" is the stress. The bridge pushes up against the bus, and this "pushing up" is the bridge's response to stress. Different kinds of stressors can cause similar stresses. For examples, cars, busses, and trucks are different kinds of stressors, but they

cause the same kind of "pushing down" stress.

In the human body, bacterial toxins cause cells to die. The toxins are the stressors and the cell deaths are the stress. The body's response to this stress is the *acute phase response*, which attempts to neutralize the toxins and kill the bacteria that produce the toxins. Germs and viruses cause similar, but not identical, stresses.

In ordinary speech, the word *stress* is often used to mean both *stress* and *stressor*.

Stressor. Something that causes a stress. A foot stepping on a paper cup is a stressor.

Stressor, Background. Any frequent or constant source of annoyance, anxiety, fear, infection, noise, pain, or worry. Chronic poisoning by caffeine, nicotine, etc. Debts incurred by living beyond our means are common external background stressors. Habitual catastrophizing can be an internal background stressor. Background stressors make us more sensitive to transient stressors like dead car batteries.

Stressor, Transient. The sound of two cats swearing their undying love to each other beneath your bedroom window at 2:00 AM.

Stria. Stretch marks. A symptom of hypercortisolism.

Stroke. A "brain attack." Usually the result of chronic cerebrovascular disease. The blood vessels in the brain may become blocked (ischemic stroke) or they burst (hemorrhagic stroke). Usually only one side of the body is affected.

Stroke, Hemorrhagic. Rupture of an artery in the brain.

Stroke, Ischemic. Blocking of an artery in the brain.

Subclinical Cushing's Syndrome (SCCS). Mild form of Cushing's syndrome caused by incidentalomas or other causes of mild to moderate hypercortisolism.

Sucrose. Table sugar. The body converts sucrose to glucose very quickly.

Supporting Objectives. An objective that helps one accomplish a strategic objective. If, for example, lowering cortisol was the strategic objective, reducing chronic infections would be a *supporting objective* in strategic medicine. Or *vice versa*.

Supraoptimal. Above normal, usually used to mean "slightly above normal." The cause of potbelly syndrome has been defined as "marginally supraoptimal glucocorticoid activity."

Symptom. An indication that a disease or disorder is present. It can be seen or felt by the patient. Compare *Sign*.

Symptoms. Markers for diseases that can be seen or felt by the patient. Compare *signs*.

Syndrome X. The earliest detectable stage of potbelly syndrome. See Reaven's Syndrome X.

Syndrome. A recognizable set of signs and symptoms frequently found together. Syndromes are usually assumed to arise from a common origin even if that common origin is not known.

T

T Cells. White blood cells that are very important in fighting intracellular germs. They are often found in arterial plaques, but their role in atherosclerosis is not clear. T cells can be infected and disabled by HIV and other germs they are supposed to fight.

T3 and T4. Thyroid hormones that accelerate fat burning and weight loss. These hormones are suppressed by cortisol.

Tactical Options. Tools that can be used to achieve military or medical objectives. If one's strategic objective is to reduce stress, the tactical options include meditation, prayer, and avoiding nasty people.

Tactician. Someone who comes up with the tactical options needed to accomplish supporting and strategic objectives. Compare *strategist*. Currently, most physicians are trained to be tacticians, not strategists.

Team Management. An approach to treating diabetes that would be valuable in treating many diseases. It is provided by a physician, nurse-educator, dietitian, and a behavioral scientist working together with the patient.

I'd like to see infection-cortisol reduction (ICR) teams treating heart disease and potbelly syndrome. The teams would have experts in infections diseases and endocrinology.

Thyroid Hormones. Hormones, chiefly T3 and T4, that stimulate the burning of fuel by cells. Thyroid hormones are suppressed by cortisol.

Tinnitis. Buzzing, ringing, clicking, and other noises in the ear. It is called *subjective tinnitis* when the sounds are only audible the patient. It is called objective tinnitis if other people can hear it too.

Miss M.G. had tinnitis and I have it, but it is not generally listed as a symptom of hypercortisolism. One of the causes of tinnitis, however, is intracranial hypertension, and this disorder is a symptom of hypercortisolism (see *pseudotumor cerebri*).

TNF-alpha. An inflammatory cytokine. See *tumor necrosis factor-alpha*.

Toxic. Harmful; having to do with poison. Germ cells often have poisons in their cell walls that they release when they die.

Toximolecular medicine. The practice of giving patients small amounts of poison to achieve therapeutic objectives; a pejorative term used by practitioners of alternative medicine to describe conventional medical practices. Compare to Orthomolecular medicine.

Toxins. Poisons that are damaging to mammalian cells. Many are produced by plants and bacteria.

Triglyceride. The form in which our fat cells store fatty acids. It is a combination of three fatty acid molecules and a glycerol molecule. You don't need to eat fat to be fat; fat cells convert glucose into triglycerides with great efficiency, and eating carbohydrates will increase your blood triglyceride levels more than butter will.

Tumor Necrosis Factor-Alpha (TNF-alpha). Inflammatory cytokine, one of the primary cytokines that raise cortisol levels.

Tunica Externa. The tough but very flexible outer layer of an artery. It is made of small elastic fibers. *Chlamydophila pneumoniae* infections dissolve the elastic fibers and can cause aneurysms. The elastic fibers are usually replaced by scar tissue that makes the artery stiff (arteriosclerosis). The outer layer is also called the *adventitial* layer.

Tunica Intima. Inner layer of an artery. This is the layer with the endothelial cells.

Tunica Media. Middle layer of an artery. This is the layer with smooth muscles and baroreceptor nerves. *Chlamydophila pneumoniae* organisms have a great affinity for smooth muscle cells and they cause hypertrophy, hyperplasia, and scarring in smooth muscles.

U

UFC. See *urinary free cortisol*.

Ulcer. A lesion (sore). Ulcers in the stomach are caused by *Helicobacter pylori*, perhaps aggravated by stress.

Ultrasound. Method of looking inside the body.

Urinary cortisol Test. An obsolete test to determine the total amount of cortisol in a person's urine, usually based on measurements of urine collected over a 24-hour period. The newer test measures *urinary free cortisol* (UFC).

Urinary Free Cortisol (UFC). The amount of *free* cortisol in a person's urine, usually based on tests done on urine collected over a 24-hour period. This is a good indicator of how much cortisol you produce during the course of a day. Unfortunately, this test is seldom performed before people develop frank Cushing's syndrome.

V

Vein. A blood vessel that carries blood towards the heart.

Ventricular fibrillations. Uncoordinated contractions that occur in one or both of the lower chambers of the heart, resulting in rapid and irregular heart and pulse rates. A type of arrhythmia. Ventricular fibrillations can kill in minutes.

Virus. A very small germ that can only reproduce within a living host cell. Viruses can only be seen with electron microscopes.

W

Waist-Hip Ratio (WHR). To find your WHR, divide your waist measurement by your hip measurement.

White Blood Cell (WBC). Immune cells that make up the first line of defense against infection and toxic agents. In this book, monocytes and macrophages are the WBCs of greatest interest. Monocytes and macrophages can be infected and disabled by the germs they are supposed to kill. WBCs are also called *leukocytes*.

WHO. World Health Organization.

WHR. See *waist-hip ratio*.

Z

Zoonosis. A disease that can be spread from animals to humans, or *vice versa*. *Chlamydophila pneumoniae*, for example, can be spread to your dog.

Disclaimer

http://www.potbellysyndrome.com, including this page, is maintained by Russell Farris, and the information contained here is based upon the research and personal and professional experiences of Russell Farris. It is not intended as a substitute for consulting with your physician or other healthcare provider. Any attempt to diagnose and treat an illness should be done under the direction of a healthcare professional.

Russell Farris does not advocate the use of any particular healthcare protocol but believes the information in this website should be available to the public. Russell Farris is not responsible for any adverse effects or consequences resulting from the use of the suggestions, preparations, or procedures discussed in this website. Should the reader have any questions concerning the appropriateness of any procedures or preparation mentioned, the web owner strongly suggests consulting a professional healthcare advisor.