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DEFINING DIABETES RISK

by Ann Gerhardt MD

Diabetes mellitus is a disease of high blood sugar due to inadequate insulin. Either the pancreas can't make any insulin (Type I) or the pancreas can't make enough to keep the blood sugar in the normal range (Type II).

Type I people have lost their pancreatic function due to immune destruction, surgical removal of the pancreas, or destruction of the pancreas by alcohol, chronic pancreatitis or tumor. Type II people burn out the pancreas, usually slowly, over years, from over-use.

People who most easily burn out their pancreas and are at risk for diabetes have what is called **Metabolic Syndrome**. This syndrome is characterized by resistance to the action of the body's own insulin and leads to bad health outcomes, including heart attacks, kidney failure, stroke, and death. The characteristics of people with metabolic syndrome are listed here: *continued on page 2*

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HEARD IN THE ER: *by Ann Gerhardt, MD*

Mr S, a 76 year old male is being admitted for weakness. Part of a history is to find out the person's social situation; with whom he lives, whether there is family to help, etc.

Asked about marital status; Mr S replied, "Not anymore: Her brother looked me up and told me she died last year."

Asked why he didn't know she had died; he replied, "She moved out 10 years ago."

Asked if they had been separated: Without skipping a beat he informed me, "Honey, we were separated all our lives."

The lady in the next bed burst out laughing.

Criteria for Metabolic Syndrome

Blood pressure	> 130/80	
Serum triglycerides	> 150 mg/dl	
Fasting glucose	> 110 mg/dl	
	Males	Females
EITHER		
waist circumference	> 40 inches	> 35 inches
OR waist to hip ratio (divide waist measurement by hip measurement)	> 0.9	> 0.8
HDL-cholesterol	< 40 mg/dl	< 50 mg/dl

Having 3 of these characteristics = metabolic syndrome. With a strong family history, one or two of the above portends a high risk for developing full-blown syndrome.



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Diabetes Risk *continued from page 1*

The normal pancreas makes insulin when blood sugar rises after a meal. Insulin helps the body's tissue to pull sugar out of the blood stream, into the cell for storage. Some of the sugar is stored as glycogen, available for quick energy during physical activity. The rest becomes fat, serving as stored energy for less immediate, sustained energy requirements.

Evolution led to human physiology that allowed survival in feast and famine conditions. Storing calories from a feast allows us to survive during periods of fasting, whether it be days between animal kills or hours between meals. Those who can store energy most-efficiently survived best long ago, but tend to pack on the pounds best now that food is readily available.

Humans differ in their ability to make insulin in response to carbohydrate-loaded meal, ranging from normal to high to none:

- **Normal:** Those who make modest amounts of insulin that are adequate to keep blood sugar levels normal. (These people are also called lucky in today's food-opulent society.)
- **Insulin resistant:** Those who can keep blood sugar levels normal, but do so with lots of insulin (in excess of normal). The body's tissues require more than the usual amount of insulin to control blood sugar. The extra insulin pushes the body to make fat out of sugar and blocks efforts to lose that fat later on, making losing weight a losing proposition.
- **Various degrees of pre-diabetes and diabetes:** Those whose pancreas is working as hard as it can to make insulin, but can't make enough to keep the blood sugar in the normal range. Depending on how out-of-control the sugar is, this condition is labeled:
Impaired Glucose Tolerance –two hours after eating, the sugar is >120 mg/dl, but the fasting sugar is normal. Pre-diabetes.
Impaired Fasting Glucose –fasting sugar between 100 – 120 mg/dl. Well on your way to diabetes.
Type II Diabetes –Fasting sugar \geq 120 mg/dl, but capable of making insulin.
- **Type I Diabetes** Those who can't make any insulin and absolutely require insulin injections to control blood sugar.

Most "pre-diabetes" people are kidding themselves if they think they can keep doing what they are doing and not suffer consequences. The organ damage that occurs in diabetes actually starts very early in the pancreas-can't-

keep-up-with-blood-sugar continuum. People with mildly elevated blood sugars, who don't even have an official diagnosis of diabetes, can develop neuropathy (nerve damage, typically in the feet), kidney damage, vascular disease (to the legs, heart, kidney and brain) and eye problems (cataracts, retina damage). By the time the doctor makes an official diagnosis, "pre-diabetes" has already inflicted damage on the unsuspecting body.

People who are overweight and out of shape and have a family history of diabetes are at great risk of developing metabolic syndrome. Not all obese people have insulin resistance or metabolic syndrome: They must also have a "diabetes gene" that predisposes them to it.

Not all thin people are free from diabetes, particularly if they eat excessive fructose and have a strong genetic tendency to diabetes. Whether thin or overweight, those who have the genetic make-up to become diabetic can stave it off by staying physically fit and controlling diet and weight.

The Reward by Ogden Nash

*In my mind's reception room
Which is what, and who is whom?
I notice when the candle's lighted
Half the guests are uninvited,
And oddest fancies, merriest jests
Come from these unbidden guests.*

Before you buy a car, consider instead a bicycle. A cruiser bike, with a comfy seat and high handlebars so you can sit up and see the world go by, is a glorious way to get around. Your bike doesn't spew exhaust, consume fossil fuel, kill pedestrians, or atrophy your legs. Your bike makes you care less about the cost of gas. And not a day goes by that someone doesn't say, "Cool bike!!"

Grand Canyon Glory



HERBS THAT RAISE BLOOD PRESSURE

by Ann Gerhardt, MD

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Some well-known herbs increase blood pressure, sometimes to levels of clinically relevant hypertension (high blood pressure). Herbs' medicinal benefits derive from the presence of natural, bio-active chemicals. With anything bio-active, there is always the risk of pesky side effects accompanying the desired benefits.

Currently, hypertension is defined as a blood pressure higher than 140/90. If only one of the numbers is higher than the cut-off, it still qualifies as hypertension. Those numbers are not strict cut-offs, below which health is assured and above which you should write your will and stop buying long CD's.

Current data make the case for a continuum of risk, with the danger for stroke and other vascular disease rising as blood pressure increases above 125/75. Blood pressure tends to rise with age, as blood vessel walls gradually lose pliability.

List of herbs that raise blood pressure		
Aniseed (maybe)	Cola alkaloids (caffeine)	
Bayberry	Ephedra	Ma Huang
Blue Cohosh	Gentian	Pau d'Arco
Calamus amines	Ginger	Scotch Broom
Capsicum	Ginseng	St. John's Wort
Chaste Berry	Guarana	Vervain
Chinese Vitex	Licorice	Yohimbe

Ephedra: The Food and Drug Administration (FDA) removed ephedra from the market because it causes hypertension, asphyxiation, heart failure and death. It is related to **pseudoephedrine**, an over-the-counter decongestant, and to amphetamines used in diet pills and street drugs.

Ephedra, also known as **ma-huang** and **E. sinensis**, contains potent alkaloids, primarily ephedrine. They stimulate the body's nerve and hormone systems to boost blood pressure. Many herbal concoctions have used ephedra to boost energy. Though illegal, some currently available supplements contain ephedra-like stimulants which are not disclosed to the purchaser. This surreptitious addition is often how a vitamin pill makes

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people feel wonderful with 'just' vitamins.

Licorice contains glycyrrhizic acid that raises blood pressure, increases blood sodium content and decreases blood potassium levels. As licorice dose increases, so does blood pressure. Only very small doses (~10-50 mg glycyrrhizic acid) are perfectly safe, corresponding to no more than 2 grams of Western licorice (*Glycyrrhiza glabra*) root.

In high doses, licorice can cause significant hypertension, even when not taken in pill form - Sustained consumption of licorice tea or real licorice candy has the same effect as pills. The maximum safe amount of real **licorice candy** ropes per day is 12 inches.

The licorice dose in most Chinese herb formulae tends to be low. A deglycyrrhized licorice (DGL) is available that does not raise blood pressure and appears to retain healing effects on stomach ulcers and gastritis.

Ginseng, at usual doses contained in most supplements, lowers blood pressure. However, Chinese practitioners inject very high doses to raise blood pressure in a person in shock (a sudden, severe drop of blood pressure). Check your blood pressure before and about 2 weeks after starting any ginseng-containing supplement to assess your individual response.

St. John's Wort contains a component that has MAO (monoamine oxidase) activity. This can cause hypertensive crisis if food containing the natural amino acid tyramine is consumed. Tyramine is found in beer on tap, red wine, liquors, aged meat and cheese, yeast extract, and soy sauces. The MAO component of St. John's Wort is minor, so many people will not experience hypertension even if these foods are consumed. To be safe, though, avoid tyramine-containing foods while taking the herb.

Others: Scotch Broom (*Cytisus scoparius*) contains the hypertensive alkaloid sparteine. Yohimbe contains the stimulant alkaloid yohimbine. For most herbs, the chemical components that lead to hypertension have not been identified.

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PREVENTING TYPE 2 DIABETES

by Ann Gerhardt, MD *Subscribe to DrG'sMediSense newsletter at algerhardt@sbcglobal.net*

People with a genetic predisposition to diabetes often drift through the warning signs of the metabolic syndrome (see accompanying article for a description of this syndrome) to full-blown Type II diabetes before they realize they have a problem. They do this by allowing themselves to gain excessive weight, eat excessive sugar or live a sedentary lifestyle.

The **absolute best way to prevent diabetes is to practice a lifestyle of prudent diet, moderate exercise, happiness and ideal body weight maintenance.** Healthy lifestyle not only prevents or delays the onset of metabolic syndrome, diabetes and vascular disease, but also prevents or diminishes a host of other diseases. Type II diabetes is often preventable; Type I diabetes usually is not. (See box for the differences between Types I and II)

The **other method to prevent diabetes involves medications:** Studies show that metformin (Glucophage), or a thiazolidinedione (Actos or Avandia) work. A study published in 2002 in the New England Journal of Medicine showed that diet and exercise OR metformin effectively delay the onset of diabetes. The most recent effective prevention trial, with rosiglitazone (Avandia), was just published in the Lancet.

Type I diabetes: Absolutely requires insulin. Caused by pancreatic destruction by the immune system, alcohol or surgical removal.

Type II diabetes: Only end-stage disease requires insulin. Caused by burn-out of the pancreas from over-work and disordered metabolism.

The easy part of preventing a disease with a pill is that it is as easy as taking a pill. The downside is that pills often have side effects. And they usually aren't as good as lifestyle to prevent diabetes. Metformin primarily exerts its effect on the liver, normalizing sensitivity to insulin and reducing unnecessary glucose production. It is a good drug that tends to reduce appetite and carbohydrate craving. Unfortunately it can also cause death from lactic acidosis in people with heart failure, or liver or kidney disease. Clearly people with those disorders should not take it.

Avandia and Actos not only improve sugar metabolism, but also reduce cholesterol levels and vascular disease. Unfortunately they also cause fluid retention that may lead to heart failure. Those most at risk already have some

degree of heart weakness or failure. Even people without heart disease can develop fluid retention and heart failure, unless they strictly limit carbohydrate intake (starch or sugar). Such dietary control would assist the effort to retard progression to diabetes.

EXERCISE at a **moderate level of exertion, for at least 30, preferably 45 minutes, almost every day.**

Being able to talk in short sentences but not sing characterizes a moderate level of exertion. If the exertion is easy, it has to be done for more time. People who walk more than 15 miles per week (about 45 miles cycling) seem to accrue health benefits and have less metabolic syndrome and diabetes. Walking 3 miles per day, at 15 minutes per mile, fulfills guidelines for exercise frequency, intensity and duration. One does not need to do the same type or quantity of exercise every day – It's all good and adds up.

DIET: Eat as little high fructose corn syrup (sodas, sweets, prepared foods) as possible.

Eat beans, nuts, beans, soy, beans, low-fat dairy, beans.

Eat large volumes of cooked or raw, non-starchy vegetables (At least 2.5 cups packed full).

Limit the starchy vegetables - corn, peas, carrots, yams, potatoes, turnips, beets and any other vegetable found underground (the root vegetables).

Eat the whole grain or high-fiber versions of starches, and limit their quantity.

Eat lean and non-deep-fried seafood, poultry and meat.

Do eat fat, but minimize trans- and saturated fats.

Eat only when physically hungry and stop when the hunger is gone.

Do not smoke – it makes the complications of having disorder sugar metabolism a LOT worse.

Severely limit alcohol intake - give your poor pancreas a chance. No sense whipping it with a toxic substance.

Reduce your stress level – Psychological stress raises cortisol and adrenaline-type hormones, which adversely affect sugar metabolism. So, think happy thoughts, laugh, have a good relationship with your spouse or partner, accept the demands of your job or get a new one and spend within your limits. Life is not stressful, it is your reaction to life that is stressed or not.

SULFA, SULFITE, SULF-WHATEVER

ALLERGIES *by Ann Gerhardt MD*

*Subscribe to DrG's MediSense newsletter at
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Many people who say they have sulfa allergy believe that they will react to anything with 'sulf' in its name or structure. (If you hail from the British Isles or former colonies, you might spell it 'sulph'.) Except for a few, rare, highly allergic individuals, this is not the case. All substances with names that start with 'sulf' are not related, and **allergy to one 'sulf' compound may not translate to allergy to a different one.**

There are three major groups of 'sulf' substances that cause reactions - sulfonamide antibiotics, sulfites and DMSO / MSM. The **reaction to sulfonamide antibiotics is a true allergy**, that escalates with each subsequent exposure. **Sulfites, DMSO and MSM cause an irritant reaction**, the degree of which is determined by a person's innate sensitivity and amount consumed.

Sulfur is an element, like oxygen and helium. (Stick with me here - the chemistry is not so bad). It not only is not toxic, but, as part of amino acids (think protein), it is essential for life. Anyone who couldn't tolerate sulfur would be dead, so no living person reacts to sulfur itself.

Sulfur dioxide and sulfites cause an irritant reaction in some people, usually asthmatics or highly allergic individuals. Sulfites may trigger asthma, hives, rash, sneezing, swollen or scratchy throat, stomach pain, nausea or diarrhea. **Sulfate causes no adverse reaction.** It is a natural by-product of metabolism which is excreted in urine.

SULFITES

sodium sulfite
potassium sulfite
sodium metabisulfite
potassium metabisulfite

The food industry uses sulfites and sulfur dioxide as food preservatives to prevent discoloration and browning.

Their use on salad bar foods has been banned, and, in general, use has declined.

Sulfur dioxide and sulfites are added to some (but not all) processed foods and meats, fruit juices, pharmaceutical products, dried fruits, beers, sauces, pickles, hamburger patties, soft drinks, potato products and vinegar. If present, one of the sulfites (names in table above) will be listed in the ingredients list. Sulfites are also used as preservatives in some medical intravenous solutions.

Sulfites occur naturally in some wines (especially red) and beers: Because there is no additive, sulfite will not be listed in the ingredient list.

Asthmatics and sulfite-reactive individuals may also be sensitive to **tartrazine (yellow dye #5)** which contains two sulfite groups. The symptoms are exactly the same as for sulfite sensitivity.

Tartrazine is a synthetic, lemon-yellow, food coloring agent derived from coal-tar. Any yellow, green or orange colored food, pill or capsule, or food that is supposed to taste like mustard, lemon or cheese may contain this dye.

'Sulfa' (sulfonamide) antibiotics contain a specific chemical structure that is metabolized to a compound that ~5% of people can't clear well from the body. This causes an allergic reaction.

SULFONAMIDE ANTIBIOTICS

sulfamethoxazole	(Bactrim, Septra)
sulfadiazine	(Microsulfon)
sulfanilimide	
sulfizoxazole	(Gantrisin)
sulfacetamide	(Klaron, Blephamide)
sulfanilamide	(AVC cream)
sulfabenzmide/sulfacetamide/sulfathiazole	(Triple Sulfa cream)

The reaction may be as mild as a skin rash or fatigue, or as severe as high fever, headache, gastric problems, anaphylaxis or life-threatening skin and internal membrane erosion. Reactions may occur after pill, skin cream, vaginal, intravenous or eye cream exposure.

There are also **non-antibiotic sulfonamide** medications: Less than 10% of people who are allergic to sulfonamide antibiotics react to these other sulfonamides. Non-antibiotic sulfonamides include hydrochlorothiazide, furosemide, glyburide and celecoxib.

Methylsulfonylmethane (MSM) and dimethyl sulfoxide (DMSO) are sulfur-containing supplements. They are not sulfonamides, but can cause adverse reactions, including nausea, headache, and rash.

Each of these substances, first DMSO in the 1960s and more recently MSM, has been touted to treat many conditions, particularly those related to pain. The only approved use for DMSO is injection for interstitial cystitis (inflammation of the bladder). DMSO, first made in 1866, is prepared from byproducts of paper manufacturing and used as an industrial solvent. (Umm... Sound healthy?) MSM is derived from DMSO.

Think first, before you act: Because you are an extraordinary manifestation of a tangle of unique genetic material, think first, before applying any or all of these articles' information to your life choices. Dr G's just trying to interpret medical and nutrition news reports for you - within the framework of information already known and the limitations of how the studies were done. Articles this size can't possibly contain every bit of information that was ever published on a subject. Distillation may leave some things out: Hopefully not crucial pieces. Don't crucify me if some new tidbit of information comes along that contradicts what I wrote. This newsletter offers some insight, not The Cure: It's not a prescription. PLEASE discuss any changes in therapy or lifestyle with your doctor. Subscribing to this newsletter presumes that you accept your own risk when making decisions about your health.

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**Getting the Most Out Of Your Doctor:
Talk sufficiently and succinctly.**

by Ann Gerhardt, MD

Doctors want to help their patients. Patients want to be helped. The business and economics of medicine these days necessitate time-constrained visits that make neither the doctors nor the patients happy. So...

Sufficient story: If you leave information out of the description of your problem, the doctor is handicapped when formulating a diagnosis and plan. Don't expect the doctor to read your mind or "just know." *Doctors are not omniscient.* AND don't feel intimidated by being rushed, so that you leave information out.

Succinct story: Repeating yourself or giving a long, drawn-out description of every detail of the day you passed out, who was there, why your bathtub was slippery that day, what you were wearing, who called 911, what the EMTs asked you, how long it took to put in the IV, the ER doctor's manner, what else was going on in the ER ... uses up your time and the doctor's interest in hearing you talk even *more*. Instead (for example), focus on when and where it happened, symptoms before and after, what got hurt when you fell, how long you were unconscious, the ER tests done and their results and the diagnosis and treatment in the ER. Then the doctor can ask more questions as needed, make a tentative diagnosis and develop a plan, which, hopefully, you will have time to question and discuss.