HEALTHY YOUNIVERSITY

DIABETES

Welcome to Healthy yoUniversty! For 8 weeks we will be exploring ways to exercise our mind and body with skills that will enable us to reclaim a healthy balance in our lives. Each week, you will receive a packet of information that focuses on a different health topic. The first page of the packet has four tickets with activities based on the information in the rest of the packet. Complete as many of these activities as you like. Then fill out the tickets for the completed activities, cut them apart, and submit them in the box located at our Information Desk. For every ticket you submit, you will receive an entry in to our drawing to win a $50 Amazon Gift Card. Good Luck!

Read the Entire Diabetes Packet

Name:_____ **Phone Number:** _____

Try one of the online risk assessment tools or forms

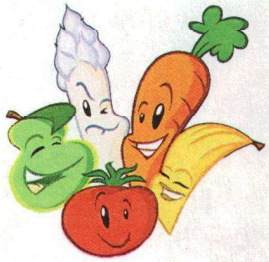
Name:_____ **Phone Number:** _____

Count the carbohydrates & calories in all your foods for at least one day

Name:_____ **Phone Number:** _____

Try at least 3 of the meals in the Outsmart Diabetes meal plan.

Name:_____ **Phone Number:** _____



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DIABETES

What is Diabetes?

To answer that, you first need to understand the role of insulin in your body. When you eat, your body turns food into sugars, or glucose. At that point, your pancreas is supposed to release insulin. Insulin serves as a "key" to open your cells, to allow glucose to enter – and allow you to use the glucose for energy. But with diabetes, this system does not work.

Several major things can go wrong – causing the onset of diabetes. Type 1 and type 2 diabetes are the most common forms of the disease, but there are also other kinds, such as gestational diabetes, which occurs during pregnancy, as well as other forms. (Taken from http://www.diabetesresearch.org/what-is-diabetes)

What is Type 1 Diabetes?

The more severe type of diabetes is type 1, or insulin-dependent diabetes. It's sometimes called "juvenile" diabetes, because type 1 diabetes usually develops in children and teenagers, though it can develop at any age.

With type 1 diabetes, the body's immune system attacks part of its own pancreas. Scientists are not sure why. But the immune system mistakenly sees the insulin-producing cells in the pancreas as foreign, and destroys them. This attack is known as "autoimmune" disease.

These cells – called "islets" are the ones that sense the glucose in the blood, and, in response, produce the necessary amount of insulin to normalize blood sugars. Without insulin, there is no "key". So, the sugar stays – and builds up – in the blood. The result: the body's cells starve from lack of glucose. And, if left untreated, the high level of "blood sugar" can damage eyes, kidneys, nerves, and the heart, and can also lead to coma and death.

So, a person with type 1 diabetes treats the disease by taking insulin injections. The challenge with this treatment is that it's often not possible to know precisely how much insulin to take. The amount is based on many factors including food, exercise, stress, and emotions/general health. If one takes too much insulin, then the body burns too much glucose and blood sugar can drop to a dangerous level. This is called *hypoglycemia*. If one takes too little insulin, the body can be starved of the energy it needs, and blood sugar can rise to a dangerous level. This is called *hyperglycemia.*

(Taken from: http://www.diabetesresearch.org/what-is-type-one-diabetes)

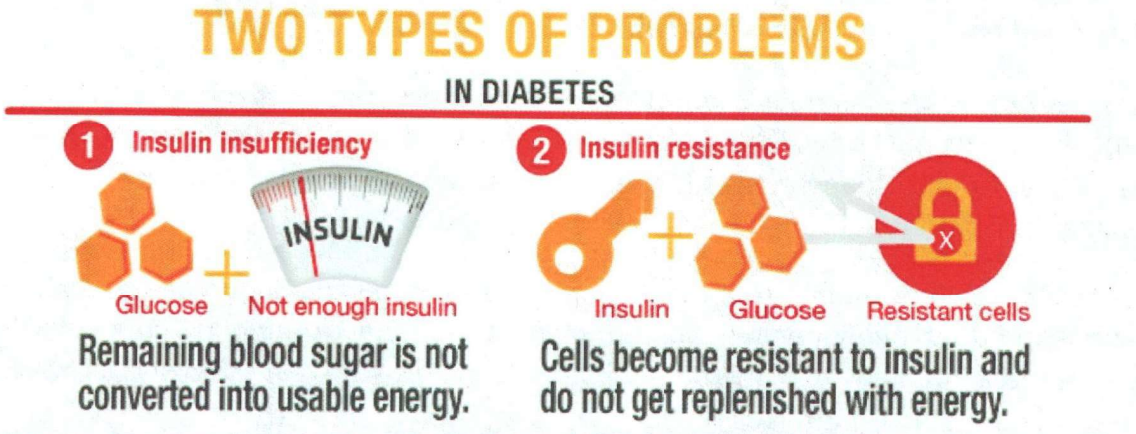
What is Type 2 Diabetes?

The most common form of diabetes is called type 2, or non-insulin dependent diabetes. This is also called "adult onset" diabetes, since it typically develops after the age of 35. However, a growing number of young people are now developing type 2 diabetes.

People with type 2 diabetes are able to produce some of their own insulin. Often, it is not enough. And sometimes, the insulin will try to serve as the "key" to open the body's cells, to allow the glucose to enter. But the key won't work. The cells won't open. This is called insulin resistance.

Often, type 2 diabetes appears in people who are overweight with a sedentary lifestyle. Treatment focuses on diet and exercise. If blood sugar levels are still high, oral medications are used to help the body use its own insulin more efficiently. In some cases, insulin injections are necessary.

(Taken from: http://www.diabetesresearch.org/what-is-type-two-diabetes)



Diffen.com: Type 1 Diabetes VS. Type 2 Diabetes
http://www.diffen.com/difference/Type_1_Diabetes_vs_Type_2_Diabetes

TYPE 2 DIABETES RISK FACTORS

Family history

Lack of exercise

Unhealthy eating

Overweight

Obesity or being overweight. Research shows this is a top reason for type 2 diabetes. Because of the rise in obesity among U.S. children, type 2 diabetes is affecting more teenagers.

Impaired glucose tolerance. Prediabetes is a milder form of this condition. It can be diagnosed with a simple blood test. If you have it, there's a strong chance you'll get type 2 diabetes.

Insulin resistance. Type 2 diabetes often starts with cells that are resistant to insulin. That means your pancreas has to work extra hard to make enough insulin to meet your body's needs.

Ethnic background. Diabetes happens more often in Hispanic/Latino Americans, African-Americans, Native Americans, Asian-Americans, Pacific Islanders, and Alaska natives.

High blood pressure . That means blood pressure over 140/90.

Low levels of HDL ("good") cholesterol and **high levels** of triglycerides.

Gestational diabetes. If you had diabetes while you were pregnant, you had gestational diabetes. This raises your chances of getting type 2 diabetes later in life.

Sedentary lifestyle. You exercise less than three times a week.

Family history. You have a parent or sibling who has diabetes.

Polycystic ovary syndrome. Women with polycystic ovary syndrome (PCOS) have a higher risk.

Age. If you're over 45 and overweight or if you have symptoms of diabetes, talk to your doctor about a simple screening test.

Web MD: What Increases My Risk of Diabetes?
http://www.webmd.com/diabetes/risk-factors-for-diabetes

My Health Advisor: A Powerful Tool to Quickly Calculate Your Risk for Several Health Problems
American Diabetes Association
http://main.diabetes.org/dorg/mha/main_en_US.html?loc=dorg-mha

Type 2 Diabetes Risk Assessment Form
http://www.idf.org/webdata/docs/FINDRISC_English.pdf

THE PANCREAS

The pancreas is an important organ that helps you digest food and maintain your blood glucose (sugar) levels. It is important to have a firm understanding of how your pancreas works so that you can recognize and address problems when they arise. The pancreas is located in the abdomen, near the back and behind the stomach. It is part of the digestive system, interacting with the liver, gallbladder, intestinal tract (large and small bowel) and bile passage. The pancreas is composed of the pancreatic duct, exocrine glands and endocrine glands. These form the head, body and tail of the pancreas.

The pancreas has two functions:

Digestive (exocrine): The pancreas helps your body digest carbohydrates, fats, proteins and acids. Exocrine tissue enables this process, delivering enzymes into a network of ducts (tube-like vessels) that are joined to the main pancreatic duct, which runs the length of the pancreas.

Hormonal (endocrine): The pancreas secretes insulin and glucagon, hormones that regulate the level of glucose (sugar) in the blood and other hormones. Endocrine tissue enables this process, and is made up of islets and Langerhans, regions of the pancreas that secrete hormones into the bloodstream.

How does the pancreas work?

When food enters the stomach, the pancreas receives electrical signals from the body's nervous system, and creates enzymes to help break food down. These enzymes then travel to the duodenum (the part of the gut just after the stomach) via ducts.

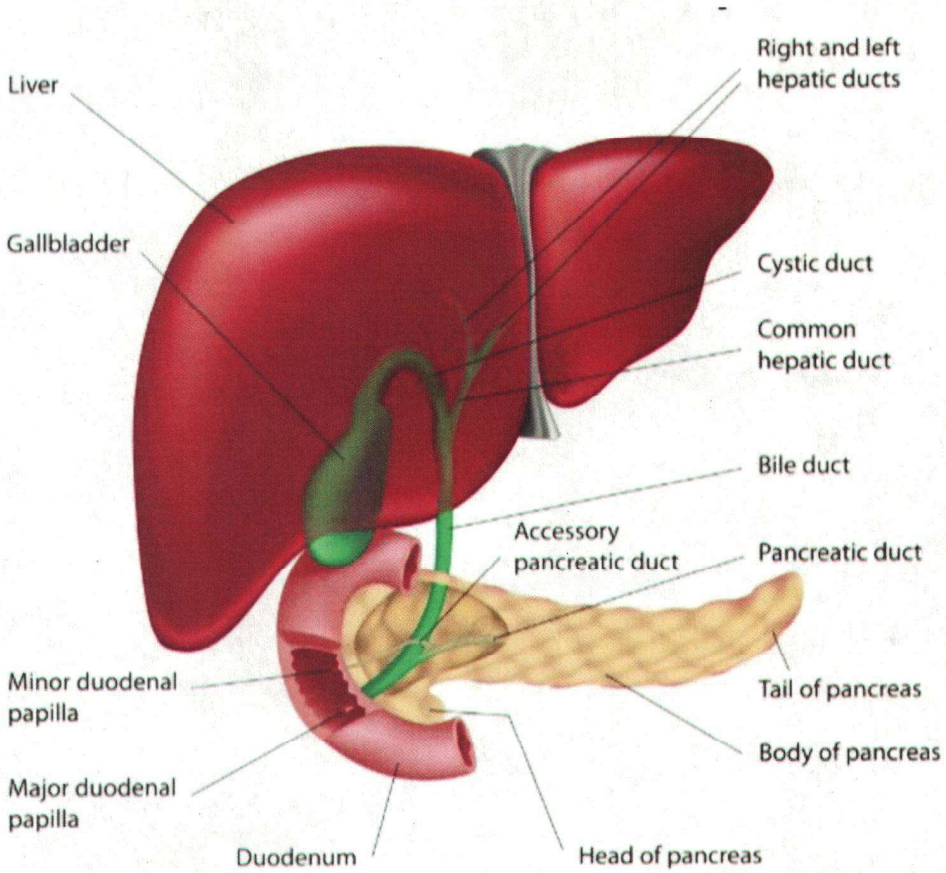
The pancreas also monitors the level of glucose (sugar) in the blood. Your body uses glucose as energy. When your blood glucose level is too low, your pancreas produces glucagon, a hormone that helps to raise blood glucose by metabolizing and releasing glucose in the blood.

When your blood glucose level is too high, your pancreas secretes insulin, a hormone that decreases the amount of glucose in the blood.

The pancreas is an important part of the body and if there are problems with it, serious illness can result, including diabetes, pancreatitis, pancreatic cancer and cystic fibrosis.

The symptoms of a diseased pancreas depend on the underlying cause, but they may include:

- Pain in the upper abdomen
- Loss of appetite
- Yellowing of the skin and eyes (jaundice)
- Back pain
- Bloating
- Nausea
- Vomiting
- Digestive upsets
- Foul-smelling and fatty stool



iTriage Understand Your Body: Pancreas

https://blog.itriagehealth.com/understand-body-pancreas-infographic-2/

How Many People Have Diabetes?

- 29.1 million people, or 9.3% of the U.S. population, have diabetes, including 8.1 million people who have diabetes but have not yet been diagnosed (All ages, 2012).
- Diabetes impacts all social, economic, and ethnic backgrounds.
- Type 1 diabetes accounts for about 5% of all diagnosed cases of diabetes, affecting approximately 1.5 million people.

New Cases of Diabetes in Adults and Children

- Among people 20 years or older, 1.7 million were newly-diagnosed with diabetes (2012) – approximately 4,657 new cases of diabetes are diagnosed each day.
- About 208,000 people younger than 20 years of age have been diagnosed with diabetes (type 1 or type 2). This represents 0.25% of all people in this age group (2012).
- The incidence of type 1 diabetes is significantly higher in people under age 20. According to a 2008-2009 study of 23,525 youths with diabetes, 78% were newly-diagnosed with type 1 diabetes vs. 22% who were newly-diagnosed with type 2 diabetes.*

Incidence of Diabetes Complications

- Diabetes can affect many parts of the body and is associated with serious complications, such as heart disease, stroke, blindness, kidney failure, and lower-limb amputation, among other conditions.

Heart Disease, Heart Attack and Stroke

- In 2010, after adjusting for population age differences, hospitalization rates for heart attack were 1.8 times higher among adults aged 20 years or older with diagnosed diabetes than among adults without diagnosed diabetes.
- In 2010, after adjusting for population age differences, hospitalization rates for stroke were 1.5 times higher among adults with diagnosed diabetes aged 20 years or older compared to those without diagnosed diabetes.

Blindness and Eye Problems

- In 2005-2008, of adults with diabetes aged 40 years or older, 4.2 million (28.5%) people had diabetic retinopathy, damage to the small blood vessels in the retina that may result in loss of vision.
- In 2005-2008, of adults with diabetes aged 40 years or older, 655,000 (4.4%) had advanced diabetes retinopathy that could lead to severe vision loss.

Kidney Disease

- Diabetes was listed as the primary cause of kidney failure in 44% of all new cases in 2011.
- In 2011, 49,677 people of all ages began treatment for kidney failure due to diabetes; and a total of 228,924 people of all ages with kidney failure were living on chronic dialysis or with a kidney transplant.

Amputations

- In 2010, about 73,000 non-traumatic lower-limb amputations were performed in adults aged 20 years or older with diagnosed diabetes.
- About 60% of non-traumatic lower-limb amputations among people aged 20 years or older occur in people with diagnosed diabetes.

Hypoglycemia and Hyperglycemic Crisis

- In 2011, about 282,000 emergency room visits for adults aged 18 years or older had hypoglycemia (low blood sugar levels) as the first-listed diagnosis and diabetes as another diagnosis.
- In 2011, about 175,000 emergency room visits for people of all ages had hyperglycemic (high blood sugar levels) crisis as the first-listed diagnosis.

Diabetes is a Deadly Disease

- Diabetes was the seventh leading cause of death in the United States in 2010 based on the 69,071 death certificates in which diabetes was listed as the underlying cause of death. In 2010, diabetes was mentioned as a cause of death in a total of 234,051 death certificates.
- Diabetes may be underreported as a cause of death. Studies have found that only about 35% to 40% of people with diabetes who died had diabetes listed anywhere on the death certificate and about 10% to 15% had it listed as the underlying cause of death.

The Cost of Diabetes

- In 2012, the total cost of diabetes in the U.S. was $245 billion.
- Of that, $176 billion accounted for direct medical costs. After adjusting for age and sex differences, average medical expenditures among people with diagnosed diabetes were 2.3 times higher than people without diabetes.
- $69 billion was attributed to indirect costs (disability, work loss, premature death).

Source: Centers for Disease Control National Diabetes Statistics Report 2014; National Institutes of Health

Myths About Diabetes

(for more myths visit American Diabetes Association
http://www.diabetes.org/diabetes-basics/myths)

Myth: If you are overweight, you will eventually develop type 2 diabetes.

Fact: Being overweight is a risk factor for developing this disease, but other risk factors such as family history, ethnicity and age also play a role. Unfortunately, too many people disregard the other risk factors for diabetes and think that weight is the only risk factor. Most overweight people never develop type 2 diabetes, and many people with type 2 diabetes are at a normal weight or only moderately overweight.

Myth: Eating too much sugar causes diabetes.

Fact: The answer is not so simple. Type 1 diabetes is caused by genetics and unknown factors that trigger the onset of the disease; type 2 diabetes is caused by genetics and lifestyle factors. Being overweight does increase your risk for developing type 2 diabetes, and a diet high in calories from any source contributes to weight gain. Research has shown that drinking sugary drinks is linked to type 2 diabetes. The American Diabetes Association recommends that people should avoid intake of sugar-sweetened beverages to help prevent diabetes. Sugar-sweetened beverages include beverages like regular soda, fruit punch, fruit drinks, energy drinks, sports drinks, sweet tea and other sugary drinks. These will raise blood glucose and can provide several hundred calories in just one serving!

Myth: People with diabetes should eat special diabetic foods.

Fact: A healthy meal plan for people with diabetes is generally the same as a healthy diet for anyone – low in saturated and trans fats, non-starchy vegetables, whole grains, healthy fats and fruit. Diabetic and "dietetic" foods generally offer no special benefit. Most of them still raise blood levels, are usually more expensive and can also have a laxative effect if they contain sugar alcohols.

Myth: People with diabetes can't eat sweets or chocolate.

Fact: If eaten as part of a healthy meal plan, or combined with exercise, sweets and desserts can be eaten by people with diabetes. They are no more "off limits" to people with diabetes than they are to people without diabetes. The key to sweets is to have a very small portion and save them for special occasions so you focus your meal on more healthful foods.

HOW MANY CARBS SHOULD YOU EAT A DAY?

http://www.diabeticlivingonline.com/food-to-eat/count-carbs/how-many-carbs-should-you-eat-day?

What's the Connection Between Carbs, Insulin, and Blood Sugar?
If carbohydrate from any food (whether a healthy food source or not) raises blood sugar, then it seems logical to restrict carb intake. However, research shows it's not that simple. The biggest key to controlling blood sugar levels, particularly after eating, is having sufficient insulin at the ready—whether that's insulin you make in your pancreas or insulin you take as a medication. If you have available insulin, then you'll be able to make use of the glucose from the carbohydrate and control after-meal blood glucose levels.

Why Should I Eat Foods that Have Carbs?
Some foods that contain carbs provide essential calories (energy), vitamins, and minerals important for good health, such as whole grains, legumes, fruits, vegetables, and low-fat dairy foods. Other than low-fat dairy foods, these foods are your main sources of dietary fiber. If you don't eat enough carbs, studies show you'll likely eat more fat, which could be unhealthy saturated fat. Remember, calories only come from three nutrients: carbohydrate, protein, and fat.

What's All the Buzz About Low-Carb Diets and Diabetes?
There's an ongoing debate about the value and necessity of restricting carbohydrate consumption if you have diabetes. This debate is fueled by websites, books, and other sources of information that often overpromise weight loss or reversal of diabetes. However, well-conducted research studies over one to two years haven't demonstrated that low-carb eating plans are better than eating plans with moderate or higher carbs. This is true whether a person has prediabetes or type 2 diabetes and wants to lose weight and/or to achieve control of blood sugar and cholesterol.
Research does show that if you want to lose weight to hit your blood glucose targets and control or slow progression of your prediabetes or type 2, you'll need to eat fewer total calories. The emphasis should be on total calories consumed versus eating more or fewer carbs, protein, or fat.
Two large, multi-year studies funded by National Institutes of Health—the Diabetes Prevention Program (DPP) in prediabetes and Look AHEAD (Action for Health in Diabetes) in type 2 diabetes—used a lower-calorie eating plan and encouraged people to be more aware of their fat consumption by counting fat grams and calories. They didn't focus on carbs. Both studies showed that people who lost weight and kept as much off as possible experienced numerous health benefits over the years. Both studies also encouraged physical activity almost every day.

What Percentage of Calories Should Come from Carbs?
If you think Americans eat a big percentage of calories from carbs, that's incorrect. We eat about 50 percent of our calories from carbohydrate. The biggest problem is too many total calories and the types of calories consumed. Research shows Americans eat too much added sugar (22 teaspoons a day, which translates to about 350 calories!) and not enough fruits, vegetables, whole grains, and low-fat dairy foods. Rather than focusing on the amount of carbs you eat, concentrate on increasing the quality of the sources of carbs you eat. Plus, minimize those sugary foods and sweets.
The Dietary Guidelines for Americans recommend a wide range of calories from carbohydrate—45–65 percent. This considers varying nutrition needs and styles of eating, from meat eaters to plant-based vegetarian eaters. Research also shows that eating this amount of carbohydrate helps people stay at a healthier body weight.

Also check out these helpful websites:

Diabetes Forecast: Are Carbs the Enemy?
http://www.diabetesforecast.org/2011/mar/are-carbs-the-enemy.html

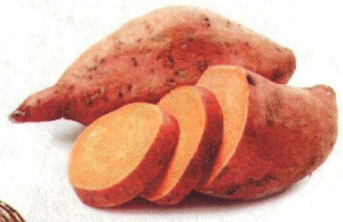
Sugar Stacks: Comparing Amounts of Sugar Cubes in Various Foods & Beverages
http://www.sugarstacks.com/

GLYCEMIC INDEX AND DIABETES

The glycemic index, or GI, measures how a carbohydrate-containing food raises blood glucose. Foods are ranked based on how they compare to a reference food or white bread. A food with a high GI raises blood glucose more than a food with a medium or low GI. Meal planning with the GI involves choosing foods that have a low or medium GI. If eating a food with a high GI, you can combine it with low GI foods to help balance the meal. Examples of carbohydrate-containing foods with a low GI include dried beans and legumes (like kidney beans and lentils), all non-starchy vegetables, some starchy vegetables like sweet potatoes, most fruit, and many whole grain breads and cereals (like barley, whole wheat bread, rye bread, and all-bran cereal). Meats and fats don't have a GI because they do not contain carbohydrate. Below are examples of foods based on their GI.

Low GI Foods (55 or less)

- 100% stone-ground whole wheat or pumpernickel bread
- Oatmeal (rolled or steel-cut), oat bran, muesli
- Pasta, converted rice, barley, bulgar
- Sweet potato, corn, yam, lima/butter beans, peas, legumes and lentils
- Most fruits, non-starchy vegetables and carrots



Medium GI (56-69)

- Whole wheat, rye and pita bread
- Quick oats
- Brown, wild or basmati rice, couscous

High GI (70 or more)

- White bread or bagel
- Corn flakes, puffed rice, bran flakes, instant oatmeal
- Shortgrain white rice, rice pasta, macaroni and cheese from mix
- Russet potato, pumpkin
- Pretzels, rice cakes, popcorn, saltine crackers
- Melons and pineapple

What Affects the GI of a Food?

Fat and fiber take longer to digest and therefore affect your blood glucose more slowly and tend to lower the GI of a food. As a general rule, the more cooked or processed a food, the higher the GI; however, this is not always true. Below are a few specific examples of other factors that can affect the GI of a food:

- **Ripeness and storage time** — the more ripe a fruit or vegetable is, the higher the GI
- **Processing** — juice has a higher GI than whole fruit; mashed potato has a higher GI than a whole baked potato, stone ground whole wheat bread has a lower GI than whole wheat bread.
- **Cooking method** — how long a food is cooked (al dente pasta has a lower GI than soft-cooked pasta)
- **Variety** — converted long-grain white rice has a lower GI than brown rice but short-grain white rice has a higher GI than brown rice.

Other Considerations

The GI value represents the type of carbohydrate in a food but says nothing about the amount of carbohydrate typically eaten. Portion sizes are still relevant for managing blood glucose and for losing or maintaining weight. The GI of a food is different when eaten alone than it is when combined with other foods. When eating a high GI food, you can combine it with other low GI foods to balance out the effect on blood glucose levels. Many nutritious foods have a higher GI than foods with little nutritional value. For example, oatmeal has a higher GI than chocolate. Use of the GI needs to be balanced with basic nutrition principles of variety for healthful foods and moderation of foods with few nutrients.

American Diabetes Association: Glycemic Index and Diabetes
http://www.diabetes.org/food-and-fitness/food/what-can-i-eat/understanding-carbohydrates/glycemic-index-and-diabetes.html

Glycemic Index

CardioProtective Lifestyle Program

The Glycemic Index (GI) is a measure of how much your blood sugar level rises after a food is ingested. High GI foods cause blood sugar to rise quickly, whereas a food with a low GI causes a smaller rise in blood sugar and may help control established diabetes, aid in weight loss, and lower cholesterol.

GLYCEMIC INDEX

Grain/Starch

LOW

Rice bran	27
Barley, pearled	36
Spaghetti protein enriched	38
Fettuccine	46
Spaghetti, wholemeal	53
Fruit 'n Oats	55
Spaghetti, white	59
Wheat kernels	59
All-bran	60
Macaroni	64
Linguine	65
Rye Kernel bread	66
Instant noodles	67
Oat bran bread	68
Bulgur	68
Mixed grain bread	69
Pumpernickel bread	71
Bran Buds	77
Special K	77
Oat Bran	78
Popcorn	79
Rice, brown	79
Muesli	80

MODERATE

Pita bread, white	82
Bran Chex	83
Rice, white	83
Hamburger bun	87
Oatmeal	87
Rye flour bread	92

Grain/Starch

MODERATE (cont.)

Oat kernel bread	93
Kellogg's Couscous	93
High Fibre Rye Crisp	93
Nutri-grain	94
Life	94

HIGH

Barley flour bread	95
Gnocchi	95
Grapenuts	96
Stoned Wheat Thins	96
Wheat bread	97
Taco shells	97
Cornmeal	98
Shredded Wheat	99
Cream of Wheat	100
White bread	100
Golden Grahams	102
Water Crackers	102
Bagel, white	103
Kaiser roll	104
Bread stuffing	106
Cheerios	106
Total	109
Breakfast bar	109
Rice Cakes	110
Post Flakes	114
Rice Krispies	117
Cornflakes	119
Rice Chex	127
Rice, instant	128
French baguette	136

Vegetable

LOW

Peas, dried	32
Tomato soup	54
Marrowfat, dried	56
Peas, green	68
Carrots	70
Yam	73
Sweet potato	77
Sweet corn	78
Potato, white, boiled	81
Potato, new	81

MODERATE

Beets	91
Potato, canned	97

HIGH

Potato, mashed	100
Rutabaga	103
Pumpkin	107
French fries	107
Potato, microwaved	117
Potato, instant	118
Potato, baked	121
Parsnips	139

Fruit

LOW

Cherries	32
Grapefruit	36
Apricots, dried	44
Pear, fresh	53
Apple	54
Plum	55
Peach, fresh	60
Orange	63
Grapes	66
Peach, canned	67
Kiwifruit	75
Banana	77

MODERATE

Fruit cocktail	79
Mango	80
Apricots, fresh	82
Raisins	91
Cantaloupe	93
Pineapple	94

HIGH

Watermelon	103
Dates	141

Dairy

LOW

Yogurt, low fat, artificially sweetened	20
Milk, chocolate, artificially sweetened	34
Milk, regular	39
Soy milk	43
Milk, skim/nonfat	46
Yogurt, low fat, fruit sugar sweet	47
Milk, chocolate, sugar sweetened	49

MODERATE

Ice cream, low fat	71

HIGH

Ice cream	87

Protein

LOW

Peanuts	21
Beans,dried, not specified	40
Lentils, not specified	41
Kidney beans	41
Butter beans	43
Split peas, yellow, boiled	45
Lima beans, baby, frozen	46
Chick peas (garbanzo beans)	47
Navy beans	54
Pinto beans	55
Black-eyed beans	59
Chick peas, canned	60
Lentil soup, canned	63
Pinto beans, canned	64
Baked beans, canned	69
Kidney beans, canned	74
Lentils, canned	74

MODERATE

Split pea soup	86
Black bean soup	92
Green pea soup, canned	94

Sweets

LOW

Fructose	31
Strawberry jam	51
Cake, sponge	66
Ice cream, low fat	71
Cake, pound	77
Oatmeal cookies	79

MODERATE

High Fructose Power Bar	81
Pastry	84
Muesli Bars	87
Ice cream	87
Muffins	88
Sucrose (table sugar)	89
Corn Syrup	90
Shortbread	91

HIGH

Cake, angel food	95
Croissant	96
Corn chips	105
Graham Wafers	106
Donut	108
Waffles	109
Vanilla Wafers	110
Tapioca, boiled with milk	115
Pretzels	116
Honey	126
Glucose	138
Maltose	152
Tofu frozen dessert, non-dairy	164

Berkeley HeartLab, Inc.
4myheart Center

1 (800) Heart-89 • 1 (800) 432-7889

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