

**GLYCOGEN STORAGE DISEASE TYPE I  
Sucrose, Fructose, Galactose Free Diet**

<b>Food Group</b>	<b>Foods Permitted</b>	<b>Foods Need to be Omitted</b>
<b>Meat and Fowl</b>	Plain beef, pork, chicken, turkey, lamb and veal. Use lean meats. Only permitted foods may be added when seasoning cooking. Limited cold cuts and hotdogs (beware of fillers). Bake meats breaded do not fry.	Cold cuts, hot dogs or any other food that contains sugar, honey, molasses, syrup or milk/milk products that have been added in processing or cooking. Creamed or breaded meat. Meats containing milk or milk products such as frankfurters.
<b>Fish</b>	Any fresh, frozen or canned fish	Processed fish with sugar; creamed or breaded fish
<b>Cereal/Grains</b>	Unsweetened cereal, puffed wheat, puffed rice, white rice, wheat bran, brown rice, Shredded Wheat, oatmeal, Cream of Wheat, Cream of Rice, whole grain cereals without sugar coating	Cooked or ready-to-eat cereals sweetened with sugar, fructose or sorbitol, wheat germ
<b>Crackers/Snacks</b>	Those made without sugar such as saltines, pretzels, rice cakes, potato chips	Any that contain sugar
<b>Bread/Flour</b>	Any bread that does not have sugar, fructose or sorbitol as an ingredient, white flour, rye flour, cornmeal, rice, bagels, English muffins, tortillas, grits, oatmeal, pretzels, rice cakes	Any sweet bread or others made with sugar, fructose or sorbitol; sugar-coated donuts and sweet rolls
<b>Fruit</b>	Avocado, rhubarb, lemon juice, raw lemons (limited), limited amounts of raspberries, gooseberries, strawberries, blackberries, cranberries, currants, pomegranates, limes	All fruits, fruit juices, fruit extracts and dehydrated fruit and products that contain fruit
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<b>Potatoes</b>	Most allowed (only small sweet potato)	Sweet potatoes (Large)
<b>Vegetables</b>	All allowed	Corn and green peas should be limited to 1c serving per day. Limit tomato pasta sauce to ¼ c. Limit ketchup to one packet per day.
<b>Fat</b>	Butter, margarine, oil, homemade mayonnaise, mustard and salad dressings without sugar and that do not contain any milk/milk products. Use mono/polyunsaturated fats such as olive oil or canola, corn, safflower or soybean oil, nonfat or low fat margarines, lard, nondairy coffee creamer free of fructose, high fructose syrup, honey, molasses and sugars. Use shortening, whipping cream, bacon, butter and regular margarine in moderation. Limit fat intake to 5-8 teaspoons a day.	Mayonnaise, mustard and salad dressings with sugar, added fructose, fruit, high fructose corn syrup, honey, molasses or sugar, milk products, sour cream.
<b>Eggs</b>	Any type	Raw eggs
<b>Milk, Cheese and Milk Products</b>	Special formula – as instructed by your dietitian; soy milk products made without sucrose or fructose, nondairy creamers (without sugar), aged cheese, butter, buttermilk (fermented), yogurt. FairLife Milk (3oz), Ripple Milk (Target) 6-8oz Yogurt 4 oz. Two Good; Hood Calorie Countdown 4oz.	Milk and milk products with added fructose, sugar, ice cream, cream, sweet yogurt
<b>Nuts</b>	Any type, no more than 1 oz per day or 2 tablespoons of natural peanut butter (no sugar) per day	Candy-covered nuts or nuts prepared with sugar, fructose or sorbitol

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<b>Desserts</b>	Unsweetened or artificially sweetened yogurt, cakes, cookies and ice creams made without sugar. Dietetic Jell-O, any dessert homemade from allowed ingredients.	Any dessert that contains sugar, fructose or sorbitol such as cake, pie, cookies, candy, puddings, Jell-O, ice cream, sherbet. Any dessert containing honey, fruit, chocolate or milk.
<b>Sweeteners</b>	Glucose, dextrose, dextrin, maltose, maltodextrin, corn syrup, glucose polymers, lactose, Truvia, Nutrasweet (aspartame), Stevia, Splenda, (sucralose), Sweetmate (acesulfame K) and Saccharin (Sweet'N Low) Manitol, Xylitol	Sugar, sucrose, fructose, sorbitol, beet sugar, cane sugar, powdered sugar, honey, maple syrup, molasses, invert sugar, levulose, mannose, high fructose corn syrup, agave nectar, Galactose, Brown Sugar, Sorghum, Sorbitol
<b>Others</b>	Coffee, tea, diet soft drinks that contain artificial sweeteners, cocoa powder, plain gelatin, salt, pepper and other spices. Special formula, vegetable juices except tomato.	Ketchup, sauces that contain sugar, regular soft drinks, jellies, jams, marmalades, canned or bottled fruit preserves. Milk and milk containing drinks with added fructose, fruit or flavors that contain honey, molasses or sugar, beer, brandy, rum, vodka, carbonated beverages containing fructose, fruit juice or sugar, fruit juices or drinks containing fruit juice, liqueur, sherry, vermouth.
<b>Miscellaneous</b>	Peanut butter with no added sugar, honey, molasses or milk fillers; corn syrup; olives; aspartame; saccharine; pure spices and herbs; prepared mustard and vinegar, garlic, glucose, maltose, dextrose and starch, bakers cocoa, bitter chocolate, MSG, vitamin and mineral supplements not containing fructose or lactose	Carob powder, ketchup, chili sauce, chocolate milk or sweets, drugs and vitamin/mineral supplements containing fructose, sorbitol or sugar, seasonings containing added fructose, high fructose syrup, maple syrup, jam, jellies, preserves, honey, molasses, non-alcoholic beer , except Wurtzburger & Clausthaler

## Menu Samples and Suggestions For Type I

### Breakfast

Plain oatmeal Cream of Wheat/Rice Waffles/Pancakes Yogurt (non-dairy)	Eggs Cereal Grits Omelets	Soy milk: plain, unsweetened (enriched) Rice milk Almond milk Toast Vegetables
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### Snacks

Cheerios Pretzels Popcorn Rice cakes Melba Toast Sugar free pudding Cheez-its Pickles	Goat cheese Potato chips Fritos Breadsticks Sugar free Jell-O Goldfish Yogurt Vegetables	Cheese/cheese sticks (natural hard, not processed soft) Crackers/Ritz (many to choose from) Sugar free peanut butter Low fat Triscuits Peanuts/nuts not coated with sugar or honey roasted Corn Flakes (plain) Nuts
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**Add lemon to water**

### Lunch/Dinner

Burritos/Tacos Hummus French Fries Chicken fingers Tofu	Flour tortillas Fish sticks All rice All beans Salads	All meats/poultry/fish All pasta (Not stuffed) All vegetables All Potatoes (Small Sweet Potato)
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**Add lemon to water**

**Reminders:**

**Reminder:** It is recommended that **each meal needs to contain less than 5 grams of simple sugar.**

**Reminder:** It is recommended that each meal is **between 15 grams of carbohydrates.**

**Reminder:** If blood sugars are between **85-100 mg/dL (4.7-5.6 mmol/L)** a snack is not needed.

Read the food label on each package to find brands with the lowest sugar content (i.e. preferably less than 5 grams per meal).

Our team's recommended diet allows small amount of fructose and galactose to be consumed in order to diversify the diet and improve nutrition, but it is important to keep the amount of fructose + galactose **to less than 2.5 grams per meal.**

Some very common types of sugar alcohols are sorbitol, xylitol, mannitol, maltitol, lactitol, erythritol, isomalt (note that most sugar alcohol names end with **-ol**). You may also see the term "**Hydrogenated Starch Hydrolysates**" (HSH), which is a type of sugar alcohol.

**Sorbitol** is an exception, however. Our body changes sorbitol to FRUCTOSE during digestion. Therefore, if you have type Ia and Ib, please limit and/or avoid foods that have sorbitol listed in the ingredients.

**Calcium Supplement and Multivitamin Suggestions in Type I GSD**

<b>Calcium supplement Suggestions</b>	<ul style="list-style-type: none"> <li>❖ UpCal D (powder) – Global Health Products</li> <li>❖ Cal-Quick (liquid) – Twin Lab</li> <li>❖ Calci-Mix (powdered capsule) - Watson Pharmaceuticals</li> <li>❖ CitraCal (tablet) or any type of calcium citrate</li> <li>❖ Tums (tablet) <sup>®</sup>pareve – available in sugar-free</li> <li>❖ Solgar <sup>®</sup>pareve (adult, in health food stores, online)</li> <li>❖ Calcium Citrate is better absorbed than Calcium Carbonate</li> </ul>
<b>Multivitamin Suggestions</b>	<ul style="list-style-type: none"> <li>❖ One-A-Day (sugar-free, children's and adult varieties available) or generic equivalent</li> <li>❖ Nature's Plus Animal Parade (sugar free in health food stores, chewables only)</li> <li>❖ Flintstone's Complete (sugar-free in CVS, Walgreens)</li> <li>❖ Natrol for Children (chews, non-sucrose in CVS &amp; Walgreens)</li> <li>❖ Poly-vi-sol<sup>®</sup> (liquid for infants &amp; children in CVS, Walgreens)</li> <li>❖ Centrum or generic equivalent (chewable form in Walmart)</li> <li>❖ Reviva (sucralose, maltodextrin in Sam's Club)</li> <li>❖ Solgar<sup>®</sup> Formula VM (tablet in health food stores)</li> <li>❖ Wellesse mult i(adult, sugar free liquid, online)</li> <li>❖ Dr. Mercola Children's (chewable in Vitamin Shoppe)</li> <li>❖ FruitVits by VitaFlo</li> <li>❖ NutriStart Multivitamin Powder</li> </ul>
<b>Omega-3 Fish Oil</b>	<ul style="list-style-type: none"> <li>❖ Kids Smart by Bioglan grape flavored (liquid, Xylitol, Sucralose in Walgreens)</li> <li>❖ Omega Smart, Kids DHA, fruit punch flavored softgel chew or swallow (Stevia leaf in Walgreens)</li> <li>❖ Solgar<sup>®</sup> flaxseed oil (adult, in health food stores)</li> </ul>

### **Important Notes about taking Multivitamins and Calcium:**

- Ⓢ Better absorption of the multivitamin occurs when it is taken with food.
- Ⓢ Do not take more than 500 mg calcium at one time. If more than 500 mg calcium supplementation needed daily, separate each dose, and take with a meal.
- Ⓢ It is not recommended to take the multivitamin at the same time as the calcium supplement.
- Ⓢ It is also not recommended to take the calcium supplement at the same time as an iron supplement, as iron inhibits the absorption of calcium, causing less to be absorbed.
- Ⓢ For low iron, pull out the cast iron skillets and cook in them, iron transfers into the food. Better iron absorption occurs with vitamin C foods.

*If you have any questions, please contact the UCONN GSD Program Dietitian:*

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