



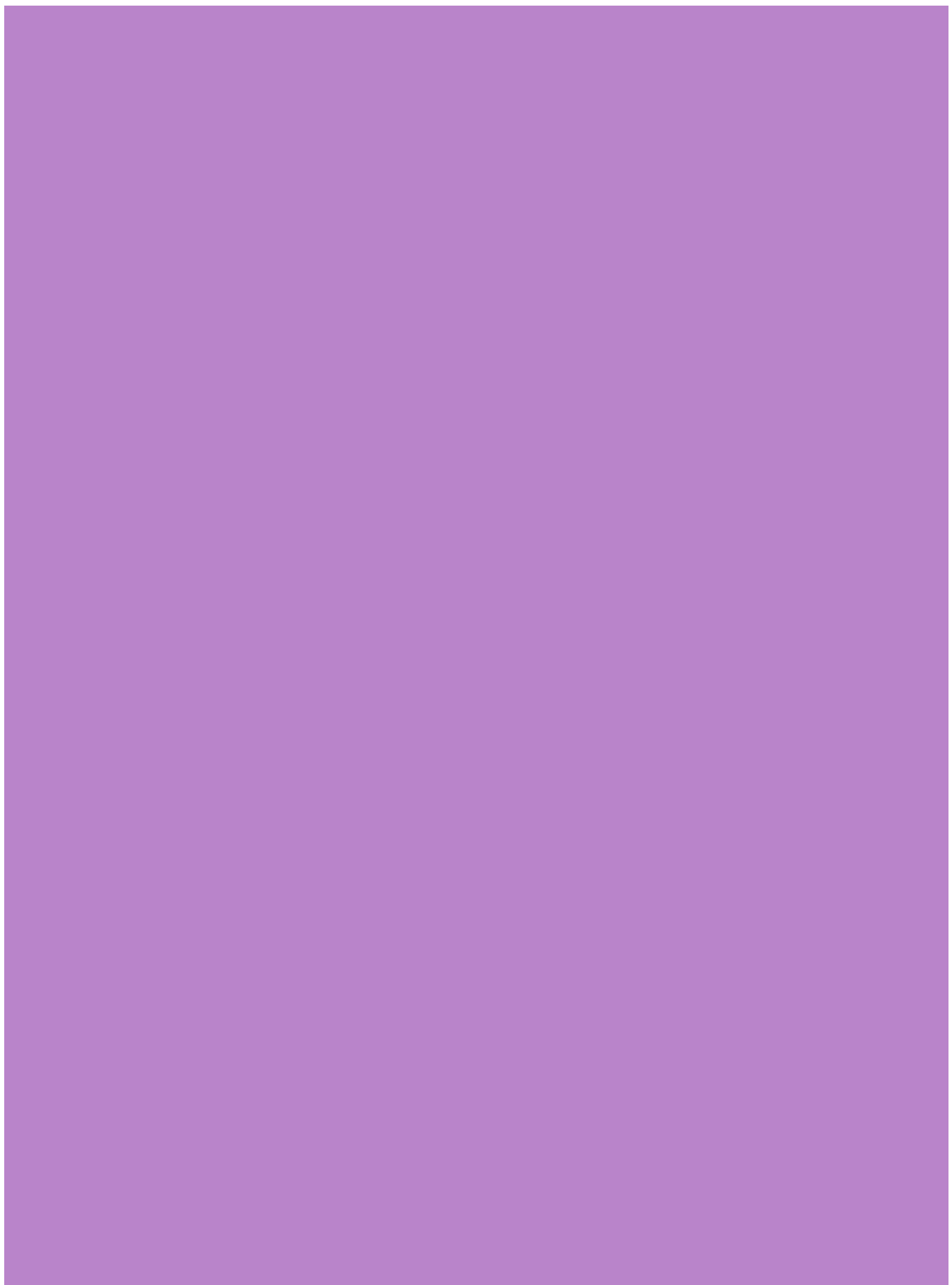
Total Joint Replacement Patient with Diabetes

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**NORMAN
REGIONAL**
Health System

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Total Joint Replacement Patient with Diabetes

The period of time after surgery can be challenging for people with diabetes trying to control their blood sugar levels. Surgery can be a stressful experience, especially for diabetics. It's quite common to have a blood sugar rise after surgery in people who have diabetes and sometimes in people without diabetes too. What causes this blood sugar rise after surgery?

What is High Blood Sugar (Hyperglycemia)?

A blood sugar higher than your target. Hyperglycemia can be caused by not enough/skipped medications, too many carbohydrates, less activity than usual, illness, surgery or stress. Symptoms include being thirsty, blurry vision, fatigue, frequent urination and hunger.

Why Is My Blood Sugar High After Surgery?

Any type of stress makes blood sugars more difficult to control, including the stress of surgery. When people with diabetes are stressed for any reason, their body pumps out hormones that alter blood sugar levels – causing blood sugars to go up or down. Sometimes medications doctors give during or after surgery, particularly steroids, cause blood sugar levels to rise. Although high blood sugar levels are more common after surgery, hypoglycemia or low blood sugars can also occur in some cases.

It's critical to control blood sugars after surgery since **diabetics are at higher risk of complications than non-diabetic patients and diabetics with high blood sugars are at an even higher risk of complications can include post-surgical infection and poor wound healing.**

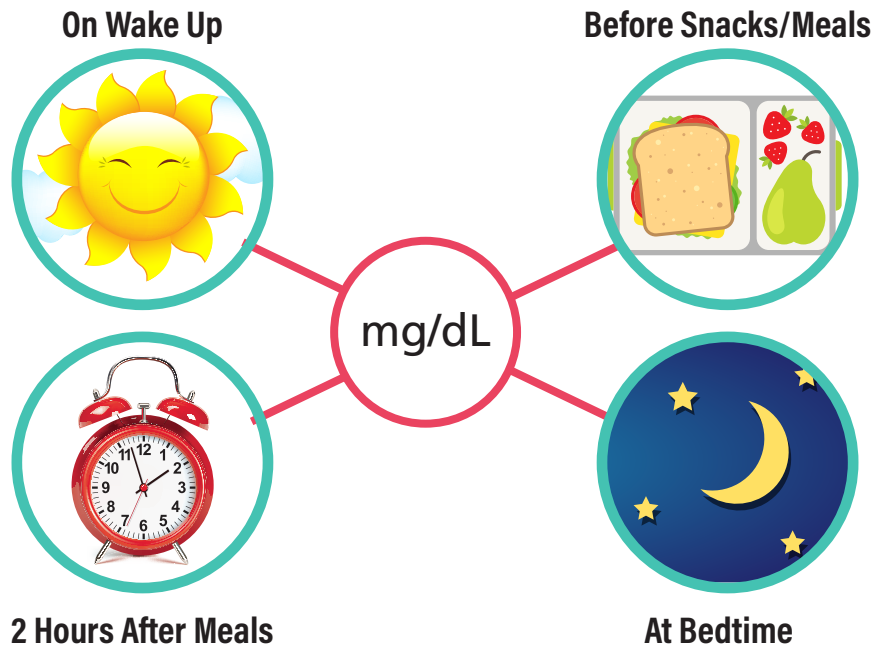
Obviously, it's important for doctors to treat these blood sugar rises to increase the chances of a good outcome.

How Are Rises in Blood Sugar Controlled After Surgery?

After surgery, doctors instruct the nurses to monitor glucose levels more frequently- usually before meal and at bedtime and may instruct insulin to be given based on the results. The goal is to keep blood sugar levels less than 150 milligrams per deciliter since blood sugars above this level increase the risk of complications such as infection. Short acting insulin may be used to lower blood sugars and allows for more precise blood sugar control than oral medications. Insulin may be given in addition to your regular diabetic medications and will not cause you to become insulin dependent.

Monitoring your Blood Sugar After Surgery

If you normally monitor your blood sugar, make a commitment to be extra vigilant for at least the first month you are home after surgery. The American Diabetic Association recommends you monitor your blood sugar when you wake up, before meals/snacks, 2 hours after meals and at bedtime on a daily basis.



Blood sugar targets may be different for each person and change throughout the day. The chart below includes the 2019 blood sugar goals from the American Diabetes Association.

Time of Test	Acceptable Results	My Target Range
Before meals	80-130 mg/dl	
2 hours after start of meal	Less than 180 mg/dl (less than 150 after surgery)	
Before Bedtime	100-150 mg/dl	

Blood Glucose Tracker - Week One at home

Day	Before Breakfast	1-2 hours after Breakfast	Before Lunch	1-2 hours hours after Lunch	Before Lunch after Dinner	1-2 hours hours	Bed
Sunday							
Monday							
Tuesday							
Wednesday							
Thursday							
Friday							
Saturday							

Blood Glucose Tracker - Week Two at home

Day	Before Breakfast	1-2 hours after Breakfast	Before Lunch	1-2 hours hours after Lunch	Before Lunch after Dinner	1-2 hours hours	Bed
Sunday							
Monday							
Tuesday							
Wednesday							
Thursday							
Friday							
Saturday							

Blood Glucose Tracker - Week Three at home

Day	Before Breakfast	1-2 hours after Breakfast	Before Lunch	1-2 hours hours after Lunch	Before Lunch after Dinner	1-2 hours hours	Bed
Sunday							
Monday							
Tuesday							
Wednesday							
Thursday							
Friday							
Saturday							

Blood Glucose Tracker - Week Four at home

Day	Before Breakfast	1-2 hours after Breakfast	Before Lunch	1-2 hours hours after Lunch	Before Lunch after Dinner	1-2 hours hours	Bed
Sunday							
Monday							
Tuesday							
Wednesday							
Thursday							
Friday							
Saturday							

What Effects Does Diabetes and High Blood Sugar Have on My Recovery From Surgery?

POOR CIRCULATION

Narrowed blood vessels lead to decreased blood flow and oxygen to a wound. An elevated blood sugar level decreases the function of red blood cells that carry nutrients to the tissue. This lowers the efficiency of the white blood cells that fight infection. Without sufficient nutrients and oxygen, a wound heals slowly. Poor circulation can also lead to swelling this is why we encourage you to keep your legs elevated.

IMMUNE SYSTEM DEFICIENCY

Diabetes lowers the efficiency of the immune system, the body's defense system against infection. A high glucose level causes the immune cells to function ineffectively, which raises the risk of infection for the patient. Studies indicate that particular enzymes and hormones that the body produces in response to an elevated blood sugar are responsible for negatively impacting the immune system.

INFECTION

With a poorly functioning immune system, people with diabetes are at a higher risk for developing an infection. Infection raises many health concerns and also slows the overall healing process.

Left untreated, infection can heighten the risk of developing gangrene, sepsis or a bone infection like osteomyelitis. Notify your physician for temperature 101.5 or greater, yellow green drainage, redness or streaking from incision site.

WHAT YOU CAN DO TO IMPROVE HEALING

There are several things a patient can do to improve wound healing. The most important thing is to control the blood sugar level. Healing can be improved by taking these measures:

- Eating a healthy diet and maintaining good nutrition will help to regulate blood glucose levels and also provide the essential vitamins and nutrients to enhance the healing process. Adequate protein, carbohydrates and vitamin C intake are important factors to aid healing. Seek the advice of a registered dietician who specializes in diabetes, if necessary.
- Stop smoking to improve circulation and overall health.
- Monitor your blood sugars at least twice daily and try to follow a healthy diet for at least 4-6 weeks after surgery. If your blood sugars remain elevated please contact your primary care physician or endocrinologist.

Seven Simple Steps to Create Your Plate

It's simple and effective for both managing diabetes and losing weight. Creating your plate lets you still choose the foods you want, but changes the portion sizes so you are getting larger portions of non-starchy vegetables and a smaller portion of starchy foods. When you are ready, you can try new foods within each food category.

Try these seven steps to get started:

1. Using your dinner plate put a line down the middle of the plate. Then on one side, cut it again so you will have three sections on your plate.



2. Fill the green section with non-starchy vegetables.
3. Now in the red section, put grains and starchy foods.
4. And then in the yellow section, put your protein.
5. Add a serving of fruit, a serving of dairy or both as your meal plan allows.
6. Choose healthy fats in small amounts. For cooking, use oils. For salads, some healthy additions are nuts, seeds, avocado and vinaigrettes.
7. To complete your meal, add a low-calorie drink like water, unsweetened tea or coffee.

Non-Starchy Vegetables

Artichoke, Artichoke hearts
Asparagus
Baby corn
Beans (green, wax, Italian)
Bean sprouts
Beets
Brussels sprouts
Broccoli
Cabbage (green, bok choy, Chinese)
Carrots
Cauliflower
Celery
Coleslaw (packaged, no dressing)
Cucumber
Eggplant
Greens (collard, kale, mustard, turnip)
Leeks

Mushrooms
Okra
Onions
Pea pods
Peppers
Radishes
**Salad greens (chicory, endive, escarole,
lettuce, romaine, spinach, arugula,
radicchio, watercress)**
Sprouts
**Squash (cushaw, summer, crookneck,
spaghetti, and zucchini)**
Sugar snap peas
Tomato
Turnips
Water chestnuts

Grains and Starchy Foods

GRAINS - BEST CHOICES

Finding whole grain foods can be a challenge. Some foods only contain a small amount of whole grain but will say it contains whole grain on the front of the package. For all cereals and grains, read the ingredient list and look for the following sources of whole grains as the first ingredient:

Bulgur (cracked wheat)
Whole wheat flour
Whole oats/oatmeal
Whole grain corn/corn meal
Popcorn
Brown rice
Whole rye
Whole grain barley
Wild rice
Buckwheat
Buckwheat flour
Millet
Quinoa
Sorghum

For cereals, pick those with at least 3 grams of fiber per serving and less than 6 grams of sugar.

BEST CHOICES OF STARCHY VEGETABLES

Starchy vegetables are great sources of vitamins, minerals and fiber.

The best choices do not have added fats, sugar or sodium. Try a variety such as:

Parsnip
Plantain
Potato
Pumpkin
Acorn squash
Butternut squash
Green Peas
Corn

BEST CHOICES OF DRIED BEANS, LEGUMES, PEAS AND LENTILS

Try to include dried beans into several meals per week. They are a great source of protein. Dried beans such as black, lima, and pinto

Lentils
Dried peas such as black-eyed and split
Fat-free refried beans
Vegetarian baked beans

Protein Choices

PLANT-BASED PROTEINS

Plant-based protein foods provide quality protein, healthy fats, and fiber. They vary in how much fat and carbohydrate they contain, so make sure to read labels.

Beans such as black, kidney, and pinto
Bean products like baked beans and refried beans

Hummus and falafel

Lentils such as brown, green, or yellow

Peas such as black-eyed or split peas

Soy nuts

Nuts and spreads like almond butter, cashew butter, or peanut butter

Tempeh, tofu

Products like meatless “chicken” nuggets, “beef” crumbles, “burgers”, “bacon”, “sausage”, and “hot dogs”

FISH AND SEAFOOD

Try to include fish at least 2 times per week.

Fish high in omega-3 fatty acids like **Albacore tuna, herring, mackerel, rainbow trout, sardines, and salmon.**

Other fish including **catfish, cod, flounder, haddock, halibut, orange roughy, and tilapia.**

Shellfish including **clams, crab, imitation shellfish, lobster, scallops, shrimp, oysters.**

POULTRY

Choose poultry without the skin for less saturated fat and **Chicken, turkey, Cornish hen**

CHEESE AND EGGS

Reduced-fat cheese

Cottage cheese

Egg whites and egg substitutes

GAME

Buffalo, ostrich, rabbit, venison

Dove, duck, goose, or pheasant (no skin)

BEEF, PORK, VEAL, LAMB

If you decide to have these, choose the leanest options, which are:

Select or Choice grades of beef trimmed of fat including:

chuck, rib, rump roast, round, sirloin, cubed, flank, porterhouse, T-bone steak, tenderloin

Beef jerky

Lamb: chop, leg, or roast

Organ meats: heart, kidney

Veal: loin chop or roast

Pork: Canadian bacon, center loin chop, ham, tenderloin

SKIN CARE WITH DIABETES

****If you have diabetes, you are at a higher risk for complications and skin breakdown on your heels following total joint replacement surgery, even if you have never had any problems before.**

You can reduce this risk by following the safety tips below:

- #1. Pay close attention to both of your feet during your recovery. In those patients who develop wounds on their heels, it is frequently on their non-operative leg.**
- #2. Wash your feet daily and dry gently, especially between toes as excess moisture can lead to infections.**
- #3. Check your heels and the soles of both feet every day—this tends to be easier to follow if you pick a certain time to perform this task. If you are unable to look yourself, have a family member to assist you or use a long handled mirror.**
- #4. Wear shoes whenever you are out of bed. Make sure your shoes have a hard sole, good support and a back.**
- #5. Notify your physician immediately if you notice any redness, discoloration, blisters or breakdown.**

***If you make a commitment to managing your diabetes at least for the first 4 weeks after surgery, you will improve your chances of a successful outcome.*



Norman Regional Diabetes Center

Services are covered by most private insurances and Medicare.

Contact us at 405-307-5730

The Diabetes Center at Norman Regional offers a variety of programs designed to help patients manage their diabetes. Classes, counseling, insulin pump training and support groups help those with diabetes or those at risk learn to cope with this serious condition. Certified by the American Diabetes Association, the Diabetes Center's goal is to empower patients through increased knowledge and understanding.

Our services include:

- Type 1 and Type 2 individual education
- Type 2 class
- Flexible insulin management program
- Insulin pump training program
- Gestational diabetes program
- Diabetes and pregnancy assistance
- Medical nutritional counsel for pre-diabetes
- Educational support groups

Other Resources



www.diabetes.org

1-800-DIABETES (800-342-2383)

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