

Nutrition and Exercise in the Transplant Journey

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Tell me a little bit about you!!

- **Poll #1**

- Have a transplant
- Waiting on a transplant
- Potential donor
- Family member

- **Poll #2**

- Organ type (kidney, liver, pancreas, heart, lung)



Hello
my name is



About Me

- Christine Hare, RD and Certified Renal Specialist
- Worked as an RD on transplant team for 14 years
- Currently teach Kidney Smart classes in the community focusing on chronic kidney disease education, how to slow down CKD progression and modality options.



Today's Objectives

- Learn about the importance of nutrition throughout the transplant process
- Pre-transplant, immediately post-operative, long-term post-transplant nutrition guidelines
- Discuss nutrients that need to be focused on or limited
- Role of exercise in transplant process
- Provide resources for home
- Time for questions!

Nutrition and transplant- why is it important?

- Nutrition and functional status impacts outcomes
- Post-operative healing
 - Having a transplant is a big operation!
 - Proper nutrition helps with healing
 - Adequate protein intake
 - Blood sugar management
 - Electrolyte management
- Long-term health
 - Weight management
 - Disease specific management
 - Stabilization of electrolytes



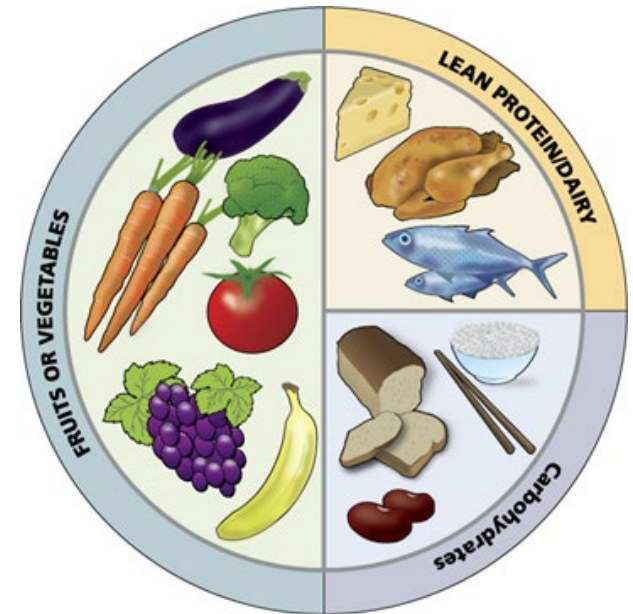
Pre-transplant



- **Optimize nutrition and functional status**
- Low sodium diet
 - Most organ transplant recipients should be limiting sodium
- Maintain appropriate protein intake
 - Lower protein intake for those not on dialysis; higher with dialysis
 - With liver disease often more protein is needed
- Adjust electrolytes as needed
 - With kidney disease, often limit potassium and phosphorus
- Maintain/strive for healthy weight
- Stay active- improved functional status = quicker recovery

Work with your team

- Reach out to the Transplant team RD and your physician to help you understand what nutrition guidelines are best for YOU!
- Know your numbers / goals
- Optimize functional status



Optimize functional status

- Consider Physical Therapy if you are deconditioned; ask your PCP or transplant team for referral
- Walking
 - If you use a step-counter, aim to increase your steps by 1,000 a day to a goal of 7,000-10,000
 - No step counter? Start with 10 minute walks and add 5-10 minutes for a goal of 150-300 minutes a week
- Resistance training
 - Exercise bands, chair exercises
- The stronger you are going into a surgery, it helps with post-operative outcomes
- Mindfulness matters- meditation / yoga / reiki

Post-operative nutrition

- Focus on lean protein
 - Protein is very important to help heal our bodies
 - Surgical wound closure
 - Body in catabolic state, breaks down muscle
- Manage blood sugars
 - If diabetic, important to be on proper medications
 - Prednisone likely will affect levels
 - Consistent carbohydrate intake
- Balance electrolyte imbalances
 - Often magnesium and phosphorus are low; potassium variable
 - Low sodium diet generally is maintained
- Hydration- ensure adequate hydration
 - Big change for many people
 - Choose low calorie beverages

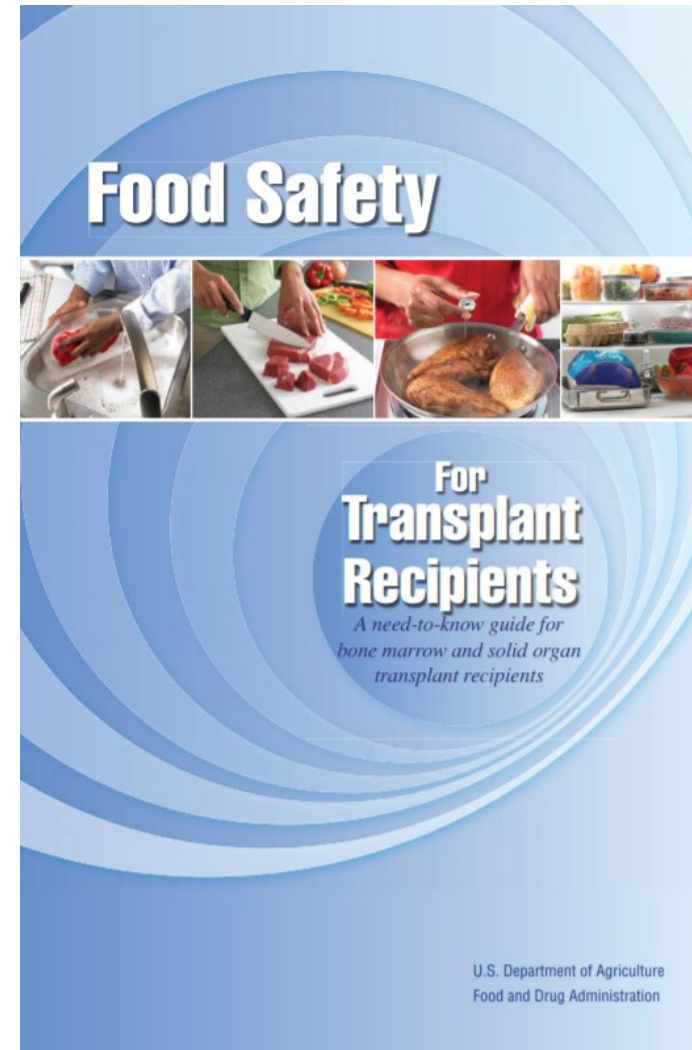


Healthy Nutrition Post-Transplant

- Maintain/strive for healthy body weight
 - Focus on small changes
 - Get moving- after your transplant they will have you up and moving as soon as tolerated / PT
- Manage any health issues (i.e. high blood pressure, DM, high cholesterol)
- Keep electrolytes within target range
- Drug-nutrient interactions
 - Grapefruit/grapefruit juice, pomegranate juice, Seville oranges
 - Use caution with FrescaTM and Sunny DelightTM as they have small amounts of grapefruit juice

Food Safety

- Cook meats to the proper temperature, avoid raw / undercooked meat / seafood / eggs
 - - sushi, ceviche, poke bowls, raw oysters
- Wash all fruits / vegetables
- Keep hot food hot; cold food cold
- Avoid buffets and salad bars
- Make sure all dairy is pasteurized



Supplements

- Avoid herbal supplements unless cleared by doctor / pharmacist
 - St. Johns Wort, Echinacea, Ginseng, Feverfew are some that have interactions
 - Many herbal supplements have interactions with other medications / can cause blood clotting issues
- Avoid creatine supplements
- Talk with your physician / RD/ pharmacist about any vitamin / mineral supplements
- Use caution with products that contain sugar alcohol

Healthy Body Weight

- Can be a challenge for everyone, but particularly after a transplant!
- Feeling better (less nausea, less inflammatory state) = increased appetite
- Steroids (Prednisone) = increased appetite
 - Prednisone is being used MUCH less
- Less dietary restrictions = more acceptable choices
- Focus on a balance diet and exercise



Healthy lifestyle goals

- Focus on fiber - fiber helps keep us full
 - Aim for 25-35 grams fiber a day
- Whole grains, legumes, vegetables, fruits
 - Try to choose whole fruits vs. fruit juice
- Watch portion sizes - this is key!
- Focus on REAL FOOD, less processed foods
- Move more- set a step goal



Healthy lifestyle goals

- Choose lean proteins
 - At least 93% lean ground beef/turkey
 - Look for words “loin” and “round”
 - Take skin off of turkey/chicken and choose light meat
 - Include fish
 - Beans/legumes/nuts
 - Low fat dairy
 - Eggs/Egg-whites
- Limit fried foods
 - When frying use minimal oil and mainly monounsaturated fats such as olive oil, avocado oil, sesame oil

Achieving a Healthy Balance

- Try to balance your plate and make $\frac{1}{2}$ of your plate vegetables
- Drink mainly non-caloric fluids such as water
- Keep a food diary
 - Most of us underestimate what we eat by $\frac{1}{3}$
 - Be mindful of beverages as well
- Exercise regularly
 - Try using a pedometer to track your steps - aim for 10,000 a day
 - MyFitnessPal and Lose It are great apps that track intake and exercise



Estimating Portion Sizes

Starch

1 bagel =



1 medium potato =



1 cup rice/pasta/cereal =



Fruit

1 medium fruit =



1 cup of fruit =



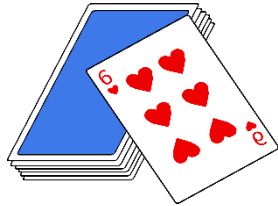
1/3 cup of dried fruit =



Estimating Portion Sizes

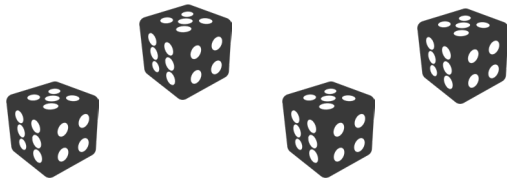
Meat

3 ounces of lean meat,
chicken, or fish =



Dairy

1 ounce of cheese =



Fats, Oils, & Sweets

$\frac{1}{2}$ cup of ice cream =



2 Tbsp. of margarine,
salad dressing,
peanut butter, or mayo =



1 ounce of hard candy or nuts =



Limit sodium intake

- Aim for less than 2,000 mg of sodium per day
- One teaspoon of table salt has 2,300 mg of sodium
- Read food labels
- Always look at the serving size



Sample Label for
Macaroni and Cheese

Nutrition Facts	
Serving Size 1 cup (228g)	
Servings Per Container 2	
Amount Per Serving	
Calories 250	Calories from Fat 110
% Daily Value*	
Total Fat 12g	18%
Saturated Fat 3g	15%
Trans Fat 3g	
Cholesterol 30mg	10%
Sodium 470mg	20%
Total Carbohydrate 31g	10%
Dietary Fiber 0g	0%
Sugars 5g	

Limit Sodium Intake

- Choose more fresh/frozen, less canned
- If canned, opt for lower sodium choices; rinse off
 - Keep in mind “Low Sodium” on label means 30% less, not necessarily low in sodium
- Eating out usually has much more sodium
 - Prepare and look at menu in advance if possible



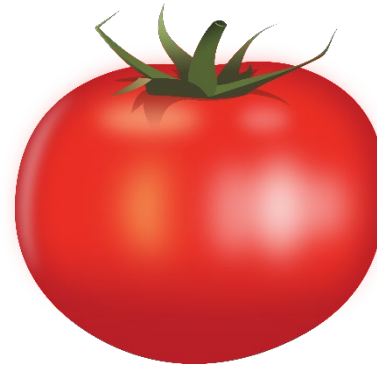
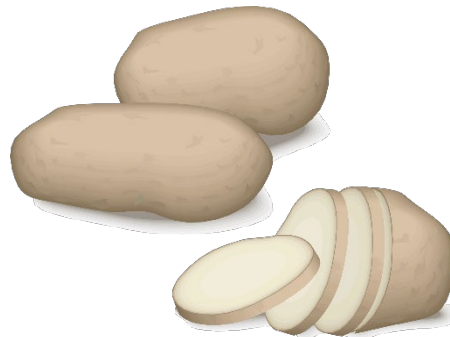
Sodium quiz!

- How much sodium do you think is in Burger King Salad with Crispy Chicken and Italian Dressing?
- A) 400 mg
- B) 700 mg
- C) 1000 mg
- D) 1300 mg



Potassium

- Can sometimes be elevated initially post-transplant due to medications; may be affected by Tacrolimus levels as well
- Individuals with kidney disease may need to limit pre-transplant
- Examples of high potassium foods include:



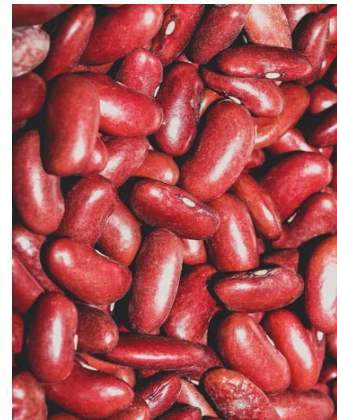
Potassium and portion control...

- Even “*low potassium*” choices such as strawberries can become “*high potassium*” if the portion is large
- 5 berries: 92 mg LOW POTASSIUM
- 8 berries: 147 mg MEDIUM POTASSIUM
- 15 berries: 275 mg HIGH POTASSIUM
- 25 berries: 450 mg **VERY HIGH** POTASSIUM



Phosphorus

- Phosphorus may be low post-transplant
- Dietary sources include dairy products, whole grains, beans, nuts/nut butters, dark sodas, and protein foods
- Individuals with kidney disease may need to limit pre-transplant. If you need to **limit** phosphorus, focus on limiting inorganic sources i.e. “**phos**” on ingredient list



Magnesium

- Magnesium also may be low post-transplant
- Supplements often required- talk to physician if needed.
Cost / benefit as may cause diarrhea
 - Mag Plus Pro; Magnesium Glyconate
- Good sources include dairy products, whole grains, nuts/seeds, dark leafy greens



New Onset Diabetes After Transplant

- Medications
- More prevalent in overweight/obese/older patients
- In kidney transplant patients, there is improved kidney function, insulin moves more quickly through body
- Losing 5-10% of body weight may be effective in decreasing insulin resistance
 - Try to get in a few minutes of movement after meals
- Consistent carbohydrate diet
 - Whole grains
 - Choose carbs with fiber
 - Non-starchy vegetables
- Follow up with endocrinologist

Healthy eating plans

- Mediterranean Diet
- Dash Diet
- Small healthy changes- work with your team to individualize a plan



Mediterranean Diet

- Plant focused meals
- Includes plenty of fish, vegetables, fruits and olive oil
- Meat and sugars occasionally



Mediterranean Diet Pyramid

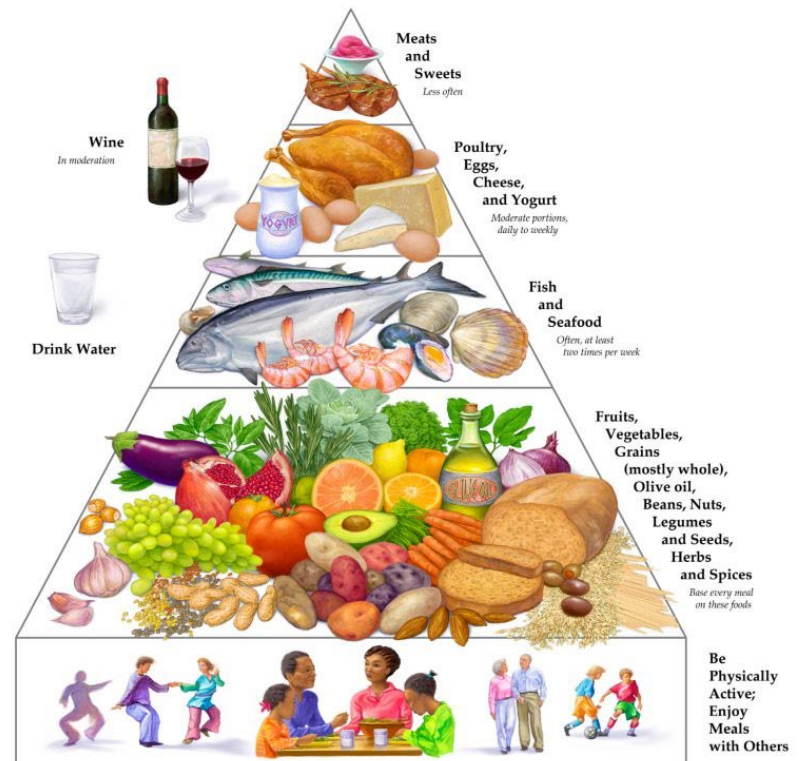


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Dash Diet

- “Dietary Approach to Stop Hypertension”
- High Potassium-Low Sodium (Monitor potassium levels)
- Lots of fruits and vegetables
- WWW.NHLBI.NIH.GOV (for more information and sample meal plan)

Type of food	Number of servings for 1600 - 3100 Calorie diets	Servings on a 2000 Calorie diet
Grains and grain products (include at least 3 whole grain foods each day)	6 - 12	7 - 8
Fruits	4 - 6	4 - 5
Vegetables	4 - 6	4 - 5
Low fat or non fat dairy foods	2 - 4	2 - 3
Lean meats, fish, poultry	1.5 - 2.5	2 or less
Nuts, seeds, and legumes	3 - 6 per week	4 - 5 per week
Fats and sweets	2 - 4	limited

Resources

- Utilize your Registered Dietitian- available through your transplant center
- Food safety:
<https://www.fda.gov/downloads/food/foodborneillnesscontaminants/ucm312793.pdf>
- American Heart Association
 - www.heart.org
 - Under the Healthy Living tab there is a tab for recipes
 - Great low sodium, heart healthy recipes for anybody
- National Kidney Foundation
 - www.kidney.org
 - Under the Patients tab there is a tab for nutrition which includes recipes
 - Includes different sections for CKD 1-4, dialysis, and post-transplant

Resources

- Chair exercises: <https://www.silversneakers.com/blog/4-chair-exercises/>
- Daily Calm or Headspace: great apps for meditation
- Check with local hospital / transplant program for PT referral
- Beginner's guide to walking plan:
<https://www.everydayhealth.com/fitness/get-started-with-walking-workouts-an-absolute-beginners-guide/>

Review

- Overall post-transplant the focus is on a “heart healthy diet”
- Strive for a healthy weight
- Stay active
- Focus on food safety
- Avoid foods that interact with medications
- Drink plenty of water
- Communicate with your healthcare team





**THANK YOU
FOR
YOUR
ATTENTION!
ANY QUESTIONS?**

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