

# Diets for Renal and Liver Disease

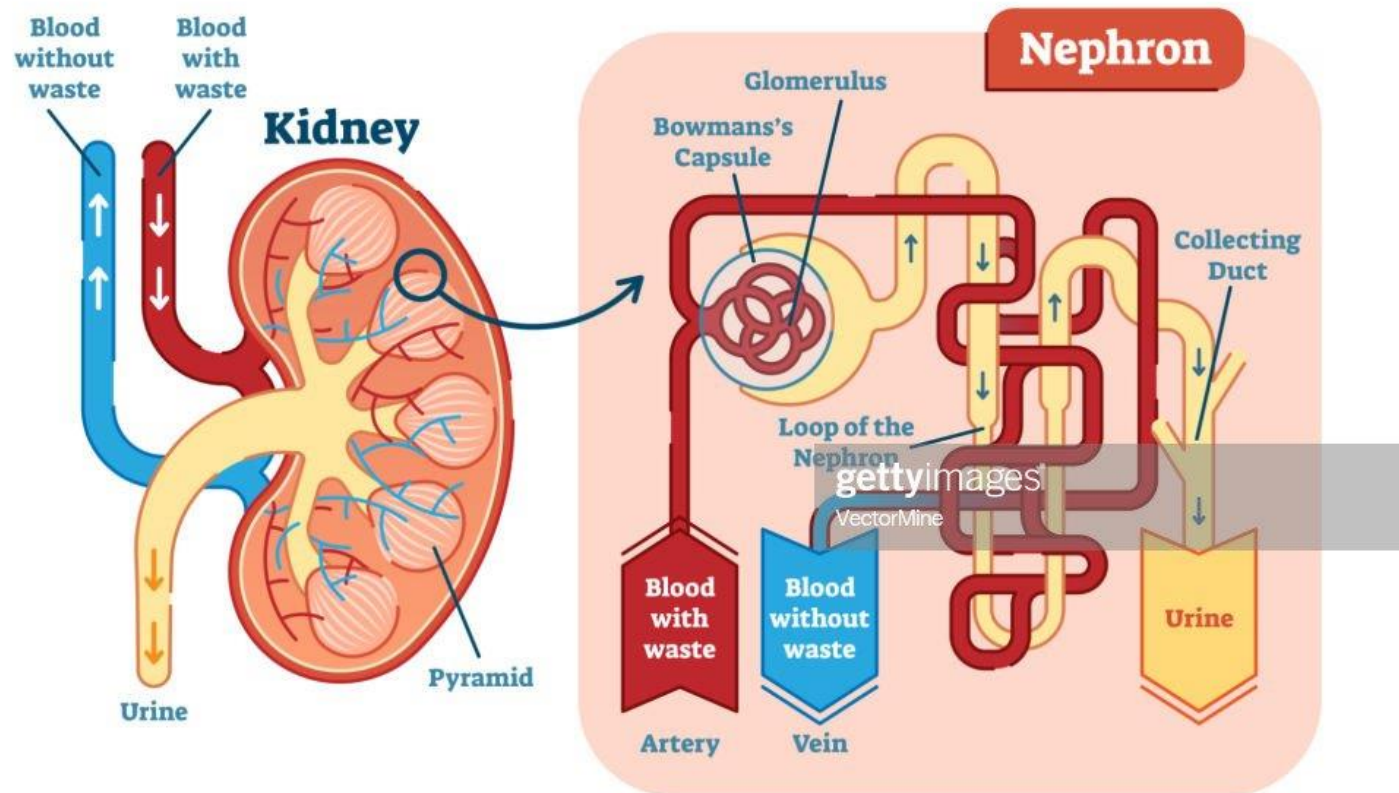
Dana Issa Marbu'

# Kidney Diseases

- The two kidneys are responsible for filtering the blood and removing excess fluid and waste in urine.
- The kidneys are proficient at this task, disturbance in body fluids that result from food intake, PA or metabolism are normally corrected within hours.
- Chronic kidney disease (CKD) is divided into 5 stages based on levels of kidney function.
- CKD stage is determined by calculating **estimated glomerular filtration rate (eGFR)**
- which is a measurement of how well the kidneys are cleaning the blood.
- calculate eGFR using a creatinine blood test, age, gender, muscle mass, and ethnicity.
- [What is GFR? Use Our GFR Calculator \(freseniuskidneycare.com\)](https://www.freseniuskidneycare.com/gfr-calculator)

# Kidney Diseases

## Nephron Anatomy



# Kidney Diseases

- Ultrafiltration is the main function of the glomeruli.
- Filtration of the plasma is based on the <sup>①</sup>size and <sup>②</sup>charge.

- **Small solutes:** cross readily
- **Larger substances:** are generally restricted
- **Albumin:** is generally reabsorbed in the healthy kidney.
- **Creatinine**

# Kidney Diseases

- **Filtration of plasma constitutes such as:**
  - Glucose
  - Amino acids
  - Water
  - Ions
  - Lactic acid
  - Uric acid
  - Creatinine
  - Etc....

# Kidney Diseases

- Urine composition:

1. **Mainly water (95%)**

2. **Other 5% of substances in the urine are:**

- **Urea.** a.a metabolism
- **Uric acid.** purines catabolism. Purines such as adenine, guanine. (nucleotides found in DNA and RNA).
- **Creatinine:** breaking down of creatine phosphate in muscle ( high percentage indicates kidney damage).
- **Electrolytes( ions):** Na, K, Cl, biocarbonate
- **Trace amount of a.a, glucose and lipids.**

# Kidney Diseases

- Kidney disease is a progressive disease, meaning that your kidney function may decline over time.
- However, being diagnosed with early stage CKD doesn't necessarily mean that you'll progress to later stages.
- **5 STAGES OF KIDNEY DISEASE:**
  1. Mild Kidney damage, eGFR 90 or higher.
  2. Mild loss of Kidney function, eGFR 60-89.
  3. Mild to severe loss of kidney function, eGFR 30-56.
  4. Severe loss of kidney function, eGFR 15-29.
  5. Kidney failure or close to failure less than eGFR 15 (ESRD)

# Chronic Kidney Disease

- **Stage 1&2:**

- Kidney damage with normal kidney function, eGFR of 60 or higher.
- Lifestyle modifications and healthy diet are so crucial; slow the progression of CKD and reduce the risk of kidney damage or other complications.
  - Quit smoking✓
  - Regular exercise✓
  - Reduce stress✓
  - No over-the-counter drugs✓
- Symptoms such as, high blood pressure<sup>1</sup>, abnormal urine test<sup>2</sup> and mild swelling<sup>3</sup>
- Causes are: hypertension or diabetes



# Chronic Kidney Failure

- **Stage3:**

- 3a: Kidney damage with mild to moderate loss of kidney function, eGFR of 45-59Stage
- 3b: Kidney damage with moderate to severe loss of kidney function, eGFR of 30-44
- Patients in this stage experience:
  - Changes in urination
  - Swelling in your hands or feet
  - Back pain, Weakness or fatigue.
- A nephrologist and a renal dietitian are needed.
- Eating a kidney-friendly diet, quitting smoking, exercising, and maintaining a healthy weight and education.

# Chronic Kidney Failure

- **Stage 4**

- Severe loss of kidney function, eGFR of 15–29.
- Start planning ahead for potential treatments like a kidney transplant or dialysis.
- Symptoms are:
  - Anemia/ erythropoietin hormone
  - Decreased appetited
  - Bone disorders/ imbalance in minerals.
  - Abnormal blood levels of phosphorous, calcium, or vitamin D
- Steps to take at stage 4
  - kidney-friendly diet.
  - Regular follow-up with the nephrologist.
  - building your support network.
  - Potential treatment options/ dialysis.

# Chronic Kidney Failure

- **Stage 5**

- Stage 5 kidney disease, or end stage renal disease (ESRD), occurs when your estimated glomerular filtration rate (eGFR) falls below 15, indicating that the kidneys are failing or close to failing.
- Treatments; dialysis or a kidney transplant.

- **Symptoms:**

- Uremia (waste buildup in your blood).
- Fatigue—possibly caused by anemia.
- Shortness of breath
- Swelling in your hands/legs/eyes ( physical examination).
- Nausea or vomiting.
- Abnormal thyroid levels

# Diets for Renal and Liver Disease

- **Modified Renal Diet**
- **Fluid Restrictions.**
- **Nutritional Guidelines for Liver disease.**

# Diets for Renal and Liver Disease

- **Purpose of diet therapy:**

1. To maintain good nutrition status.
2. To slow the progression.
3. To treat complications.

# Diets for Renal and Liver Disease

- Diet therapy focus on controlling **5 nutrients**:
  - Protein
  - Sodium
  - Potassium
  - Phosphorus
  - Fluids

# Modified Renal Diet

- **Use**, the Modified Renal Diet may be prescribed for individuals with:
  - End-stage renal disease (ESRD).
  - On dialysis and reside in a healthcare setting.
  - High incidence of malnutrition; due to poor appetite and gastrointestinal intolerance e.g. nausea and vomiting.
- The **registered dietitians** in the dialysis unit should collaborate to **individualize nutrition therapy** and promote consistency for the best overall health outcome for the patient.

# Modified Renal Diet

- **Adjustments** to the renal diet will depend on the person's individual **biochemistry results (lab work)** and tolerance of dialysis treatments.
- **Adequacy:** May not provide adequate quantities of
  - B vitamins.
  - calcium, and vitamin D.
  - phosphorus and potassium.
- The kidney's impairment affects the levels of these nutrients and the interactions between them.
- Over-the-counter nutritional supplements, should be used only with the **approval of the renal physician and dietitian.**



# Modified Renal Diet

- **Diet Principles:**

1. The Modified Renal Diet is limited in sodium (2000 mg), phosphorus (15 mg/kg/day), and potassium (2000mg).
2. **fat.** Adequate caloric intake, usually 30–35kcal is essential.
3. **Carbohydrates.** Refined carbohydrates and simple sugars (i.e., desserts) can be useful in achieving adequate protein-sparing calories.
4. If the person with ESRD has diabetes, refer to the Consistent Carbohydrate Diet.
5. **Protein.** Patients on dialysis require more protein than usually expected 1.2–1.3g/kg.

# Modified Renal Diet/ Diet Principles

- 0.60g/kg body weight is the lowest recommended amount.
- Protein of high biological value is preferable; at least half of the protein intake should come from animal-derived foods.
- Examples: meat, poultry, fish, and eggs or soybeans provide an alternative complete protein.
- Suggestions for increasing protein offered:
  - Double egg portion at breakfast.
  - Large portion of meat at midday and evening meal.
  - Meat or egg sandwich for snack.
  - For vegetarians, the phosphorus content of beans and legumes means alternative special protein supplements may be needed.

# Modified Renal Diet/ Diet Principles

6. **Sodium (Na<sup>+</sup>)** restriction may be needed to **control fluid, to manage BP.**

✱ The no added salt diet or any sodium restricted diets apply to the Modified Renal Diet along with the following:

- Substitute lower sodium plain meats to replace high sodium meats.
- Substitute all soup with either appropriately made lower sodium soups or a lower potassium vegetable.

✱ Avoid salt substitutes, seasoning mixes.

✱ Avoid foods with visible salt such as chips.

7. **Potassium (K<sup>+</sup>)** is usually **limited to avoid** dangerous levels that could cause **heart problems.**

- **The exception is for people on Dialysis, they do not need a potassium restriction.**

# Modified Renal Diet/ Diet Principles

8. Phosphorus needs to be limited, **phosphate binders** can be used which can be given during snacks and meals.

- If **phosphorus is uncontrolled**, painful bone loss and calcium deposits in tissue can occur.

9. Fluid restriction.

- People on a dialysis fluid restriction diet should typically limit fluids to 32 oz or less each day.
- all foods contain some fluid; however, foods liquid at room temperature or that become liquid when swallowed—such as gelatin—need to be counted

What does 32 ounces of fluid look like?



$$32 \text{ OUNCES} = 4 \text{ CUPS} = 1 \text{ QUART} = 946 \text{ MILLILITERS} = 1 \text{ LITER}$$

# Modified Renal Diet/ Diet Principles

- Foods that are considered liquids (1 fluid oz = 30mL):

## SAMPLE MENU PLAN FOR FLUID RESTRICTIONS

Fluid Restriction	Breakfast	Lunch	Dinner	Nursing or Snacks
1000 mL	240 mL	240 mL	240 mL	280 mL
1200 mL	360 mL	240 mL	240 mL	360 mL
1500 mL	360 mL	360 mL	360 mL	420 mL
1600 mL	480 mL	360 mL	360 mL	400 mL
1800 mL	480 mL	480 mL	360 mL	480 mL
2000 mL	480 mL	480 mL	480 mL	560 mL

# High Phosphorus Foods

- Low phosphorous: 0-50 mg
- Medium phosphorus: 51-150 mg
- High phosphorus: > 150 mg
- It is important to note that too much emphasis on dietary phosphorus restriction means **less protein and nutrient intake** for persons on dialysis.
- It is best to treat patients with **phosphate binders** before unnecessary restriction of phosphorus.

**Table 9.3** High Phosphorus Foods

<b>Food Category</b>	<b>Foods High in Phosphorus</b>
<b>Vegetables</b>	Lima beans, cooked legumes (dry beans and peas)
<b>Fruits</b>	None
<b>Grains</b>	Whole wheat bread, corn tortillas, corn bread, whole wheat bread, biscuits, brown rice, pancakes, waffles, muffins. Cereals made with bran or whole grains (shredded wheat, oats)
<b>Dairy Products</b>	Milk, cheese, pudding, yogurt, cottage cheese Eggnog
<b>Protein Foods</b>	Beef, pork, lamb, veal, poultry, fish, eggs Legumes (dry beans and peas) such as pork and beans, refried beans, split peas, kidney beans Nuts and seeds, peanut butter Soybeans, tofu
<b>Oils, Solid Fats</b>	None
<b>Added Sugars</b>	Desserts containing >1 oz chocolate Cake doughnuts Ice cream Cream pies
<b>Others</b>	Breads and desserts made with baking powder

# NUTRITIONAL GUIDELINES FOR LIVER DISEASE



# Functions of Healthy Liver

- The liver is an essential organ of the body that performs over 500 vital functions.
- **Albumin Production:** Albumin is the most predominant circulating protein in healthy adults, regulate blood volume and transport nutrients.
- **Bile Production.**
- **Stores Vitamins and Minerals.**
- **Produces clotting factors.**
- **Breaks down ( metabolizes) alcohol and many drugs.**

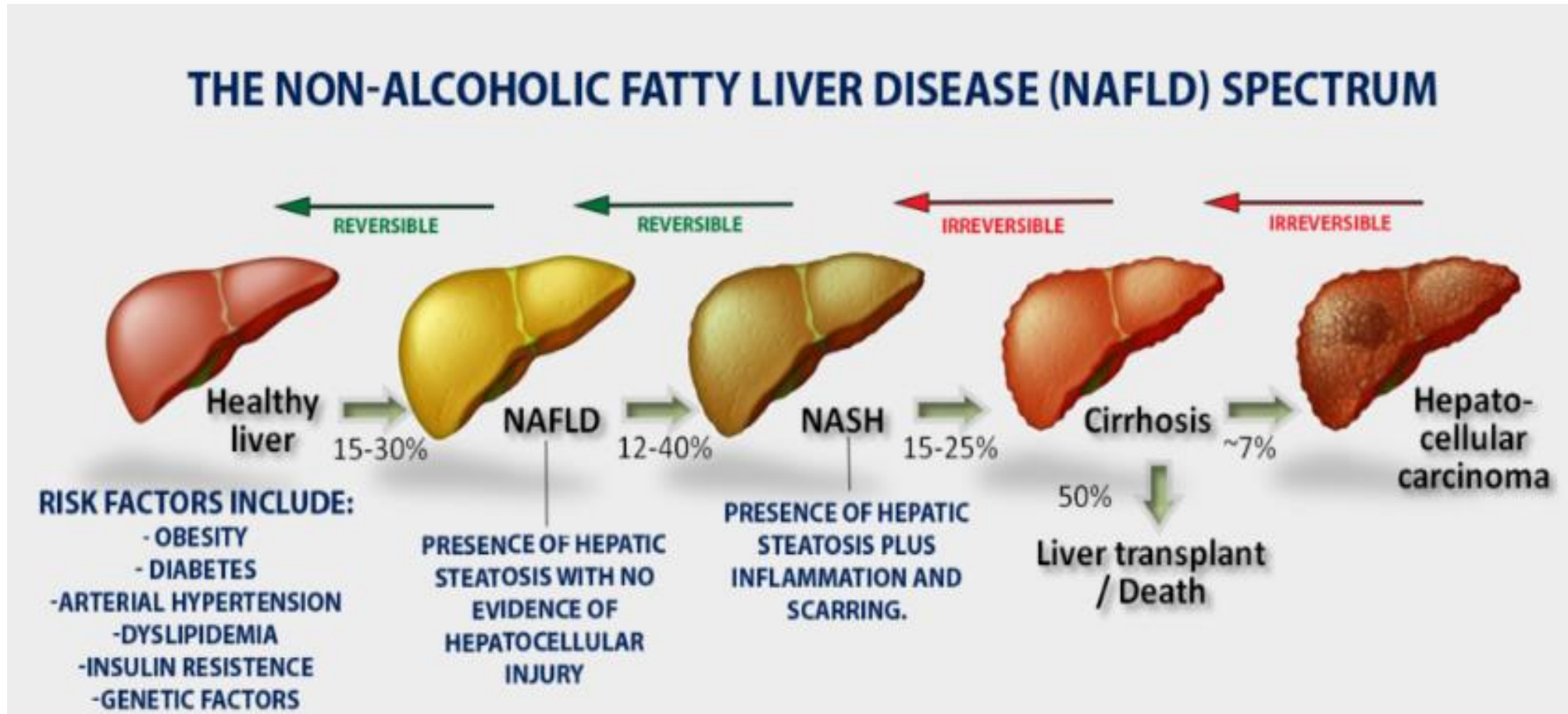
# Functions of Healthy Liver

- **Regulates** the composition of the blood, including amounts of sugar, protein, and fat that enter the bloodstream.
- **Removes bilirubin, ammonia and other toxins** from the blood.
  - Bilirubin is a by-product of the breakdown of hemoglobin from red blood cells.
  - Ammonia forms when protein is broken down.

# Liver Diseases

- Alcoholic liver disease Vs. Nonalcoholic liver disease.
  - Alcoholic liver disease is common, but can be prevented.
  - There are 3 types that progress through the that:
    1. Fatty liver.
    2. Alcoholic hepatitis
    3. Alcoholic cirrhosis

# Liver Diseases

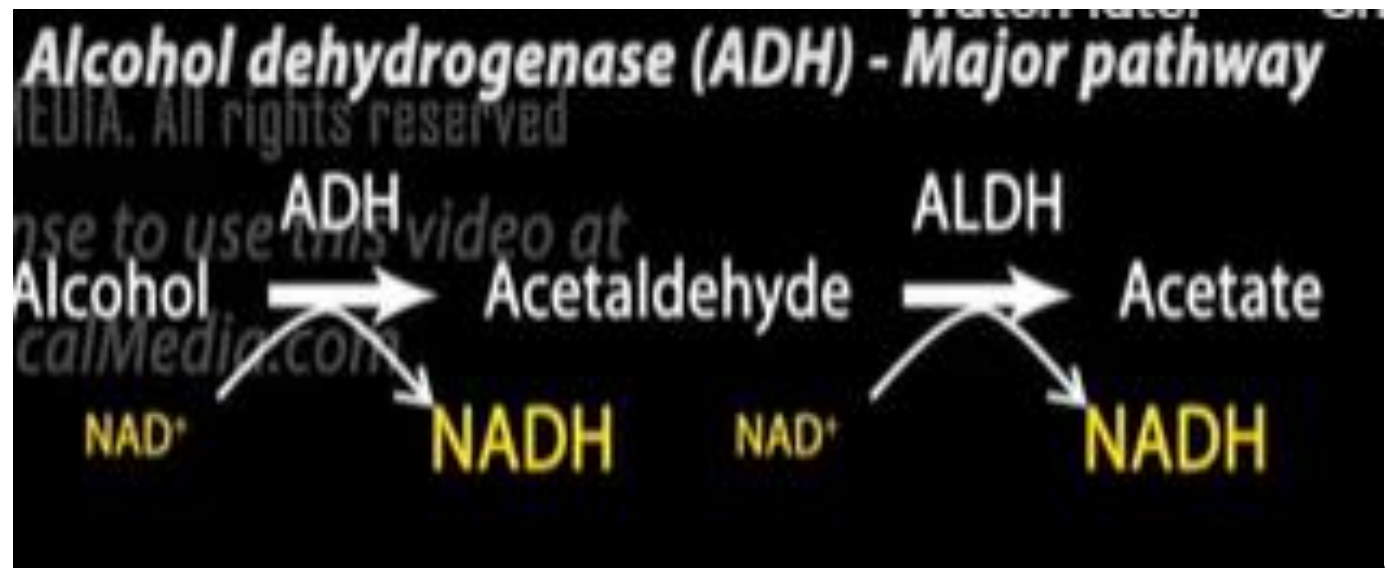


# Liver Diseases

- **Pathophysiology; two pathways.**
  1. **Alcoholic dehydrogenase (ADH)- Major pathway.**
  1. **Cytochrome P450 2E1 (CYP-2E1).**

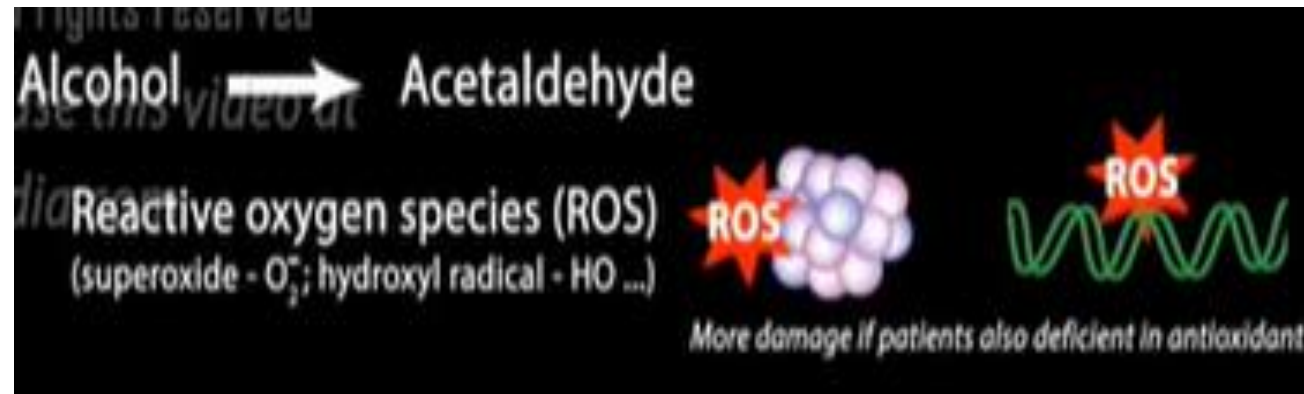
# Alcoholic fatty liver.

- **Acetaldehyde and NADH:NAD<sup>+</sup>**
  - Reduces fat oxidation
  - increase fat synthesis/ activate enzymes for fat synthesis and inhibit enzymes for fat oxidation.
  - Reduce the export of fat from the liver e.g. cholesterol



# Alcoholic fatty liver.

- Chronic alcohol exposure activate hepatic macrophages; triggers inflammation.
- **Acetaldehyde** can bind to intracellular protein (forming Aduct), that seen as anti-gen on cell member for the immune system ( make the body in inflammation condition)



# Liver Diseases

- **Fatty Liver:**

- Fat accumulation
- Liver enlargement
- No symptoms.

- **Alcoholic hepatitis**

- Inflammation.
- Jaundice ( **yellowish or greenish pigmentation of the skin and whites of the eyes due to high bilirubin levels**)
- Painful enlargement.



# Liver Diseases

- **Alcoholic cirrhosis**
  - Scar tissue (fibrosis).
  - Hepatitis end-stage.
  - Liver shrank.
  - Irreversible.
- **Fluid retention** is a complication of cirrhosis that can cause abdominal swelling (ascites) or edema.
- **Malnutrition.**

# Liver Diseases

- **The aim of the nutrition therapy is:**
  - To maintain the best nutritional status possible.
  - Manage the symptoms.
  - Prevent complications.

# Dietary Planning for Liver Disease

- In liver diseases the usual restrictions are in:
  - i. Protein
  - i. Na<sup>+</sup>
  - i. Fluids

# Liver Diseases Nutrition Guidelines

- **Diet Principles**

- **weight loss** is needed it; it should be done slowly, not more than 1 pound per week.
- **Protein.** is important for liver cell repair. A malnourished patient will need adequate amounts of protein to prevent breakdown of the body's protein stores.
- **Carbohydrates.** Complex carbohydrates high in fiber, whole grain foods, and a variety of fresh fruit and fresh vegetables should be encouraged.
- Excess calories in the form of simple, refined carbohydrates can cause **hyperglycemia** and more fat deposits in the liver

# Liver Diseases Nutrition Guidelines

- Fat intake should be 30% or less of total daily calories, Avoid as much saturated fat and trans fats as possible to help decrease hyperlipidemia
- Some patients may have problems with digestion or absorbing fat, which then is lost in the stool; medium chain triglycerides (MCT) oil is absorbed more easily by the body and may be useful in meeting energy needs.
- **Sodium** should be limited to maintain normal fluid and electrolyte balance.
- Those that have fluid retention and swelling in the abdomen wall (ascites) or the legs (peripheral edema) need a Low Sodium Diet.

# Liver Diseases Nutrition Guidelines

- Fluids may need to be limited (1,000–2,000mL of fluid per day) if serum sodium levels are low or if fluid retention is not well controlled.
- A vitamin supplement with adequate B-complex vitamins, vitamins A, C, D, E, and K, and folate may be needed.
- Thiamin may need to be higher in alcoholic liver diseases.
- Avoid mega-vitamin supplements/ therapy; especially vitamins A and D excess vitamin A is toxic to the liver.
- Alcohol should be avoided to allow the liver a chance to heal, rebuild, and a chance for new cells to grow.

# Liver Diseases Nutrition Guidelines

- Beware of “natural” diet treatments and herbal remedies because many are quite dangerous and toxic to the liver.
- In malnourished patients, enteral nutrition support may be needed.

# Exchange System for Protein and Electrolytes

Food group	Exchange Unit	Kcal	Protein (g)	CHO (g)	Fat (g)	Na (mg)	K (mg)	P (mg)
Milk *** (whole)	1/2 c	75	4	6	4	80	185	110
Nondairy milk substitutes especially coconut milk	1 c	140	0.5	12	10	40	80	30
Read labels								

Cheese is high in P and should be limited to once a week= 1 oz serving

\*\*\* Energy content of milk group foods depends on the type of food chosen



# Exchange System for Protein and Electrolytes

Food group	Exchange Unit	Kcal	Protein (g)	CHO (g)	Fat (g)	Na (mg)	K (mg)	P (mg)
Meat (lean)	1 oz	45	7	0	2	25	100	65
Meat *** (medium fat)	1 oz	75	7	0	5	25	100	65
Meat (high fat)	1 oz	100	7	0	8	25	100	65

Unsalted peanut butter is high in K & P and should be limited to once a week  
= 1 Tbsp serving

\*\*\* Energy content of milk group foods and meat group foods depends on the type of food chosen

# Exchange System for Protein and Electrolytes

Food group	Exchange Unit	Kcal	Protein (g)	CHO (g)	Fat (g)	Na (mg)	K (mg)	P (mg)
<b>Vegetables</b>	$\frac{1}{2}$ c (cooked or raw) unless otherwise indicated e.g. 1 c lettuce $\frac{1}{4}$ c high $\uparrow$ K <sup>+</sup> and $\uparrow$ P vegetables							
<b>Low K<sup>+</sup></b>		25	2	5	0	15	70	20
<b>Medium K<sup>+</sup></b>		25	2	5	0	15	150	20
<b>High K<sup>+</sup></b>	$\frac{1}{4}$ c	25	2	5	0	15	270	20

# Exchange System for Protein and Electrolytes

Food group	Exchange Unit	Kcal	Protein (g)	CHO (g)	Fat (g)	Na (mg)	K (mg)	P (mg)
<b>Vegetables</b>	$\frac{1}{2}$ c (cooked or raw) unless otherwise indicated e.g. 1 c lettuce $\frac{1}{4}$ c high $\uparrow$ K <sup>+</sup> and $\uparrow$ P vegetables							
<b>Low K<sup>+</sup></b>		25	2	5	0	15	70	20
<b>Medium K<sup>+</sup></b>		25	2	5	0	15	150	20
<b>High K<sup>+</sup></b>	$\frac{1}{4}$ c	25	2	5	0	15	270	20

# Exchange System for Protein and Electrolytes

Food group	Exchange Unit	Kcal	Protein (g)	CHO (g)	Fat (g)	Na (mg)	K (mg)	P (mg)
<b>Fruits*</b>	<b>1/2 C</b> unless otherwise indicated							
<b>Low K<sup>+</sup></b>		60	0.5	15	0	5	70	15
<b>Medium K<sup>+</sup></b>		60	0.5	15	0	5	150	15
<b>High K<sup>+</sup></b>		60	0.5	15	0	5	270	15

\*Fruits canned in heavy syrup count as 100 Calories and 25 CHO

# Exchange System for Protein and Electrolytes

Food group	Exchange Unit	Kcal	Protein (g)	CHO (g)	Fat (g)	Na (mg)	K (mg)	P (mg)
Starch          <b>Refined</b>	1/2 c (rice, pasta, etc; other 1 oz bread 1/3 oatmeal)	80	3	15	1	80	35	35
<b>Beans</b>          <b>Boiled unsalted</b>	1/2 c	115  V	7 +  V	15 +  V	3  V	Traces  V	270  V	150  V



# Exchange System for Protein and Electrolytes

Food group	Exchange Unit	Kcal	Protein (g)	CHO (g)	Fat (g)	Na (mg)	K (mg)	P (mg)
Oils/Fats *	1 exchange unit	45	0	0	5	55	10	5
Salt Choices	1/8 tsp salt	0	0	0	0	300	0	0

- Oils contain traces of Na , K, and P e.g. olive oil, corn oil, canola oil, soy oil, sunflower oil, walnut oil, etc.
- Tahineh contains traces of Na, and is high in P

# Exchange System for Protein and Electrolytes

Food group	Exchange Unit	Kcal	Protein (g)	CHO (g)	Fat (g)	Na (mg)	K (mg)	P (mg)
Hot Beverages Coffee, Tea	1/2 c	0	0	0	0	0	65	5
↓ Calorie Beverages Diet drinks	1/2 c	0	0	0	0	0	20	10
↑ Calorie choices (beverages, candies, sweets)	1/2 c bev (candies and sweets varies)	60	0	15	0	15	20	5

# Exchange System for Protein and Electrolytes

- Acceptable level of deviation:
  - **Protein + or – 5g**
  - **Na<sup>+</sup>, K<sup>+</sup> and P: up to 100 mg over the limit.**
  - **Fluid: up to 50 ml over the limit**



# Classifications of vegetables according to potassium content level

Vegetables	Low Potassium	Medium Potassium	High Potassium
	<ol style="list-style-type: none"><li>1. Cabbage</li><li>2. Celery</li><li>3. Green beans</li><li>4. Lettuce (iceberg)</li><li>5. Onions</li><li>6. Peas</li><li>7. Bamboo Shoots</li><li>8. Bean Sprouts</li><li>9. Water Chestnuts</li><li>10. Wax (Yellow) Beans</li></ol>	<ol style="list-style-type: none"><li>1. Beets (canned, boiled, drained)</li><li>2. Broccoli</li><li>3. Carrots</li><li>4. Cauliflower</li><li>5. Corn</li><li>6. Cucumber (peeled)</li><li>7. Eggplants</li><li>8. Peppers (green/red)</li><li>9. Mushrooms (¼ cup)</li><li>10. Mixed Vegetables (canned or frozen)</li><li>11. Peanut Butter (1 Tbsp)</li></ol>	<ol style="list-style-type: none"><li>1. Artichoke</li><li>2. Asparagus</li><li>3. Legumes, dried, cooked</li><li>4. Beet Greens (cooked)</li><li>5. Beets</li><li>6. Brussels Sprouts</li><li>7. Collards, cooked</li><li>8. Kale</li><li>9. Kohlrabi</li><li>10. Parsnips</li></ol>

# Classifications of vegetables according to potassium content level

Vegetables	Low Potassium	Medium Potassium	High Potassium
		<ol style="list-style-type: none"> <li>1. Mustard Greens, cooked</li> <li>2. Okra</li> <li>3. Spinach (fresh)</li> <li>4. Potatoes, mashed made w/water, boxed flakes or granules</li> <li>5. Turnips</li> <li>6. Turnip Greens, cooked</li> <li>7. Radishes</li> <li>8. Zucchini (summer squash)</li> <li>9. Condiments such as ketchup, chili sauce, taco sauce or salsa, (2 Tbsp)</li> </ol>	<ol style="list-style-type: none"> <li>1. Potato (baked, boiled or prepared from frozen), mashed(homemade)</li> <li>2. Spinach (cooked)</li> <li>3. Pumpkin (canned)</li> <li>4. Salsa</li> <li>5. Squash, winter, cooked</li> <li>6. Swiss chard (cooked)</li> <li>7. Sweet potato (cooked)</li> <li>8. Tomato (whole, juice or sauce)</li> <li>9. Vegetable juice<sup>11</sup></li> </ol>

# Potassium in food ( Fruit)

High in K+ (> 250mg)	Moderate in K+ (120-250 mg)	Low in K+ (<120 mg)
Avocado, Banana	Apple (including juice) Grapefruit, ½ medium	Applesauce Blueberries
Cantaloupe Dried fruit, raisins	Apricots, Blackberries	Fruit Cocktail Grapes (including juice)
Honeydew melon, Kiwifruit	Cherries, Cranberries	Pears Pineapple (including juice)
Mango, Nectarine	Peaches Pear	Raspberries Watermelon
Orange (fruit and juice), Papaya	Plums Strawberries	
Pomegranate Prunes, (fruit and juice)	Tangerines (Mandarin Oranges) Tropical Fruit Mix,	

# Potassium in food ( veggies)

High in K+ (> 250mg)	Moderate in K+ (120-250 mg)	Low in K+ (<120 mg)
Artichoke Asparagus	Beets, Broccoli	Cabbage Celery
Beans, dried, cooked, (includes baked beans, lentils and limas).	Carrots Cauliflower	Green Beans Lettuce, iceberg
Beet greens Brussels sprouts Collards	Corn Cucumber, Eggplant	Onions Peas
Kale Kohlrabi Parsnips	Green/Red Peppers Mixed Vegetables, canned or frozen	
Potato, Spinach, cooked Pumpkin,	Mushrooms Radishes Spinach, fresh	
Sweet potato Tomato (whole, juice or sauce) Vegetable juice	Turnips Summer Squash	

# Potassium in food( Dairy products+ protein+ others )

High in K+ (> 250mg)	Moderate in K+ (120-250 mg)	Low in K+ (<120 mg)
Milk, fresh or canned Yogurt	Cottage cheese	-
- Dried beans and peas such as pork and beans, refried beans, split peas, kidney beans, lentils. - Soybeans, cooked	Peanut butter	-

High in K+ (> 250mg)	Moderate in K+ (120-250 mg)	Low in K+ (<120 mg)
Salt substitutes (containing potassium chloride)	Ketchup, chili sauce. Taco sauce or salsa.	-
-Low sodium broth and bouillon (may contain potassium chloride; check nutrient analysis before using)		-

# Electrolyte controlled Diets

Protein level (g)	40	60	80
Calories	1775	1800	2040
Sodium (mg)	1920	1845	2030
Potassium (mg)	2180	2325	2600
Phosphorus (mg)	695	890	1150
<b><u>Milk</u></b> (1/2 c/choice)	1	1	2
Nondairy, milk substitutes	0	0	0
<b><u>Meat</u></b>	3	5	7

# Electrolyte controlled Diets

Food Group	1 <sup>st</sup> prescription	2 <sup>nd</sup> prescription	3 <sup>rd</sup> prescription
<b><u>Starch</u></b>	5	8	8
<b><u>Vegetables</u></b>			
Low K <sup>+</sup>	1	1	1
Medium K <sup>+</sup>	1	1	2
High K <sup>+</sup>	1	1	1
<b><u>Fruits</u></b>			
Low K <sup>+</sup>	2	1	1
Medium K <sup>+</sup>	2	2	2
High K <sup>+</sup>	1	1	1



# Electrolyte controlled Diets

Food Group	1 <sup>st</sup> prescription	2 <sup>nd</sup> prescription	3 <sup>rd</sup> p
<u>Oils/Fats</u>	9	8	9
High Calorie items	5	1	0
<u>Hot Beverages</u>	2	2	2
Low Calorie (sugar free items)	0	0	0
<u>Salt Choices</u>	3	2	2