



# Living with Heart Failure

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Advanced Heart Failure & Cardiac  
Transplantation

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# Definition of Heart Failure

1. Inability of the heart to keep up with demand
2. Failure of the heart to pump with normal efficiency



# Common (but maybe inaccurate) synonyms

- “Enlarged heart”
- “Weakened heart”
- Cardiomyopathy
- But not “the heart stopped working”



# What Are The Symptoms of Heart Failure?

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Think **FACES**...

- **F**atigue Constant lack of energy
- **A**ctivities limited Difficulty with everyday activities
- **C**hest congestion Dry cough or producing white or pink blood-tinged phlegm
- **E**dema or ankle swelling Swelling of the feet, ankles, legs, abdomen, or unexplained weight gain
- **S**hortness of breath Breathlessness during activity, at rest, or while sleeping

Additional symptoms: Lack of appetite, nausea, increased heart rate, irregular heart rhythm



# Heart Failure is Very Common

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- Heart failure affects nearly 5 million Americans
  - 50% men and 50% women
- An estimated ½ million new cases are diagnosed each year
  - Expected to rise to 750,000 new cases by 2040
  - Related to aging population, better treatment of heart disease and risk factors, awareness
- Over one million heart failure hospitalizations annually
  - Rising over past few decades
  - Accounts for over 20% admissions in people 65 and over



# What Causes Heart Failure?

Heart failure results after injury to the heart

Heart attack

High blood pressure

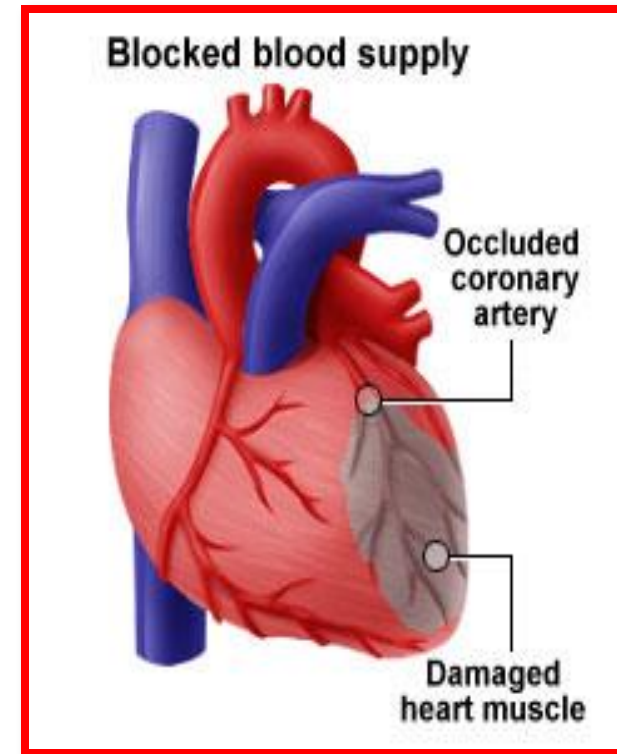
Damage to heart valves

Diabetes

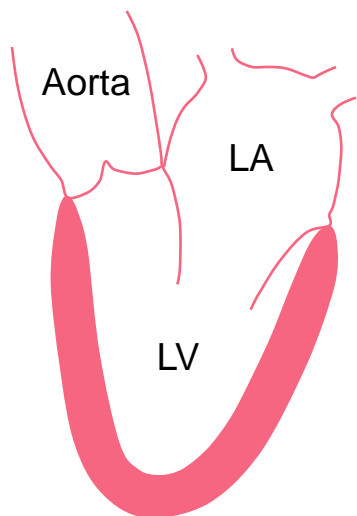
High cholesterol

Heart muscle disease: damage  
from drugs, alcohol, or  
infections

Congenital heart disease

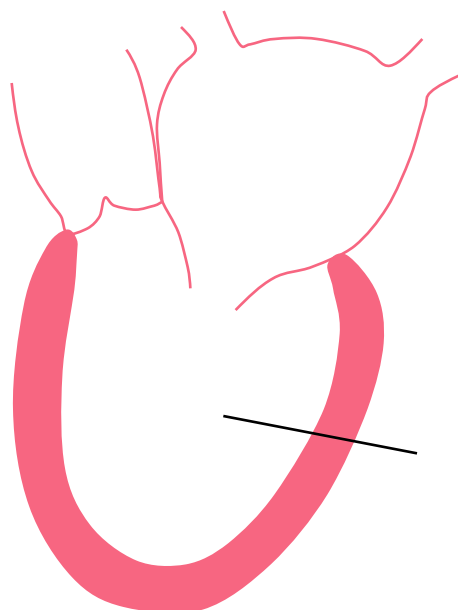


# Types of Heart Failure: Difference Between Systolic and Diastolic Heart Failure



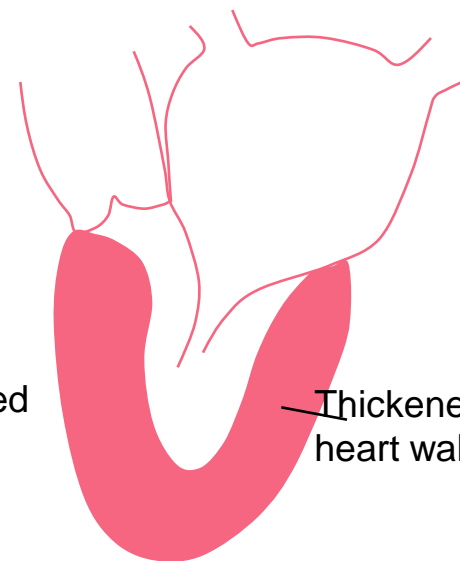
**Normal**

*Normal ejection (squeeze)  
=Systolic function  
Normal relaxation (filling)  
=Diastolic function*



**Systolic Heart Failure**

*Weakened pump  
Relaxation ± abnormal  
→ Blood backs up  
and overloads the heart*



**Diastolic Heart Failure**

*Normal ejection  
Abnormal relaxation: Stiff or scarred  
→ Won't allow enough blood to fill the  
heart before it squeezes*



# Simplified View of Systolic Heart Failure

Normal



Normal Heart



Dilated cardiomyopathy



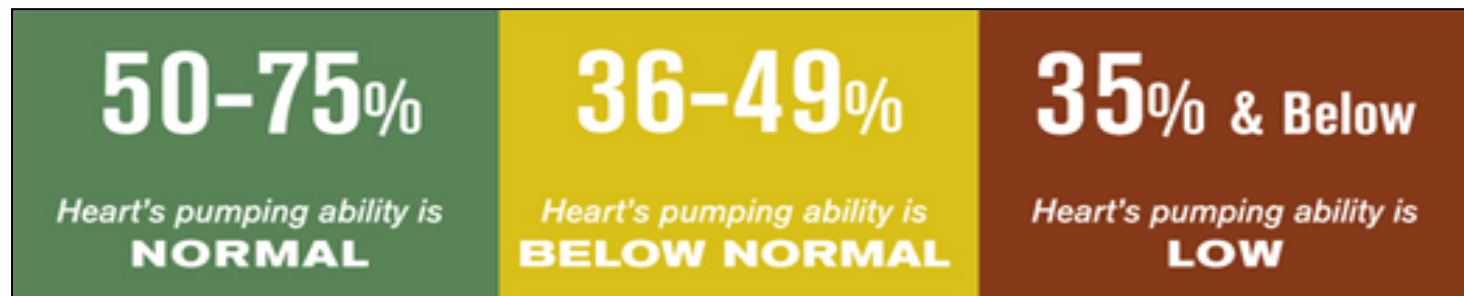
Development of  
Heart Failure





# How Severe is A Patient's Heart Failure?

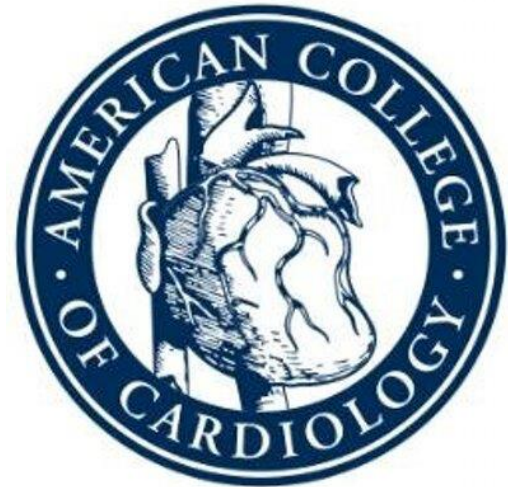
- We measure the ejection fraction by echo
  - The fraction of blood that the heart pumps with every beat



- We assess the patient's symptoms
  - No or mild symptoms
- We assess the patient's functional status

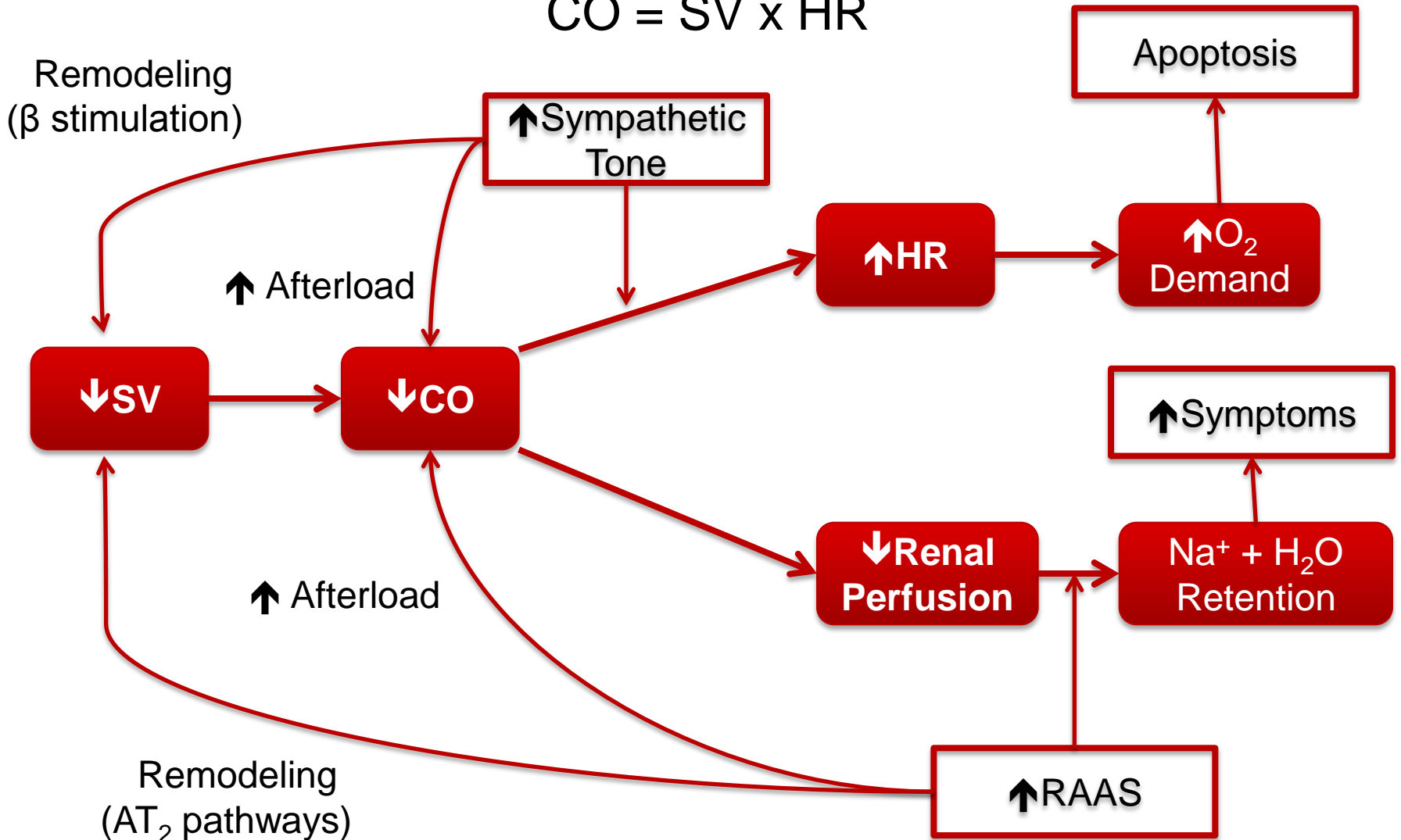


# Heart Failure Treatment Guidelines

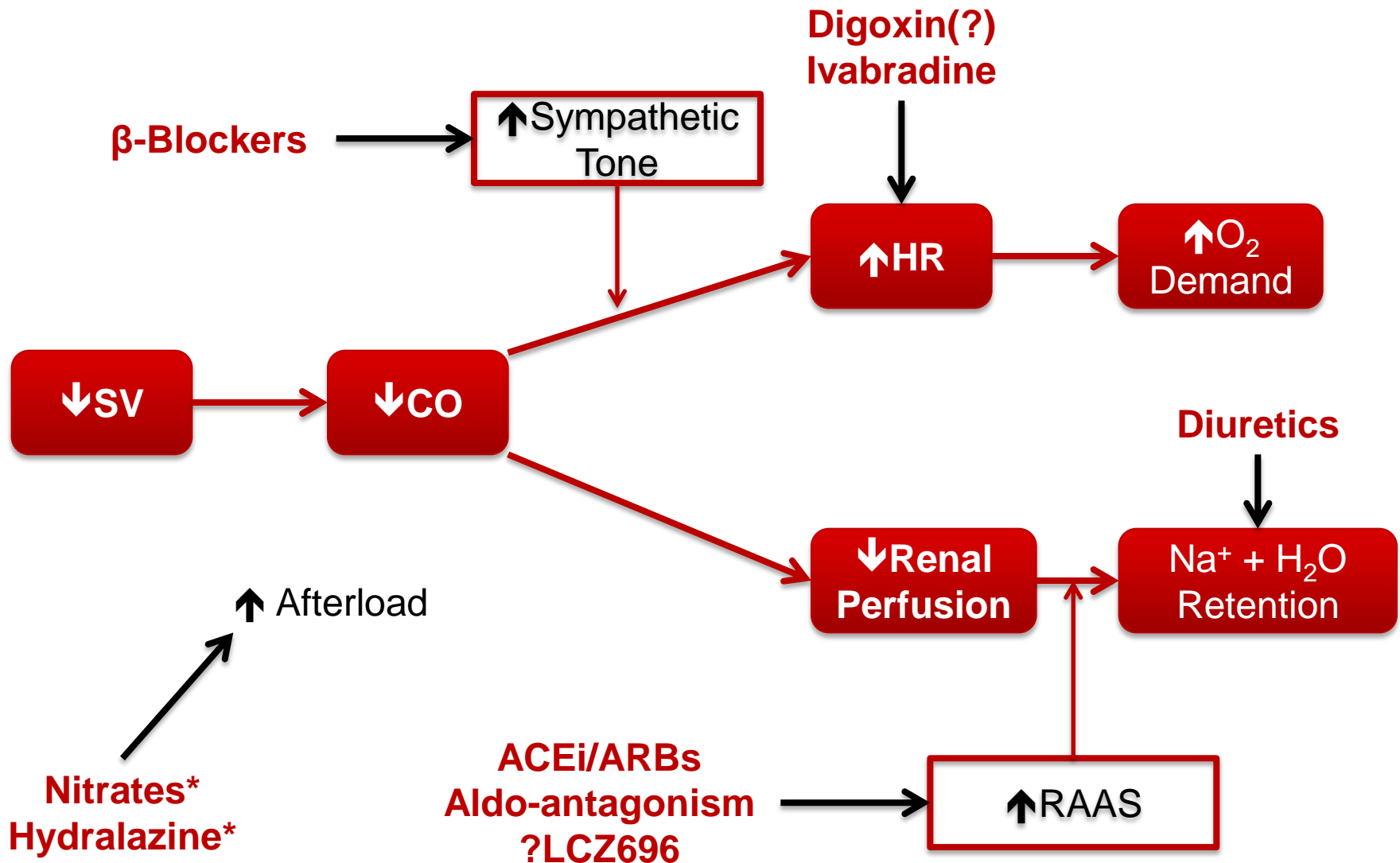


# Heart Failure Mechanisms (simplified)

$$CO = SV \times HR$$



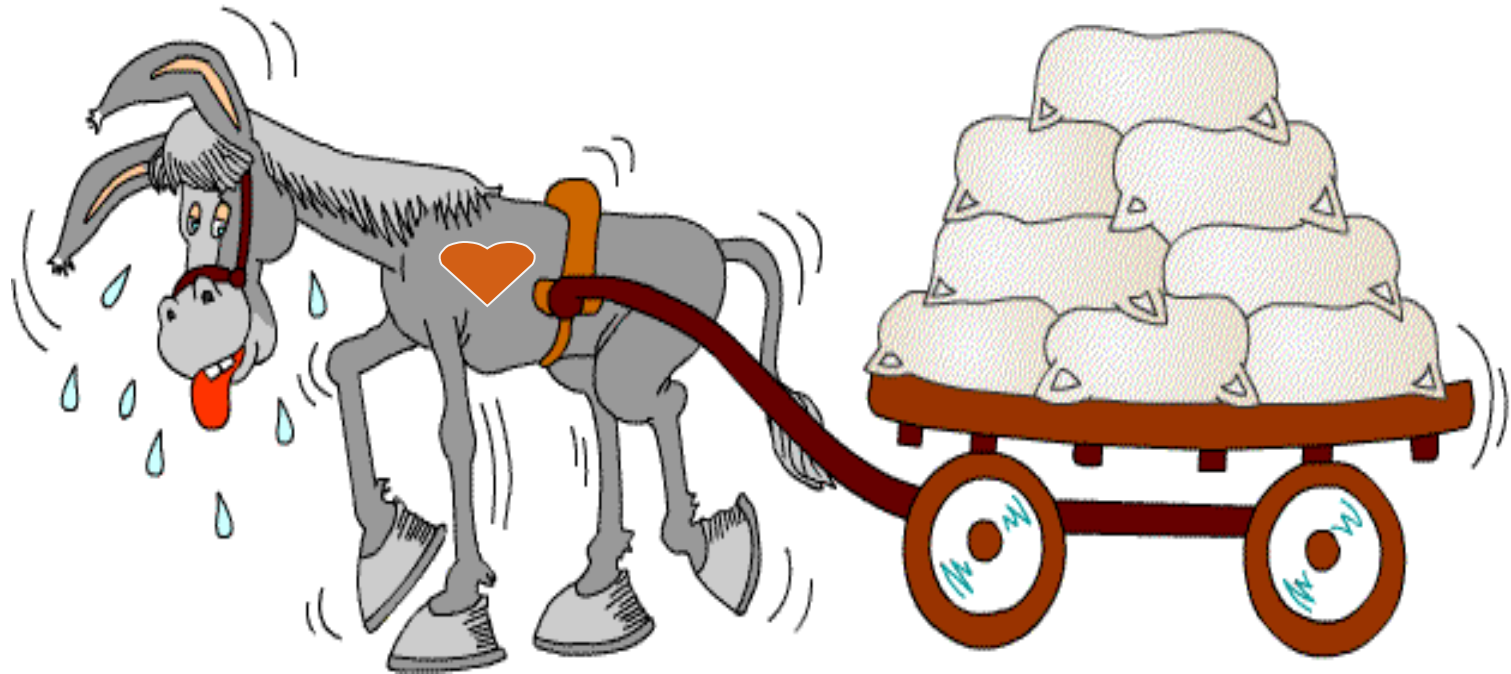
# Treating Chronic HF (Simplified)



# Why Do We Use These Treatments?

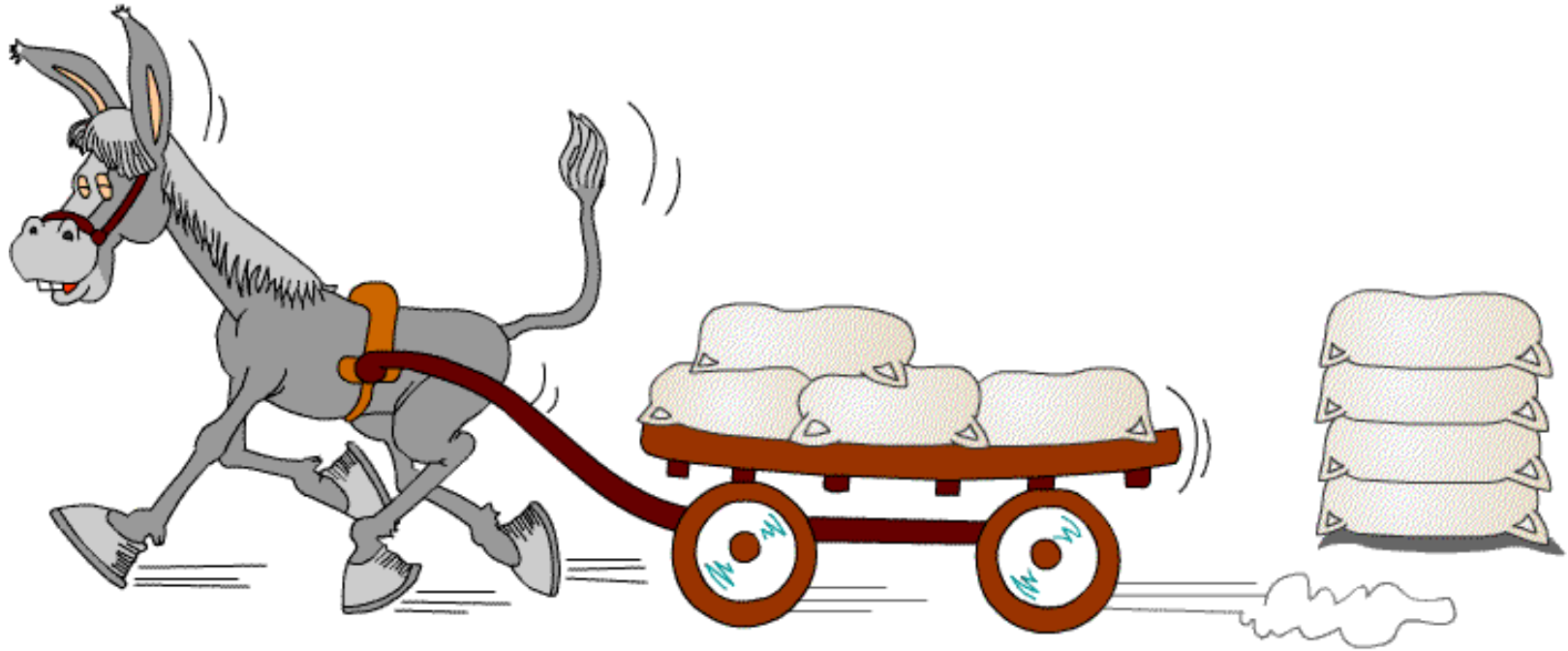
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Heart failure limits a patient's ability to perform the routine activities of daily living...



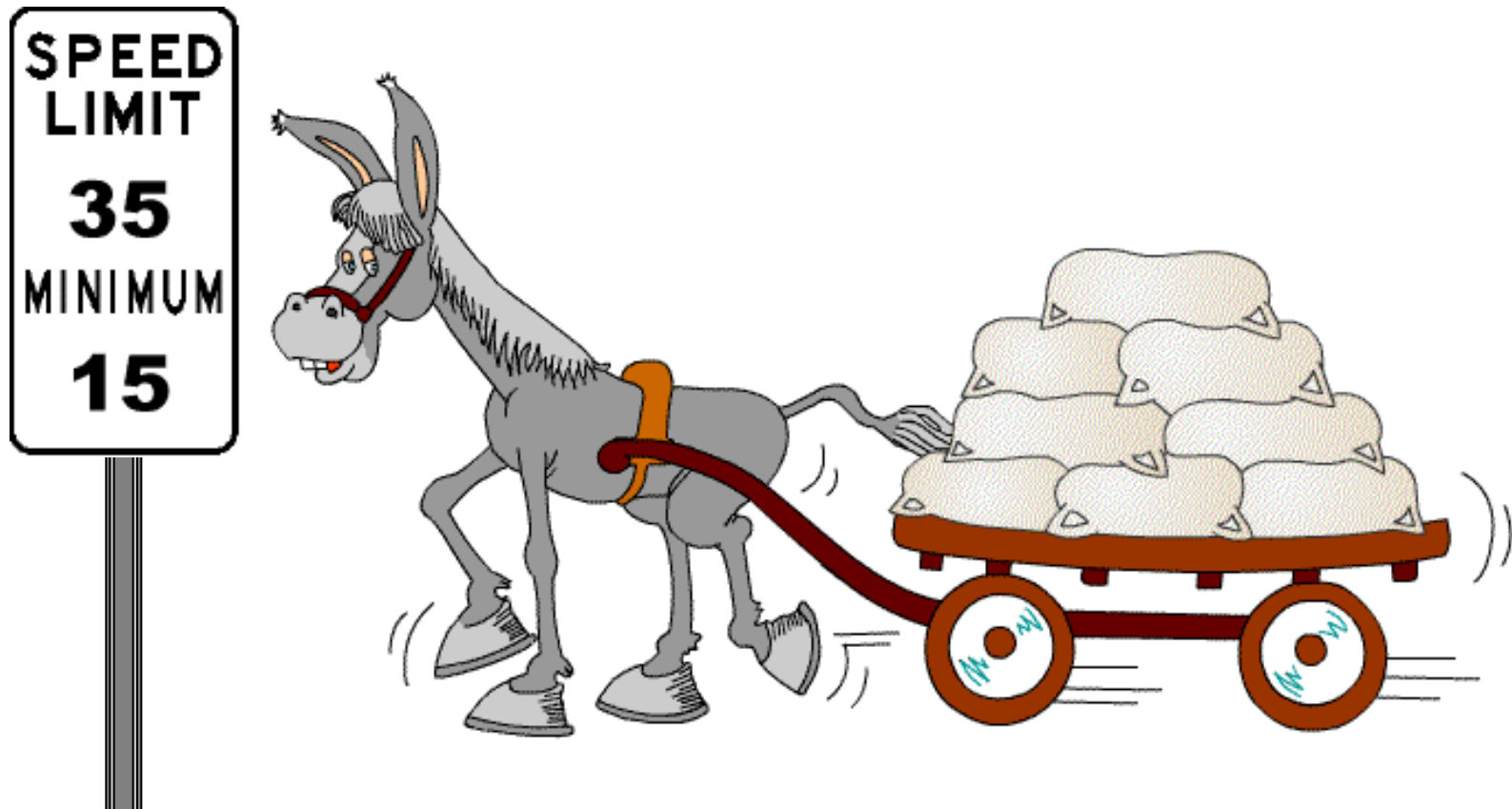
# Diuretics, ACE Inhibitors

Reduce the number of sacks on the wagon (or load on the heart)



# $\beta$ -Blockers

Limit the speed, thus saving energy



# Spironolactone, Cardiac Resynchronization Therapy

Increase the heart's efficiency

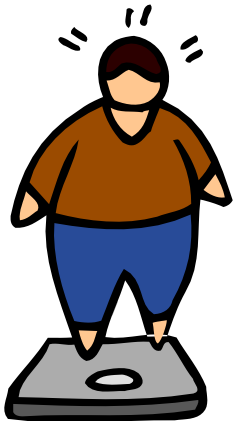




# How Do We Treat Heart Failure?

## Lifestyle Changes

- Quit smoking
- Monitor diet: low-fat, low sodium
- Exercise regularly
- Lose weight
- Avoid alcohol
- Limit caffeine intake



# Limiting Sodium or Salt Will Improve Your Heart Failure Symptoms

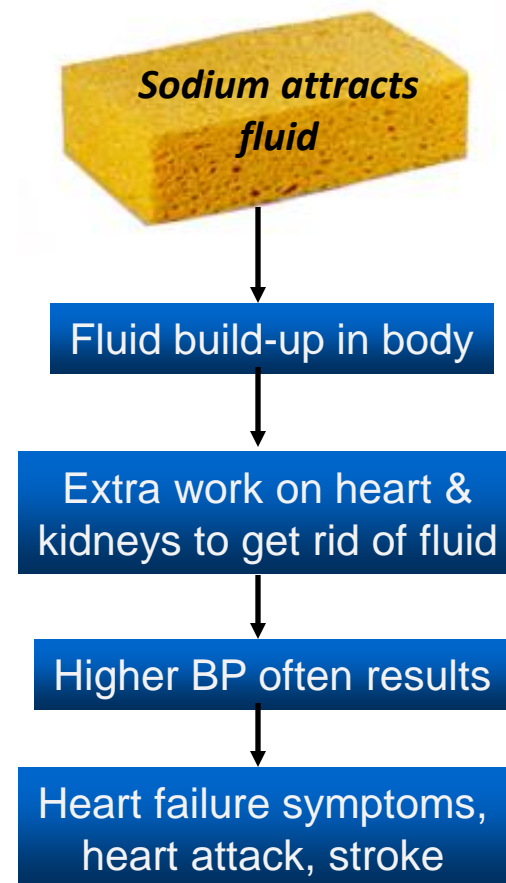
Sodium is a component of salt

- Naturally occurring in many foods
- Added during processing
- In most foods eaten away from home

Your body needs only a small amount of sodium to keep a normal fluid balance.

Too much sodium causes your body to hold onto fluid and cause symptoms of weight gain, shortness of breath, and fatigue.

**The more sodium (salt) you take in, the more fluid your body holds on to**



# Patients Should Follow a 2000 mg Sodium Diet

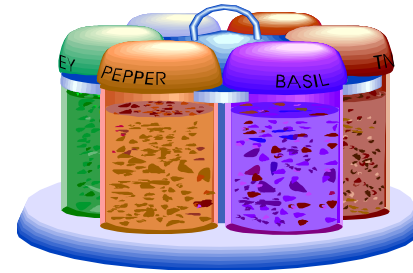
In addition to heart failure patients, the American Heart Association recommends

- 1) All adults older than 51
- 2) All African Americans
- 3) Anyone with high blood pressure

limit their daily intake to **1500 mg**

Plan your meals for 2000 mg intake

<u>MEAL</u>	<u>mg Sodium</u>
Breakfast	600mg
Lunch	600mg
Dinner	600mg
Snack	200mg



## Use alternative seasonings!

<i>Basil</i>	<i>Parsley</i>
<i>Chives</i>	<i>Paprika</i>
<i>Dill weed</i>	<i>Pepper</i>
<i>Garlic</i>	<i>Sage</i>
<i>Tarragon</i>	<i>Mrs. Dash</i>
<i>Thyme</i>	<i>Lemon, lime juice</i>



# How It Shakes Out

¼ tsp salt = 600 mg sodium

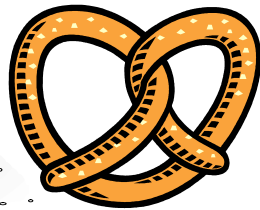
½ tsp salt = 1200 mg sodium

1 tsp salt = 2300 mg sodium *More than daily recommendation*

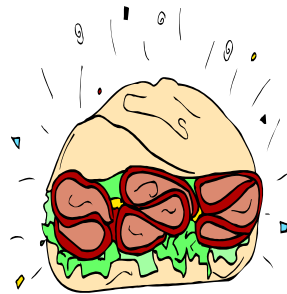
Even a small amount of salt counts!



½ tsp salt



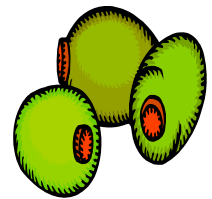
= 1 serving  
pretzels



= 3 slices of ham  
= 2 packets of  
soy sauce



= 3 pickles  
olives



= 14 green

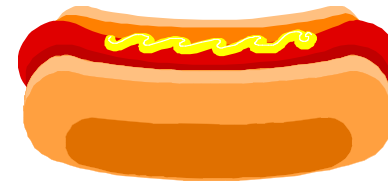
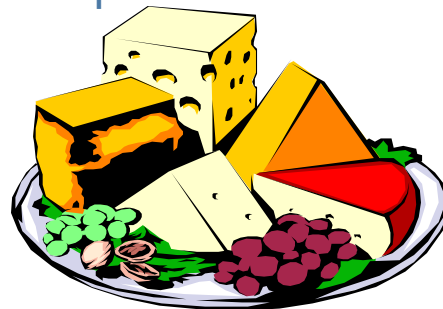


# Some common high sodium foods

- \* Frozen meals
- \* Canned foods
- \* Breads, baked goods
- \* Lunch & smoked meats
- \* Cheese
- \* Condiments (salad dressing)
- \* Olives
- \* Pretzels
- \* Pickles
- \* Bacon
- \* Anchovies
- \* Soy sauce
- \* Seasoning mixes
- \* Gravy
- \* Salted crackers
- \* **FAST FOOD**



Rule of thumb: the more processed the food, the more sodium it contains



# Learn how to read sodium labels on all food

1. Look for Sodium  
Listed as milligrams or mg
2. Next, look at serving size  
If you eat 2 servings of a food you need to double what you see on the label
3. Reduced-sodium products still contain sodium  
*Always read the label*

Example of Nutrition Facts Label			
Serving Size 1/2 cup (114 g) Servings per Container 4			
Calories 90	Calories from Fat 30 % Daily Value *		
Total Fat 3g	5%		
Saturated Fat 0g	0%		
Cholesterol 0mg	0%		
<b>Sodium 300mg</b>	13%		
Total Carbohydrate 13g	4%		
Dietary Fiber 3g	4%		
Sugars 3g			
Protein 3g			
Vitamin A 80%	•	Vitamin C 60%	
Calcium 4%	•	Iron 4%	
Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your needs.			
	<b>Calories</b>	<b>2,000</b>	<b>2,500</b>
Total Fat	Less than	65g	80g
Saturate Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Total Carbohydrate		300g	375g
Fiber		25g	30g
<b>Calories per gram:</b>			
Fat 9	•	Carbohydrate 4	• Protein 4



# Sodium Guidelines

**< 140 mg = low sodium**

**Enjoy these foods!**

**140-400 mg = medium sodium**

**Use food in moderation**

**> 400 mg = high sodium**

**Use this food sparingly**

**Low sodium**      **140 mg or less sodium per serving**

**Very low sodium**      **35 mg or less sodium per serving**

**Sodium-free**      **Less than 5 mg sodium per serving**

1. Use salt substitute or other spices when cooking (watch for high potassium in some substitutes)
2. Don't add salt at the table



# Fluid intake & Daily Weights

Limiting fluid intake: important in managing heart failure

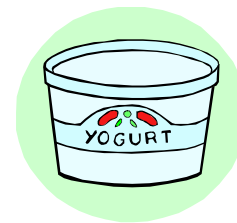
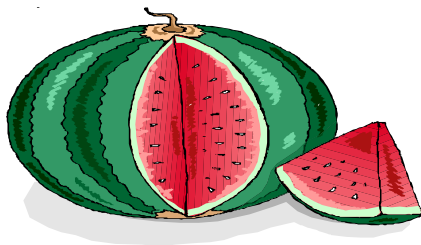
**REMEMBER:** Anything liquid at room temperature is considered a fluid

Daily weights: every morning at the same time using the same scale

Keep track of daily weights

Typically, weight gain of 3 or more pounds in 24 hours OR 5 or more pounds in 48 hours can be a sign of fluid retention

**REMEMBER:** You might not see swelling until you are 8-15# up





# Exercise: Get Off the Couch!

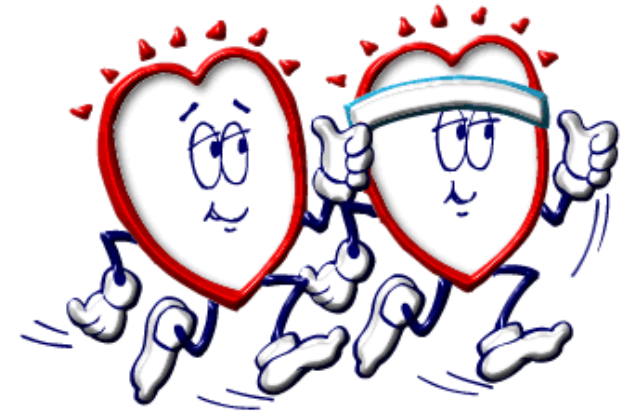


**“Sometimes it’s good to change your walking routine. Try walking around the block instead of wandering around the kitchen.”**



# Exercise Will Improve Your Quality of Life

- Pick a simple aerobic activity that you enjoy
  - Start slowly and increase gradually
- Need to move large muscle groups
  - Walking is a great first choice
  - Resume activities you stopped (gardening, bowling, fishing)
- Work your way up to 30 minutes most days
  - Doesn't have to be 30 minutes in a row
  - Warm up and cool down
- Check with your physician first if
  - You are really out of shape, uncertain about your abilities, or have shortness of breath with very mild activity

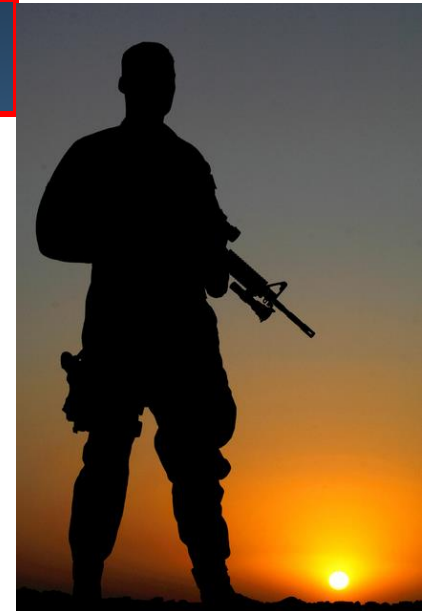
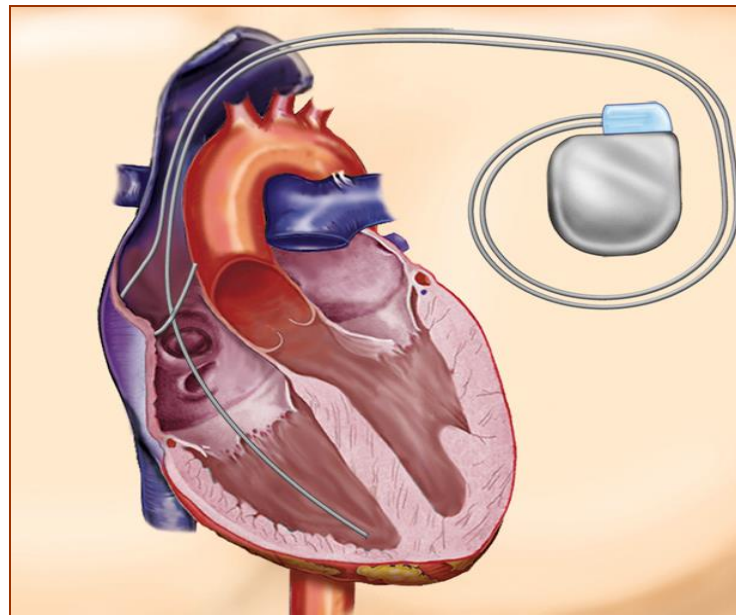


# What if the Heart is Still Weak After Medications?

## Risk of death from cardiac arrest

- Defibrillators can protect the heart from these abnormal rhythms

*Based on the ejection fraction*

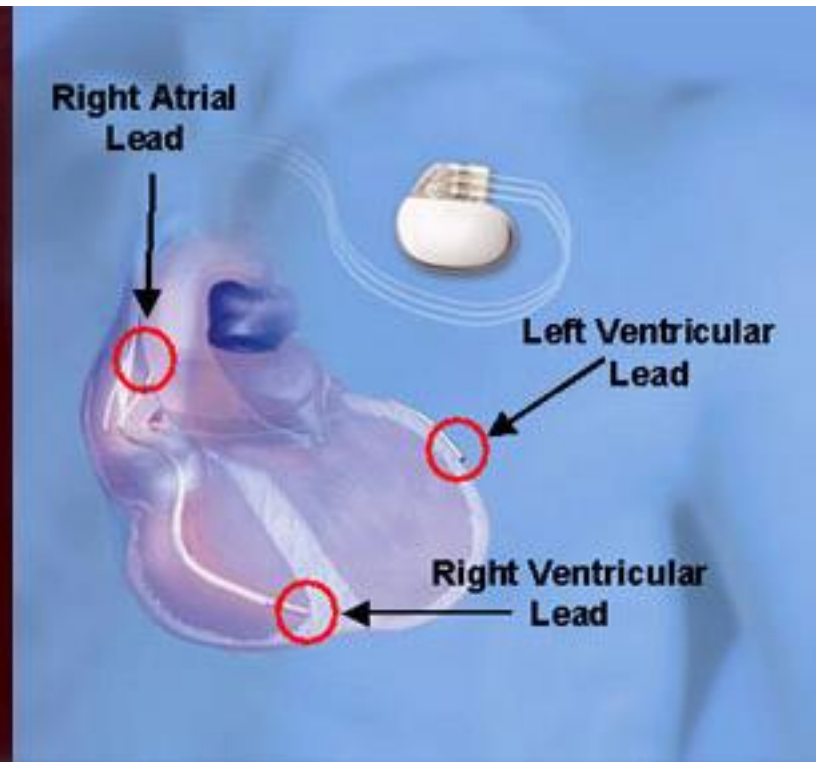
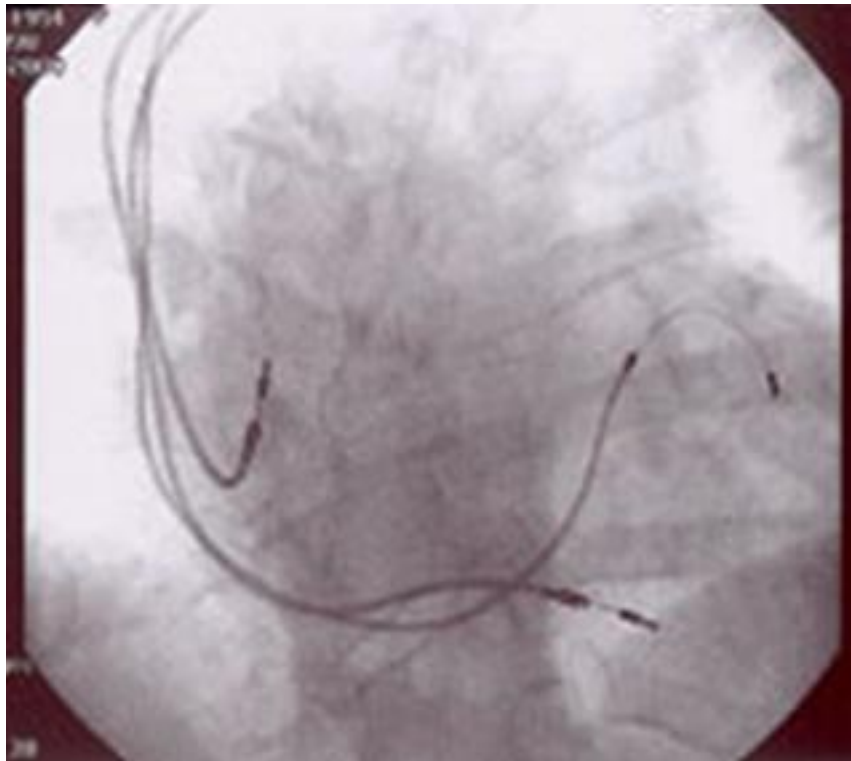


# Some Patients Need Pacemakers

Pacemakers tell the heart when to beat

Some versions resynchronize the chambers

Based on EKG



# Other Conditions Associated with HF

Sleep Apnea is very common in HF patients

Between 60-75% of HF patients have some form



Sleep Apnea is inefficient breathing patterns at night

Patients may sleep “fine”

But the inefficiency can cause increased adrenaline




# Symptoms of Sleep Apnea

- Fatigue
- Excessive daytime sleepiness
- Frequent naps
- Falling asleep while doing things (TV, driving)
- Feeling tired when you wake up



# Benefits of Treating Sleep Apnea

- Increased energy
  - Lower BPs
  - Lower chance of irregular heart rhythms
  - Increase in ejection fraction
- 

# What can you do?

## At home:

Take your medicines

Limit sodium and fluid intake

Exercise

Kick bad habits (smoking)

Monitor weights and symptoms

Have a support system



# Friends and Family

- Emotional support helps a patient have a more positive outlook on life
- Allow the patient to make decisions regarding health care and lifestyle behaviors
- Positive reinforcement
- Discuss fears about heart failure
- Discuss advanced care planning
- Don't forget to take care of yourself: eat healthy, exercise, sleep



## When to call your doctor

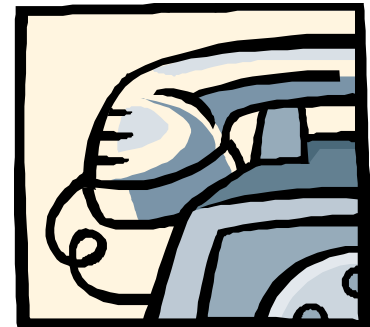
A change in shortness of breath,  
fatigue, or swelling

Requiring more pillows than usual to sleep  
comfortably at night or needing to sleep in  
a recliner

Chest pain

Near fainting or fainting

Weight gain of more than 2 lbs in 24 hours  
or 5 lbs in 48 hours



# What can we do?

## With your health care providers:

Come to your visits


Discuss problems with medications/side-effects

Discuss changes in activity, energy, or mood

Discuss signs of fluid retention



## Into the future ...

- New therapies being developed all the time
  - Better understanding of individual disease processes
  - Continue to improve both survival and quality of life
- 

Thank You



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