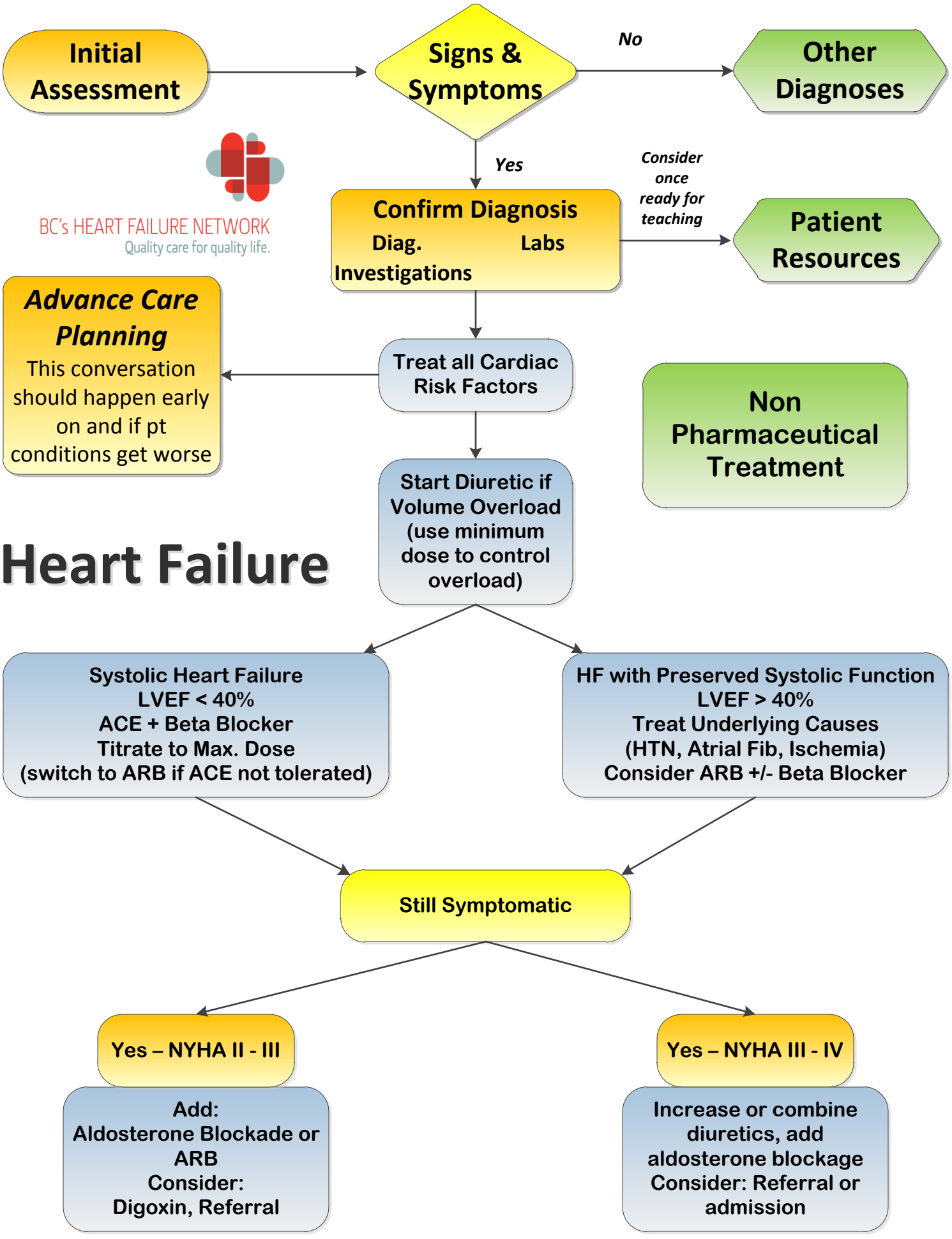
Initial Assessment
Signs & Symptoms
No
Other Diagnoses
Yes
Consider once ready for teaching
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Confirm Diagnosis
Diag. Labs Investigations
Patient Resources
Advance Care Planning
This conversation should happen early on and if pt conditions get worse
Treat all Cardiac Risk Factors
Non Pharmaceutical Treatment
Start Diuretic if Volume Overload (use minimum dose to control overload)
Heart Failure
Systolic Heart Failure
LVEF < 40%
ACE + Beta Blocker
Titrate to Max. Dose
(switch to ARB if ACE not tolerated)
HF with Preserved Systolic Function
LVEF > 40%
Treat Underlying Causes
(HTN, Atrial Fib, Ischemia)
Consider ARB +/- Beta Blocker
Still Symptomatic
Yes – NYHA II - III
Add:
Aldosterone Blockade or ARB
Consider:
Digoxin, Referral
Yes – NYHA III - IV
Increase or combine diuretics, add aldosterone blockage
Consider: Referral or admission

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Heart Failure Patient Questionnaire

Please take the time to answer the following questions before you see your doctor

Appointment Date: _____

Since your last doctors appointment on_____	Yes	No	How many times?	Reason
Did you see a Specialist				
If yes: which specialist				
Have you been admitted to a hospital?				
Have you had to go to a hospital Emergency for treatment?				

What are you doing for activity	Yes	No	How far in street blocks?	For how long?	How many times per week
Walking					
Housework					
Gardening					
Anything else					
Are you participating in a structured exercise program?					

How may pillows do you need to use to sleep?	(circle) none 1 2 3 4 5 6 7

	Yes	Better	Worse	No	Comments
Has there been a change in your energy level since your last appointment?					
Has there been an change in your shortness of breath since your last doctors appointment?					
Has your chest pain changed since your last visit?					
Do you ever feel your heart racing?					
Do you wake up at night with shortness of breath?					
Do you get lightheaded or dizzy?					
Do you have swelling in your: (circle) feet ankles legs stomach					
Do you take extra water pills for your swelling?					

	Better	Worse	Same	Comments
Since your last doctors appointment do you feel your condition is?				

What fluid restriction do you follow?	☐ 6-8 cups	☐ 4-6 cups	☐ None	☐ Other

Over the last two weeks, how often have you been bothered by any of the following problems?	Yes	No	
Little interest or pleasure in doing things			If your patient answers "yes" to either question, go to the PHQ9 questionnaire
Feeling down, depressed or hopeless			
Feeling anxious, nervous or on edge			If your patient answers "yes" to either question, go to the GAD7 questionnaire
Not being able to stop or control worrying			

Questions you would like to ask your nurse or doctor today?

Continued

Print Handout

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Name _____

Date _____

PHYSICAL EXAM					
Weight	Last Visit	Current	Dry		
Vital Signs	B/P Lying Standing	HR	O2 Sat	Waist Circumference (cm)	
Heart Sounds	S1 S2 S3 S4 (circle)	**Murmurs** Grade	**Murmur Location/Radiation**		
Lungs	Clear Crackles <1/4 >1/2 (circle)	**JVP (cm)**	**Ascites**		
Edema	+1 +2 +3 +4 (circle)	**Fluid Volume** (circle one) Euvolemic Dry Overloaded			
Activity	Type:	Time/day: _____ Minutes Days/wk: 1 2 3 4 5 6 7			
NYHA Class	I	II	III	IV	N/A
	(circle) No Sx	No Sx at rest	Comfortable only at rest	Sx at Rest	
Chest XRay: Date:			EF Date: Echo MIBI MUGA (circle)		
Clinical Status	Better	Same	Worse	**Stable:**	Yes / No

EDUCATION			
Topic:	**Yes**		**MD (Directives and/or plan of care)**
Disease			
Medications			
Fluid			
Salt			
Activity/Exercise			
Smoking			
Travel			
Stress Management			

MEDICATIONS		
Type:	**Medication:**	**Notes/Changes:**
Diuretic:		
ACE/ARB:		
Beta Blocker:		
Other:		

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Signs and Symptoms of Heart Failure

Signs	*Symptoms*	*Red Flags*
➢ Weight gain (2 kg (4 lb) in two days or 2.5 kg (5 lb) in 1 week ➢ Swelling and/or Abdominal bloating ➢ Peripheral Edema ➢ Extra heart sounds ➢ Plural Effusion ➢ Elevated JVP ➢ Ascites ➢ BNP measurement (may take up to 1 week) $20.00 ▪ < 100 = not heart failure ▪ 100-400 = equivocal for Heart Failure ▪ >400 = Heart failure	➢ Fatigue ➢ Dyspnea at rest ➢ Decreased exercise tolerance ➢ Orthopnea ➢ Oliguria	➢ Systolic BP < 80 ➢ Sa O2 , < 92% ➢ Tachycardia > 100 ➢ New onset Cyanosis **Apply O2** **Call 911** **And/or** **Refer to Acute care Hospital** **And /or** **Consult a Cardiologist**

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Non-Heart Failure Causes of Shortness of Breath

Cardiac Causes	Pulmonary Causes: *or other conditions that can mimic or exacerbate heart failure*
Ischemic Heart Disease ▪ Myocardial infarction, ischemia	Asthma
Supraventricular arrhythmias ▪ Atrial Fibrillation	Sleep Apnea
	Chronic Obstructive Pulmonary Disease
Hypertension	Pneumonia
Valvular heart disease ▪ Mitral regurgitation/stenosis, aortic insufficiency/stenosis, tricuspid regurgitation or pulmonic insufficiency	Interstitial Pulmonary Disease Restrictive lung disease due to abdominal obesity
	Pulmonary Embolism
	Renal Insufficiency
	Collagen vascular disease
	Endocrinologic or metabolic disorders ▪ Hyperthyroidism, hypothyroidism, uremia, diabetes mellitus, acromegaly, thiamine deficiency, selenium deficiency, carnitine deficiency, kwashiorkor, carcinoid
	Pregnancy
	Febrile illnesses
	Anemia

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New York Heart Association Functional Class

Functional Class	Symptoms
I (mild)	None • Can perform ordinary activities without any limitations
II (mild)	No symptoms at rest • Occasional swelling • Somewhat limited in ability to exercise or do other strenuous activities
III (moderate)	Comfortable only at rest • Noticeable limitations in ability to exercise or participate in mildly strenuous activities
IV (severe)	Symptoms at rest • Unable to do any physical activity without discomfort

Heart failure is classified on a scale of I-IV based on the patients symptoms and ability to do activity or exercise. The functional class can get better or worse over time based on how the patient responds to treatment and how severe their symptoms are. Treatment for patient's heart failure is based on their functional class.

Adapted from: The Criteria Committee of the New York Heart Association. Nomenclature and Criteria for Diagnosis of Diseases of the Heart and Great Vessels. 9th ed. Boston, Mass: Little, Brown & Co; 1994:253-256

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Risk Factors

- **Coronary artery disease**
- **Hypertension**
- **Diabetes Mellitus**
- **Alcohol or substance abuse**
- **Family history**
- **Atrial fibrillation**
- **Toxic exposure: including**
  - **Chemotherapy**
  - **Radiation**
- **Thyroid disease and other endocrinopathies**

Conditions that may worsen heart failure

- **Chronic obstructive pulmonary disease**
- **Kidney disease**
- **Moderate to severe sleep apnea**
- **Anemia**
- **Hypertension**

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Advance care planning

Discussion initiated early in the disease course and particularly when symptoms and/or functional status declines despite maximal medical therapy.

- Discussion about natural history of the disease and prognosis in all cases
- Address all precipitating factors: angina, hypertension, sodium and fluid restriction, adherence to medications, contributory conditions
- Ensure all active therapeutic options have been appropriately considered (ICD, biventricular pacing, revascularization, transplant)

Once the decision to initiate end-of-life care is made, the goal of therapy is to manage all symptoms (including those of comorbid conditions, e.g. chronic pain) and address function and quality of life issues.

Subsequent care should be based on the following principles

- *Support of dying patients and their families*
- *Control of pain and symptoms (eg. overload)*
  - Consider choice and dose of narcotic as renal function is likely impaired – i.e. Hydromorphone for narcotic naïve, Duragesic patch.
  - Consider narcotic use with uncontrolled angina, or as a first-line for dyspnea
  - Consider home oxygen (See COPD Guideline for indications http://www.bcguidelines.ca/guideline_copd.html)
  - Adequate diuretic use (sometimes more than one agent) is important
  - ACE-I dose may need to be reduced if limited by symptomatic hypotension and renal impairment (Cr > 250 μmol/L or > 30% from baseline)
- *Decisions on the use of life-sustaining therapies*

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Heart Failure Diagnostic Tests

Assessment of Left Ventricular Function

(Should be within 4 weeks of Heart Failure diagnosis)

2D Echocardiogram – allows assessment of left ventricular function as well as other cardiac structures

(repeat at end of treatment)

OR

MUGA – most accurate assessment - Left Ventricular Function + consider in patients with Atrial Fibrillation or who are overweight

OR

Perfusion Imaging (eg MIBI Scan) – provides information about both ischemia and Left Ventricular function

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Other Heart Failure Diagnostic and Lab Tests

Chest XRay

ECG

Lab: **Electrolytes, BUN, creatinine and eGFR**

TSH, FBS, CBC, INR

Liver Enzymes (AST, ALT, Gamma GT)

Consider Cholesterol, NT-proBNP or BNP

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Non pharmacological

Heart Failure 101 Patient Information Handout

- Multidisciplinary HF care including specialized HF clinics where available
- Patient Education with focus on HF self management
  - Diet
    - Low sodium diet (less than 2000mg per day)
    - Fluid Restriction 6-8 glasses/day (1500-2000ml or 48-64 oz per day: IF on a diuretic such as Furosemide)
  - Activity (if stable HF, attempt regular aerobic and anaerobic activity OR consider referring to a cardiac rehabilitation program)
  - Smoking cessation counseling or referral to smoking cessation program where available
  - Daily weights
    - Weight gain
      (No more that 4 lbs (2 kg) in 2 days or > 5 lbs (2.5 kg) in one week
- Immunizations
- Counseling for alcohol abstinence and substance abuse

Low Sodium

Fluid Restriction

Activity

Smoking Cessation

Daily Wt Chart

Alcohol & Substance Abuse Counseling

Snap Shot of Your Visit Patient Form

Heart Failure Zones Patient Handout

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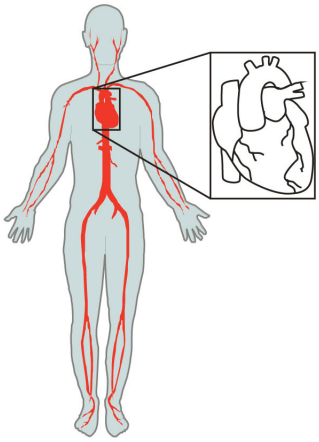
Understanding Heart Failure
The Basics

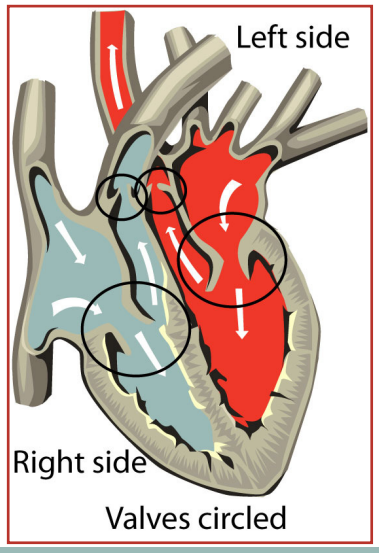
How does the heart work?



Your heart is a muscle about the size of your fist. It works like a pump, pumping blood and nutrients around your body.

The heart is actually a 2-sided pump. The *right side of the heart* pumps 'used' blood from the body to the lungs. In the lungs, your blood is loaded up with oxygen. The *left side of the heart* pumps 'fresh' blood full of oxygen from the lungs to the rest of the body. The left side of the heart is usually the larger than the right. That is because it has to pump hard to get the blood out to all parts of your body.

Each side of the heart has 2 chambers. Valves link the chambers and keep blood pumping in the right direction. These valves open and close with each heartbeat.



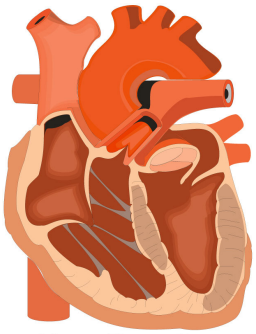
What is Heart Failure?

Heart failure is when your heart is not pumping as strongly as it should. Your body does not get the right amount of blood, oxygen, and nutrients it needs to work properly.

Heart failure usually gets worse over time. While heart failure cannot be cured, people do learn to live active, healthy lives by managing their heart failure with medication, changes in their diet, weighing daily and physical activity.

There are two main types of heart failure:

- **A weak pump:** When the heart muscle is weak, it gets larger and 'floppy'.
- **A stiff pump:** When the heart muscle cannot relax between beats because the muscle has become stiff. The heart cannot properly fill with blood between beats.



A large 'floppy' heart

Both types of heart failure reduce the blood flow and oxygen to your body.

What causes Heart Failure?

Heart failure has many causes including:

- Heart attack
- High blood pressure
- Heart valve problems
- Heart defects at birth
- Lung conditions
- Excessive use of alcohol or drugs

Other possible causes of heart failure include:

- Obesity
- Sleep apnea
- Infections affecting the heart muscle
- Abnormal heart rhythm
- Severe anemia
- Severe kidney disease
- Overactive thyroid gland
- Exposure to chemotherapy or radiation

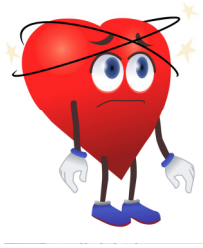
Not sure what caused your heart failure? Ask your doctor or nurse practitioner.

Signs of Heart Failure

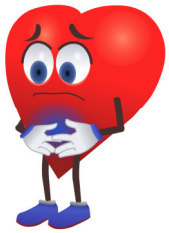
You may notice any of the following signs.

- You feel short of breath when you do daily activities.
- You find it harder to breathe when resting or lying down.
- You wake up at night feeling short of breath.
- You find it easier to sleep by adding pillows or by sitting up in a chair.
- You cough often, especially when lying down.

- Your cough is either dry and hacking, or moist and you cough up mucus (which could be slightly pink).
- You feel your heart beat faster and it does not slow down when you rest.
- You feel your heart racing, jumping, or pounding in your chest.
- You cannot walk as far you normally can.
- You are tired all the time and have no energy to do daily activities.
- You feel lightheaded or dizzy, especially when you stand up or increase your activity and this is new for you.



- You cannot eat as much as you normally would.
- You are not hungry and do not feel like eating.



- You feel bloated or your clothes feel tighter than normal.
- You have swelling in your feet, ankles, legs, or even up into the belly (abdomen).

- Sudden increase in body weight where you gain more than 4 pounds (2 kilos) in 2 days.
- You feel uneasy, like something does not feel right.
- You feel confused and have trouble thinking clearly (and this is new for you).

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Tests to identify heart failure

There is no single test for heart failure. Instead your doctor does a number of tests. The doctor looks at all the test results to determine if you have heart failure.

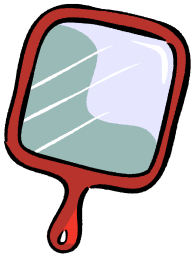
Tests can include:

- Blood tests to check certain enzymes
- Chest x-ray to look at the size of your heart
- Electrocardiogram (or ECG) to look at the electrical activity of the heart
- Exercise stress test to look at how your heart responds to exercise
- Nuclear medicine scan to get a close look at the pumping of your heart
- Angiogram to look for blockage in your heart arteries
- Echocardiogram or ultra sound of the heart to look at the movements of your heart and measure your ejection fraction

More about Ejection Fraction

This test is usually done during an echocardiogram or a nuclear medicine scan. Your ejection fraction can go up and down, depending on your heart condition and how well the treatment is working. It is good to know what your ejection fraction reading is. The reading is given as a percentage with normal being between 55 and 70%. Less than 55% means your heart is not pumping as strongly as it should be. Your ejection fraction helps your doctor or nurse treat your heart failure.

How is heart failure treated?



Look in the mirror - the key to treatment is you.

Your doctor relies on you to make changes in your lifestyle and eating habits. While there is a team of health care providers working with you to manage your heart failure, you are the one in charge.

Treatment is focused on helping you live a longer and healthier life. This includes:

- Monitoring your symptoms
- Reducing salt in your diet
- Increasing your daily activity through regular exercise
- Keeping your blood pressure low
- Maintaining a healthy weight
- Stopping unhealthy habits such as smoking
- Taking your medications as prescribed

For some people, surgery and medical devices are needed to treat the problem that led to the heart failure. Treatments could include:

- Coronary bypass surgery
- Valve repair or replacement surgery
- Implanted device such as a pacemaker and/or defibrillator
- Mechanical device to help the heart pump
- Heart transplant

For novel new ideas on heart failure treatment consult your health care provider.

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Plan today for the future

Your heart failure may get worse over time. Start thinking now about how you wish to be cared for if your disease progresses. This is called 'advanced care planning'. Advance care planning allows you to have a say in your health care if you are unable to speak for yourself.

Talk to your family and your doctor about helping you live well with heart failure and about the care you do or do not want in the future.

Things to think about and consider:

- What does it mean to live well with heart failure?
- What is important to you to make your life the best it can be?
- What is important to you as your condition progresses?
- What worries and concerns do you have?
- How will your progressing heart failure affect you and your family?
- Who or what gives you support when you need it?
- If you are not able to make your own health care decisions, who will you want to make them for you? Does that person know what you want?
- Do you have written instructions for how you want to be cared for if you cannot make decisions for yourself (this is called an advance directive).

Why learn to manage your heart failure?

When you take charge of your health and learn to manage your heart failure, it helps you:

- Improve the quality of your life.
- Feel confident that you can manage your heart failure.
- Control your condition so it will not control you.
- Know when to ask for help from your care team.
- Limit the need to go to the hospital for care.
- Prevent or limit heart failure complications as the disease progresses.

Talk with your family and your care team about your disease and care plan.
People who learn to manage their heart failure are more likely to live a longer, healthier life than those who do not.

For more information on heart failure

- Interior Health Authority Heart Failure Online Education
  www.bcheartfailure.ca/for-patients-and-families/e-learning-module-on-hf/
- HealthLinkBC on Heart Failure
  www.healthlinkbc.ca/kb/content/special/hw44415.html#tp17534
- Canadian Cardiovascular Society
  www.ccs.ca
- Canadian Heart Failure Network
  www.chfn.ca
- Heart Failure Society of America
  www.hfsa.org

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Heart Failure Zones

Check Weight Daily

- Weigh yourself in the morning before breakfast. Write it down. Compare your weight today to your weight yesterday.
- Keep the total amount of fluids you drink to only 6 to 8 glasses each day. (6-8 glasses equals 1500-2000 mL or 48-64 oz)
- Take your medicine exactly how your doctor said.
- Check for swelling in your feet, ankles, legs, and stomach.
- Eat foods that are low in salt or salt-free.
- Balance activity and rest periods.

Which Heart Failure Zone Are You Today? Green, Yellow, or Red

Safe Zone

ALL CLEAR – This zone is your goal!

Your symptoms are under control.
You have:

- No weight gain of more than 4 lbs (2 kg) in 2 days.
- No shortness of breath.
- No swelling or increase in swelling of your feet, ankles, legs, or stomach.
- No chest discomfort, pressure, or pain.

Caution Zone

CAUTION – This zone is a warning

Call your doctor's office if you have <u>any</u> of the following:

- You gain more than 4 lbs (2 kg) in 2 days.
- You feel more short of breath than usual.
- You have increased swelling in your feet, ankles, legs, or stomach.
- You have a dry hacky cough.
- You feel more tired and don't have the energy to do daily activities.
- You feel lightheaded or dizzy, and this is new for you.
- You feel uneasy, like something does not feel right.
- You find it harder for you to breathe when you are lying down.
- You find it easier to sleep by adding pillows or sitting up in a chair.

Doctor's Name	Office Phone Number
_____	_____

Danger Zone

EMERGENCY – This zone means act fast

Go to emergency room or call 9-1-1 if you have <u>any</u> of the following:

- You are struggling to breathe.
- Your shortness of breath does not go away while sitting still.
- You have a fast heartbeat that does not slow down when you rest.
- You have chest pain that does not go away with rest or with medicine.
- You are having trouble thinking clearly or are feeling confused.

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Limiting Sodium (Salt) When You Have Heart Failure

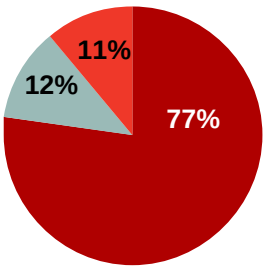
Sodium is a mineral found in food, table salt, and sea salt. Your body needs some sodium, but too much sodium causes your body to hold on to (or retain) fluid. This fluid build-up makes your heart work harder. The fluid build-up can cause swelling in your feet, legs, or belly. Fluid can also build up in your lungs, making it hard for you to breathe.

If your weight increases by more than 2 kg (4 lb) in two days, or 2.5 kg (5 lb) in 1 week, you are retaining fluid. If this happens, you should call your health care provider right away.

You should restrict the amount of sodium you eat to 2000mg or less each day.

In the average Canadian diet, where does sodium come from?

- In ready-made processed foods and restaurant meals (77%)
- Naturally occurring in food (12%)
- Added to food in cooking and at the table (11%)



How to avoid salt (sodium)?

- Eat fresh foods most of the time and prepare home-cooked, low sodium meals.
- Frozen foods are acceptable if they do not have added salt or sodium additives (which are used as preservatives).
- Remove the salt shaker from the table. Don't add salt, flavoured salts or seasonings high in salt to your foods. **One teaspoon of salt contains 2300mg of sodium!**

- Season your food with herbs, spices, lemon juice, dry mustard, and garlic. Try one of the many seasoning blends which contain no salt such as Mrs. Dash.
- Stay away from eating:
  - processed foods
  - deli meats
  - pickled foods
  - salted snack foods such as potato chips, pretzels, dips, and salted nuts
- Limit the amount of canned foods you eat. Choose products labelled 'low sodium'. Foods labelled 'lower', 'less' or 'reduced in salt or sodium' may still be high in sodium (including soups and meats).
- Eat out less often.
  - Ask restaurants to provide information on low sodium choices.
  - Restaurant meals and fast foods are always higher in salt than home cooked low sodium meals.
  - For more info, please refer to *Low Sodium (Salt) Eating Out* fact sheet at www.healthlinkbc.ca (or click here).

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Can I use Salt Substitutes?

Some salt substitutes use potassium instead of sodium. Check with your doctor or dietitian before using a salt substitute because some people need to limit how much potassium they have each day.

Keep your sodium intake to less than 2000mg each day.

As you gradually reduce the amount of salt you are eating, your taste buds will adjust!

How do I know how much sodium is in food?

Here are some helpful tips when reading the nutrition label:

- Look at the serving size – the amount of sodium listed is per serving (not the whole package).
- Keep track of the total amount of sodium you eat. **Remember:** Your maximum recommended daily amount of sodium is **no more than 2000mg per day from all sources.**
- Keep the sodium content of each meal below 650mg – this helps spread out your sodium intake over the day preventing excessive thirst and/or fluid retention.
- By law, foods labelled 'low sodium' must contain 140mg or less per serving.

Other ingredients high in sodium include: baking soda, brine, monosodium glutamate (MSG), soy sauce, fish sauce, garlic salt, celery salt, or any ingredient with 'sodium' as part of its name.

Nutrition Facts

Serving Size: Per ½ cup (125ml)

Amount	% Daily Value
Calories 140	
Total Fat 0.5g	1%
Saturated Fat 0.2g + Trans Fat 0g	1%
Cholesterol 0mg	0%
Sodium 390mg	16%
Total Carbohydrate 28g	9%
Dietary Fibre 5g	20%
Sugars 9g	
Protein 7g	

Vitamin A	2%	Vitamin C	0%
Calcium	8%	Iron	15%

Look what happens to the sodium content of foods when they are processed

Unprocessed	Processed
Cucumber 7 slices = **2mg**	Dill pickle 1 medium = **569mg**
Chicken Breast 3oz = **74mg**	Chicken Pie 1 serving frozen = **889mg**
Tomato 1 small = **14mg**	Tomato Soup 1 cup = **960mg**
Pork Tenderloin 3 oz = **58mg**	Ham 3oz = **1095mg**

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Daily Weight Information

Patient Name: _____ Heart Function Clinic or Physician's office: _____

Health Care Provider: _____ Contact phone number: _____

Check Your Weight Every Day

Why:

- Checking your weight every day lets you know if your body is retaining fluid.
- Excess fluid build up in your body makes your heart work harder.
- When you report weight gain early to your health care provider, they can help you prevent your heart failure from getting worse. This can help prevent a hospital admission.

If your weight increases by:

- More than 2 kg (4 lb) in two days, or
- More than 2.5 kg (5 lb) in 1 week

You are retaining fluid.
You should call your health care provider.

For further directions, please refer to 'Heart Failure Zones' information sheet.

When:

- Same time every day
- Preferably before breakfast

How:

- After you have emptied your bladder (gone 'pee')
- Wear the same amount of clothing

Record your weight in the attached calendar.

(**or** You may prefer to use your own method such as a notebook, a computer.)
Remember to bring your record to your doctor or clinic appointment.

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Your 'Dry Weight' (when you don't have excess fluid in your body): _____

Write down your weight each day compare today's weight to yesterdays weight.
If your weight increases by:

- More than 2 kg (4 lb) in two days, or
- More than 2.5 kg (5 lb) in 1 week

You are retaining fluid.
You should call your health care provider.

Month _____

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday

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Limiting Fluid When You Have Heart Failure

What is a fluid?

Any food or drink that is liquid at room temperature. This includes water, ice, milk, juices, soft drinks, hot drinks, alcohol, soups, gelatin desserts, ice cream, popsicles, and liquid nutrition supplements (such as Ensure or Boost).

Why do you have to limit fluid?

When you have heart failure, fluid can build up causing swelling in your feet, legs or belly making your heart work harder. Fluid can also build up in your lungs, which may cause you to have trouble breathing.

How much fluid can you have in a day?

You should have **no more than 1.5 to 2 litres of fluid in a day**. You may find you are thirsty to begin with. As you gradually reduce your fluid intake, your body will adjust!

Guide to Fluid Measures

2 tablespoons	=	30 ml	=	1 ounce
1 glass	=	250 ml	=	8 ounce
1 pint	=	500ml	=	16 ounce
1 litre or 1 quart	=	1000 ml	=	32 ounce
2 litres	=	2000 ml	=	64 ounce

Total amount of fluid per day
1.5-2 litres = 48-64 ounces = 6-8 glasses

How do you know when you have too much fluid?

To keep track of whether your body is holding on to too much fluid, weigh yourself daily.

Here is how to weigh yourself:

- Weigh yourself at the same time every day. The best time is first thing in the morning.
- Weigh yourself after emptying your bladder (gone pee).
- Wear the same amount of clothing each time.

You are holding on to too much fluid when:

- Your weight increases by more than 2 kg or 4 lb in two days.

or

- Your weight increases by more than 2.5 kg or 5 lb in a week.

Contact your health care provider right away if you are holding too much fluid.

Tips for reducing your fluid intake

- Use smaller cups and glasses.
- Measure the amount of fluid your mugs and glasses hold. They may measure more than 250 ml or 8 ounces!
- Sip your fluids slowly.
- Write down the amount you drink each day until limiting your fluid becomes a habit.

(More tips on page 2.)

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More tips for reducing your fluid intake

- Sip your fluids throughout the day. Keeping track of fluids is the only way to learn how to make the 1.5 to 2 litres of fluid last you through the day.
- You may find it easier to use a reusable water bottle. Measure how much the bottle holds so you know exactly how much water you are drinking.

- Drain the fluid from canned fruit.
- Be aware of foods with high water content like watermelon, yogurt, and pudding.
- If you can, swallow your pills with soft food like yogurt or porridge.
- Limit the amount of sodium you eat to 2000mg or less each day. Salt will make you thirsty. For more information, refer to the handout *Limiting salt (sodium) when you have heart failure*.

- Try not to eat sweet foods. They can make you thirsty. If you have diabetes, controlling your blood sugar also helps control your thirst.
- Try not to drink alcohol. Alcohol dehydrates your body and makes you thirsty.

Tips to deal with thirst

- Rinse your mouth with water often, but do not swallow.
- Brush your teeth often.
- Use a mouth wash. However, do not use a mouth wash that contains alcohol. They tend to dry out your mouth.
- Snack on a small piece of cold or frozen fruit such as a frozen grape or cold orange slice. Try cold crisp vegetables too.
- Chew sugar-free gum.
- Suck on a lemon wedge, lemon candy, or sour candy.
- Use lip balm to keep your lips from drying out.
- Don't overheat your home. Consider using a humidifier to increase the moisture in the air.
- Ask your pharmacist about gels or sprays that can add moisture to your mouth.

For more tips and resources for limiting fluid, call HealthLink BC (dial 8-1-1) to speak to a health care professional. You can also refer to www.healthlinkbc.ca (or click here).

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Why People with Heart Failure Should Keep 'Active'

What does it mean to be 'active'?

Activity and exercise - People often use these two terms to mean the same thing. All physical activities and exercise do involve increasing the heart rate and strengthening muscles.

There is, however, a small difference in their meanings. Physical activity is when you are using energy to move your body to get from place to place. Exercise is a type of physical activity. The difference is - exercise is planned. We exercise to improve or maintain fitness or health.

Why activity is important

Keeping active is one of the best ways to keep healthy. Any amount of activity is better than none at all.

Keeping active helps you:

- ✓ Sleep better
- ✓ Feel less tired
- ✓ Feel less breathless
- ✓ Feel more confident and in control

Studies show that daily activity is good for you. It can help you to live better and longer.

Getting started

- Always check with your health care provider first before starting an activity to make sure you find an activity that matches your personal needs and ability.
- Start off slowly and pace yourself.

Is the activity level right for me?

Get to know your body. It is important that you feel comfortable doing the activity.

As long as you can talk without being too short of breath the level of activity is okay.

Balance activity and rest

- Be active at a time when you feel rested, such as first thing in the morning or after nap.
- Choose which activities to do each day.
- Spread your activities throughout your day.

- If you are tired after an activity or the next day, then you have tried to do too much.
- It may take your body a while to find a balance between activity and rest, so don't give up.

Activities most people with heart failure can do

- ✓ Walking
- ✓ Light housework
- ✓ Gardening
- ✓ Light vacuuming
- ✓ Stretching
- ✓ Laundry
- ✓ Grocery shopping

When to stop an activity

Stop the activity if you:

- Cannot carry on a conversation, sing, or whistle without being short of breath.
- Feel weak, tired, or dizzy.
- Feel sick to your stomach (nauseated).
- Feel your heart is pounding or racing.
- Feel your heart beating irregularly and this is new for you.
- Have pain in your chest, neck, jaw, arm, or shoulder.

Stop and rest. Sit in a comfortable chair. Do not go to bed for a nap.

Activity most people with heart failure should not do

- ✗ Activities that involve working above your head such as painting or washing walls, washing windows, vacuuming curtains.
- ✗ Lifting or pushing heavy objects.
- ✗ Straining or holding your breath to do an activity.
- ✗ Sit ups or push ups.
- ✗ Climbing a lot of stairs.
- ✗ Heavy housework or yard work.
- ✗ Going into sauna or hot tub.

Learn more about how important activity is

Review the 'Actionset' called 'Heart Failure: Activity and Exercise' on the HealthLink BC web site.
www.healthlinkbc.ca/kb/content/actionset/aa87369.html

Tips about activity

- ✓ Stick with it, so it becomes a habit.
- ✓ Include a variety of different activities so you do not get bored doing the same thing all the time.
- ✓ Wear loose, comfortable clothing and supportive shoes.
- ✓ Count the fluids you drink during the activity as part of your daily fluid amount.

What if you don't feel confident doing activities and exercises on your own?

There are many community-based programs designed specifically for people with heart disease.

To find a program in your community:

- Talk to your health care provider
- Call HealthLink BC at 8-1-1
- Go to the HealthLink BC website (www.healthlinkbc.ca).
  - Click on the 'Find' button.
  - Type in 'cardiac rehabilitation' in the 'What?' box.
  - Type in your location in the 'Where?' box.
  - Click the 'Go' button.
  - Choose a program.
- Contact the Physical Activity Line (PAL)
  - 1-877-725-1149
  - www.physicalactivityline.com
  - info@physicalactivityline.com

quitnow ca
1-877-455-2233

THE LUNG ASSOCIATION™ British Columbia

BRITISH COLUMBIA The Best Place on Earth | ActNowBC.ca

Fax Referral Form 1-888-857-6555

PROVIDER

Service Provider Name & Title	Today's Date
	Organization
Service Provider Telephone	Fax
❑ Please inform me by fax of my patient's enrolment in this service	Email

Please give patient a copy before faxing to QuitNow By Phone at 1-888-857-6555

PATIENT INFORMATION

PATIENT INITIALS ____ I give permission to my service provider to fax this information to QuitNow By Phone. I understand that a QuitNow By Phone counsellor will call me within the next week. I understand that this is a free service.

PATIENT INITIALS ____ I agree to let QuitNow By Phone send information about my enrolment in the service to my service provider(s) listed above.

PATIENT INITIALS ____ I agree to let QuitNow By Phone leave a message at the phone number(s) listed below.

Patient Name (PLEASE PRINT)		Patient Signature
Date of Birth	Language Preference	Pregnant? ❑ YES ❑ NO Lactating/Nursing? ❑ YES ❑ NO
Patient Telephone		Email
Patient Address		Postal Code

QuitNow By Phone will call you.

Please check the best time(s) for the counsellor to reach you.

DAY	8-10 AM	10AM-NOON	NOON-2PM	2-4 PM	4-6 PM	6-8 PM	AFTER 8PM (SPECIFY TIME)	ALTERNATIVE PHONE NUMBER
Monday								
Tuesday								
Wednesday								
Thursday								
Friday								
Saturday								
Sunday								

If we are unable to reach you after 3 attempts, may we send material to your address? ❑ YES ❑ NO

QuitNow

For QuitNow By Phone use only to fax back to service provider

Counsellor's Initials	Contact Date	❑ Did not wish to enroll	❑ Unable to contact

Stage of readiness: ❑ Pre-contemplation ❑ Contemplation ❑ Preparation ❑ Action ❑ Relapse Prevention

Type of QuitNow By Phone service accepted (check all that apply):
❑ Enrolment in QuitNow By Phone ❑ Referral to pharmacy or physician for pharmcotherapy ❑ Referral to local community service ❑ Self-help material(s)

Set quit date? ❑ YES Specify quit date: ❑ NO QUIT DATE SET

To order more fax referral forms go to www.quitnow.ca

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Addressograph

SNAP SHOT OF YOUR VISIT

Date: _____

Blood work to be done

_____

_____

_____

_____

Medication changes

_____

_____

_____

_____

_____

_____

_____

Other tests

_____

_____

_____

_____

Reminders

_____

_____

_____

_____

Next Visit _____

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HF Pharmaceutical Management

Stop Hydrochlorothiazide & NSAIDs (not ASA)

Stop Diltiazem & Cardizem Reassess other CCB

ACE Inhibitor + Furosemide 40mg

Wet or Dry?

Wet

Dry

Start Beta blocker Carvedilol

Pre-existing Renal Disease?

COPD ?

HTN ?

Watch for these conditions

ACE Tolerated?

No

Yes

Try ARB

Titrate to max tolerated or target dose

Confirm Systolic Dysfunction LVEF < 40%

Treatment if LVEF > 40%

Start ACE 2 wks after optimal Beta Blocker

Creatinine Rising >30%

Stop ACE, ARB

\+ Start Beta Blocker: Carvedilol

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If now Dry

Consider Hydralazine + Isosorbide Dinitrate

Reassess NYHA I or II

If Dry

NYHA Func Class getting worse (III or IV)

No

Yes

Refer Cardiologist, Internist or HF Clinic

With each medication dosage change and prior to each office visit -> Continue to monitor symptoms, lytes, and educate regarding diet, medication compliance, daily wts, avoiding NSAIDs, etc

Assess need for diuretic each visit – taper whenever symptoms suggest NYHA Classification at each visit

Consider starting Digoxin 0.0625-0.125 mg once per day (target < 1.0 ng/mL)

OR depending on renal function can add/start Spironolactone 25 mg daily and titrate

Eligibility for ICD/CRT

End of Life Care

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Management of patient with Preserved Left Ventricular Ejection Fraction (EF > 40%)

Diuretic Titration

At present there are no medication therapies with mortality benefit in patients who have heart failure with preserved ejection fraction (EF >40%)

1. ***ACE Inhibitors*** (Evidence: PEP CHF trial, 2006)
    a. **Perindopril**: has been shown to decrease hospitalization in older patients
        i. Consider its usage if hypertension is present

2. ***ARB*** (Evidence: CHARM preserved trail, 2003 & LIFE trail, 2002)
    a. **Candesartan**: has a moderate impact in preventing hospital admission for HF patients with a LVEF > 40%.
    b. **Losartan**: has been shown to decrease L+ ventricular hypertrophy (LVH)
        i. Consider in patients with hypertension and LVH

3. ***Beta Blockers*** (Evidence: no clinical trial)
    a. Physiologically beta blockers may be advantageous given that they decrease heart rate and improve diastolic filling time
        i. Consider BB in patients with atrial fibrillation or increased heart rate in the absence of conduction system disease (eg. 1st degree block, 2nd degree, 3rd degree)

To Pharmeceutical Meds

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Commonly used Diuretics

	Starting dose	Maximum total daily dose
Furosemide	20 mg– 40 mg daily or BID	600 mg
Bumetanide	0.5mg – 1 mg daily or BID	10 mg
Ethacrynic acid	25mg –50 mg daily or BID	400 mg
Metolazone	2.5 mg once daily	20 mg

Beta blocker with Evidence in Heart Failure Populations

Drug	Starting Dose	Maximum total daily Dose
Carvedilol *(Special Authority required: call the below # 1-250-952-1216 (direct) or 1-877-657-1188)*	3.125mg BID	< 85 kg- 25mg BID >85 kg- 50mg BID
Metoprolol	12.5mg BID	100mg BID (when reached, consider change to SR)
Bisoprolol	1.25mg once daily	10mg OD at hs

Commonly used Angiotensin Converting Enzyme Inhibitor (ACE-I)

Drug	Starting Dose	Target Dose
Captopril (Capoten)	6.25 mg-12.5 mg TID	25-50 mg TID
Enalapril (Vasotec)	1.25 mg-2.5 mg BID	10 mg BID
Perindopril (Coversyl)	2 mg once daily	4-8 mg once daily (24 hr dosing)
Ramipril (Altace)	1.25-2.5 mg BID	5 mg BID 10 mg once daily
Trandolapril (Mavik)	1 mg once daily	4 mg once daily

Commonly used ARBS (if unable to tolerate ACE's)

(Special Authority required: call the below # 1-250-952-1216 (direct) or 1-877-657-1188)	Starting doses	Target dose
Candesartan	4 mg once daily	32 mg once daily
Valsartan	40 mg BID	160 mg BID

Commonly used Aldosterone Antagonists

	Starting dose	Maximum total daily dose
Spironolactone	12.5mg-25mg	25 daily
Eplerenone (not covered by MSP)	25 mg daily	50 mg daily Within 4 weeks of starting the dose

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Hemodynamic Subtypes of Heart Failure

Warm and dry

Adequate perfusion, no congestion
- Normal pulmonary capillary wedge pressure (PCWP)
- Normal cardiac index (CI)
- No signs or symptoms

Management
- *This is the target profile*
- *Emphasis on titration of chronic therapy to optimal doses*

Warm and wet (common)

Normal perfusion with congestion
- Elevated PCWP
- Normal CI
- Signs and symptoms:
  - dyspnea
  - leg swelling

Management
- *Emphasis on diuretic therapy with addition of vasodilators*
- *Significant diuresis may be required*
- *B-blockers can be continued BUT NOT initiated*

Cold and dry

Poor perfusion, without congestion
- Low or normal PCWP
- Decreased CI
- Signs and symptoms:
  - adventitious breath sounds,
  - leg swelling, ascites,
  - decreased peripheral
  - perfusion

Management
- *2 Distinguish from hypovolemic shock.*
- *Emphasis on inotropic and mechanical support*
- *Hemodynamic monitoring required*

Cautious filling if CXR clear

Cold and wet

Poor perfusion with congestion
- Elevated PCWP
- Decreased CI
- Signs and symptoms:
  - Altered mental status, decreased
  - oxygen saturation,
  - reduced urine output
  - possibly other indicators of cardiogenic shock

Management
- *Emphasis on vasodilator therapy and diuresis*
- *B-blockers and ACE inhibitors may need temporary withdrawal*

Adapted from: Nohria A et al. Medical Management of Advanced Heart Failure. JAMA 2002: 287; 628–40.

Commonly used Diuretics

	Starting dose	Maximum total daily dose
Furosemide	20 mg– 40 mg daily or BID	600 mg
Bumetanide	0.5mg – 1 mg daily or BID	10 mg
Ethacrynic acid	25mg –50 mg daily or BID	400 mg
Metolazone	2.5 mg once daily	20 mg

If pre-existing renal dysfunction consider starting with higher dose of diuretic

Diuretic Up Titration & Intervention Guidelines

Perform telephone or in clinic assessment of fluid status 3-4 days after medication changes, and check blood work within 7-10 days after medication changes

Signs and Symptoms Assessment	Dose/Drug Changes	Actions	Comments
Step 1 Weight gain > 5 lbs (2.5 kg) in one week or 4 lbs (2kg) two days Also assess: • Auscultate lungs • Leg edema • Abdominal girth increase • VS (P,B/P, RR, O2 sat)	Consider doubling the patient's *current* dose for 3 consecutive days or until cumulative weight loss of 5-10 lbs Doses > 80 mg should be split into twice daily dosing	• Order : Electrolytes, BUN, SCr, eGFR within 7-10 days after change in diuretic dose • Instruct patient to call clinic if desired weight loss is achieved prior to having blood work done	Review fluid intake, should be 6-8 cups (48-64 ounces) per day Review Na intake, should be less than 2000mg per day
Step 2 After 3 days reassess fluid status and symptoms If still > 5 lbs (2.5kg) above target weight If patient at goal weight refer to Furosemide down titration guide	Continue to increase Furosemide dose by 50 – 100% (Watch renal function*)	• Evaluate electrolytes BUN, SCr, eGFR as ordered in Step 1 Instruct patient to call clinic if desired weight loss is achieved prior to having blood work done • Reorder: Electrolytes, BUN, SCr, eGFR within 7-10 days after change in diuretic dose • Repeat Step 2 until patient at goal weight.	*If volume overload persists despite optimal medical therapy proceed to Step 3.* May need to consider down titration if : • symptomatic hypotension • If potassium >5 mmol/L • If SCr > 30% from baseline
Step 3 Assess fluid status and symptoms If volume overload persists despite optimal medication therapy	Add Metolazone 2.5- 5 mg 30 min prior to morning Furosemide dose. Metolazone: Start with daily dosing for 3 days or 3 times per week dosing (Mon, Wed, Fri) OR Change to Bumetanide as oral absorption may be improved	Evaluate electrolytes BUN, SCr, eGFR Electrolytes, BUN, SCr, eGFR within 7-10 days after change in diuretic dose (as per patient specific Physician/NP standing order If volume overload persists despite optimal medical therapy proceed to step 4	May need to consider down titration if : • symptomatic hypotension • If potassium >5 mmol/L • If SCr > 30% from baseline Instruct patient to call if desired weight loss is achieved prior to having blood work done

Continued

Step 4 **Assess fluid status and symptoms**		**If volume overload persists despite optimal oral therapy consider:** • **Refer to Internist/Cardiologist/HFC (may need intravenous Furosemide)** • **Call RACE line for cardiologist support** (604 696-2131 or toll free 1 877 696-2131)	**May need to consider down titration if :** • **If symptomatic hypotension** • **If potassium >5 mmol/L** • **If SCr > 30% from baseline** **Evaluate electrolytes BUN, SCr, eGFR**

Diuretic Down–Titration Guideline

Indications	Signs and Symptom Assessment	Drug/Dose Changes	Actions	Comments
1. Volume Stable (Euvolemic)	**Goal weight is met** **Resolution of HF symptoms**	**Decrease Furosemide by 50 %**	**After 3 days reassess fluid status** **Instruct patient to call clinic if weight loss is greater than 10 lbs in 3 days** **Reassess: Electrolytes, BUN, SCr, eGFR within 7-10 days after change in diuretic dose**	**Watch for S & S of volume depletion** **Signs** • **Hypotension** • **Tachycardia** • **Tachycardia with exercise** **Symptoms** • **Dizziness** • **Lightheadedness** • **Syncope** • **Very dry mouth** • **Constant thirst**
2. Volume Depletion (Dry) (hypovolemic)	**Weight is less than goal weight** **Signs of volume depletion** • **Hypotension** • **Tachycardia** • **Tachycardia with exercise** **Symptoms of volume depletion** • **Lightheadedness** • **Dizziness** • **Syncope** • **Very dry mouth** • **Constant thirst**	**Hold next dose of Furosemide then reduce maintenance dose by 50%**	**After 3 days reassess fluid status** **Reassess: Electrolytes, BUN, SCr, eGFR within 7-10 days after change in diuretic dose**	**If persistent signs and symptoms of hypovolemia** **Reassess fluid intake** **May consult:** • **Cardiologist, Internist or Nephrologist at your site**

Continued

3. Worsening Renal Function	**Increase in serum creatinine by >30% from baseline** **Serum potassium >5 mmol/L** **If worsening renal function despite reduction in maintenance Furosemide consider:** • **Decrease or stop spironolactone** **Or** **Metolazone** • **ensure no other nephrotoxic agents** • **Decrease ACE inhibitor/ARB dose**	**If patient euvolemic reduce maintenance Furosemide dose by 50 %**	**After 3 days reassess fluid status, S & S of hypovolemia** **Electrolytes, BUN, SCr, eGFR within 7-10 days after change in diuretic dose**	**Consider consulting:** • **Site cardiologist, internist or Nephrology**

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Commonly used Diuretics

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Step 2 After 3 days reassess fluid status and symptoms If still > 5 lbs (2.5kg) above target weight If patient at goal weight refer to Furosemide down titration guide	Continue to increase Furosemide dose by 50 – 100% (Watch renal function*)	• Evaluate electrolytes BUN, SCr, eGFR as ordered in Step 1 Instruct patient to call clinic if desired weight loss is achieved prior to having blood work done • Reorder: Electrolytes, BUN, SCr, eGFR within 7-10 days after change in diuretic dose • Repeat Step 2 until patient at goal weight.	*If volume overload persists despite optimal medical therapy proceed to Step 3.* May need to consider down titration if : • symptomatic hypotension • If potassium >5 mmol/L • If SCr > 30% from baseline
Step 3 Assess fluid status and symptoms If volume overload persists despite optimal medication therapy	Add Metolazone 2.5- 5 mg 30 min prior to morning Furosemide dose. Metolazone: Start with daily dosing for 3 days or 3 times per week dosing (Mon, Wed, Fri) OR Change to Bumetanide as oral absorption may be improved	Evaluate electrolytes BUN, SCr, eGFR Electrolytes, BUN, SCr, eGFR within 7-10 days after change in diuretic dose (as per patient specific Physician/NP standing order If volume overload persists despite optimal medical therapy proceed to step 4	May need to consider down titration if : • symptomatic hypotension • If potassium >5 mmol/L • If SCr > 30% from baseline Instruct patient to call if desired weight loss is achieved prior to having blood work done

Continued

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2. Volume Depletion (Dry) (hypovolemic)	**Weight is less than goal weight** **Signs of volume depletion** • **Hypotension** • **Tachycardia** • **Tachycardia with exercise** **Symptoms of volume depletion** • **Lightheadedness** • **Dizziness** • **Syncope** • **Very dry mouth** • **Constant thirst**	**Hold next dose of Furosemide then reduce maintenance dose by 50%**	**After 3 days reassess fluid status** **Reassess: Electrolytes, BUN, SCr, eGFR within 7-10 days after change in diuretic dose**	**If persistent signs and symptoms of hypovolemia** **Reassess fluid intake** **May consult:** • **Internist, Nephrologist or Cardiologist at your site**

Continued

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Hypertension Considerations

- Treatment with non- dihydropyridine Calcium channel blockers (eg. Verapamil, Diltiazem) are contraindicated in patients with reduced LVEF (LVEF < 40%) and must be stopped.

- Nifedipine, Amlodipine and Felodipine are useful in HF population but may complicate assessment of edema

- ***Carvedilol*** may be the most effective beta blocker when HF and hypertension are together.

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COPD Considerations

- **Bisoprolol may be the most preferred Beta Blocker when Heart Failure and COPD co-exist because of its β1 selective properties.**
- **Minimize prn Ventolin as it causes tachycardia.**
- **Oral Steroids can cause fluid retention and may exacerbate heart failure**

Angiotensin Converting Enzyme Inhibitor (ACE-I) with evidence in Heart Failure Populations

Drug	Starting Dose	Target Dose
Captopril (Capoten)	6.25 mg-12.5 mg TID	25-50 mg TID
Enalapril (Vasotec)	1.25 mg-2.5 mg BID	10 mg BID
Perindopril (Coversyl)	2 mg once daily	4-8 mg once daily (24 hr dosing)
Ramipril (Altace)	1.25-2.5 mg BID	5 mg BID 10 mg once daily
Trandolapril (Mavik)	1 mg once daily	4 mg once daily

ARBS (if unable to tolerate ACE's) with evidence in Heart Failure Populations

(Special Authority required: call the below # 1-250-952-1216 (direct) or 1-877-657-1188)	Starting doses	Target dose
Candesartan (Atacand)	4 mg once daily	32 mg once daily
Valsartan (Diovan)	40 mg BID	160 mg BID

Angiotensin Converting Enzyme Inhibitor (ACE-I) & ARB Up-Titration Guideline

Signs and Symptoms Assessment	Dose/Drug Changes	Actions	Comments
Step 1	Begin with recommended starting dose	Baseline assessment • Vital signs • Renal Function o Creatinine o BUN o eGFR	Reassess blood work every 2-4 weeks especially if you are titrating medications ▪ Electrolytes ▪ Renal function
Step 2	Increase by 50-100% every 2-4 wks	For every medication and dosage change Reassess: • Vital signs B/P • , Renal Function o Creatinine o BUN o eGFR	Remember: Patients who are clinically "dry" may be more prone to renal failure when ACE/ARB dose is up-titrated Closer monitoring with CKD and/or diabetes
Step 3	Increase by 50-100% every 2-4 wks	For every medication and dosage change Reassess: • Vital signs B/P • , Renal Function o Creatinine o BUN o eGFR	Closer monitoring with CKD and/or diabetes

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ACE-I/ ARB Symptom Management Guideline

Considerations:

- Most of the side effects and rise in creatinine are transient and resolve within 2-4 weeks but can return with each up-titration of ACE I medication
- Patients often need support to continue medications through this phase.
- Try to titrate to maximum dose tolerated.
  - Typical patients difficult to up titrate include those with:
    - Chronic Kidney disease and Diabetes. They require very close monitoring of renal function

	Options for Dose/Drug Changes	Actions	Comments
Symptomatic hypotension	Step 1: Reduce diuretic by 50% (per diuretic guideline) if pt euvolemic Step 2: Consider alternate dosing schedules to minimize symptoms (eg. morning and bedtime) Step 3: Decrease ACE-I by 50% Step 4: Decrease BB per guidelines	For every medication change and dosage change Reassess: • Vital signs • Electrolytes • Renal function • Assess postural vitals	Taking other vasodilator medications at alternate times (e.g. BB at noon) Taking ACE I at night (if once daily) Suggest reduction in vasodilators that are not associated with mortality benefit in patients with HF (e.g. CCB) Suggest to patient to rise slowly with position changes
Cough	Step 1: Ensure etiology is not Pulmonary edema Step 2: Reduce ACE-I by 50% OR Consider switching to ARB	For every medication change and dosage change Reassess: • Vital signs • Electrolytes • Renal function	

Continued

	Step 3: **After one week, Consider D/C ACE-I Must Switch to ARB**		
Nausea /vomiting	**Step 1:** **Take with food** **Step 2:** **Take at night** **Step 3:** **D/C if N/V persists And switch to ARB**	**Assess for:** **If N/V persists need to assess:** ▪ **B/P, HR,RR** ▪ **Electrolytes** ▪ **Hydration**	
Rise in creatinine	**Step 1:** **Consider reducing ACE-I by 50%** **Step 2: After one week** **If Cr remains increased consider reducing ACE-I by 50%** **Step 3:** **If Cr remains elevated ≥200 umol/L consider D/C ACE-I and start Nitrate/Hydralazine**	**Reduce until stable renal function**	**Monitor creatinine, allow a 30% increase in baseline** **If diabetic, may have to stop metformin once Cr > 200 umol/** **Normal Creatinine levels** **Avoid NSAIDS**
Hyperkalemia (less than or equal to 5.5)	**Step 1:** **Reduce or D/C spirolactone** **Consider reducing ACE-I by 50%** **Step2: after 1 week** **If K + remains elevated reduce by another 50%** **Step 3:** **D/C ACE**	**Assess if patient is taking Na substitute as they can be high in K+** **Assess if pt is eating food high in K+** **Asses if patient is taking NSAID's and if they are D/C** **If K+ > 6.0 mmol/L then direct to acute care facility.**	**Normal K+** **3.5-5 mmol/L** **Assess for S& S of Hyperkalemia** **Caution in clinical conditions which could lead to dehydration (eg. concurrent sepsis or infection)**

BC's HEART FAILURE NETWORK
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ARBS (if unable to tolerate ACE's) with evidence in Heart Failure Populations

(Special Authority required: call the below # 1-250-952-1216 (direct) or 1-877-657-1188)	Starting doses	Target dose
Candesartan (Atacand)	4 mg once daily	32 mg once daily
Valsartan (Diovan)	40 mg BID	160 mg BID

ARB Up-Titration Guideline

Signs and Symptoms Assessment	Dose/Drug Changes	Actions	Comments
Step 1	Begin with recommended starting dose	Baseline assessment • Vital signs • Renal Function o Creatinine o BUN o eGFR	Reassess blood work every 2-4 weeks especially if you are titrating medications ▪ Electrolytes ▪ Renal function
Step 2	Increase by 50-100% every 2-4 wks.	For every medication and dosage change Reassess: • Vital signs B/P • , Renal Function o Creatinine o BUN o eGFR	Remember: Patients who are clinically "dry" may be more prone to renal failure when ACE/ARB dose is up-titrated Closer monitoring with CKD and/or diabetes
Step 3	Increase by 50-100% every 2-4 wks.	For every medication and dosage change Reassess: • Vital signs B/P • , Renal Function o Creatinine o BUN o eGFR	Closer monitoring with CKD and/or diabetes

ARB Symptom Management Guideline

Considerations:

- Most of the side effects and rise in creatinine are transient and resolve within 2-4 weeks but can return with each up-titration of ACE I medication
- Patients often need support to continue medications through this phase.
- Try to titrate to maximum dose tolerated.
  - Typical patients difficult to up titrate include those with:
    - Chronic Kidney disease and Diabetes. They require very close monitoring of renal function

Continued

	Options for Dose/Drug Changes	Actions	Comments
Symptomatic hypotension	Step 1: Reduce diuretic by 50% (per diuretic guideline) if pt. euvolemic Step 2: Decrease ARB by 50% Step 3: Consider alternate dosing schedules to minimize symptoms (eg. Morning and bedtime) Step 4 Decrease BB per guidelines :	For every medication change and dosage change Reassess: • Vital signs • Electrolytes • Renal function	Taking other vasodilator medications at alternate times (e.g. BB at noon) Taking ACE I at night (if once daily) Suggest reduction in vasodilators that are not associated with mortality benefit in patients with HF (e.g. CCB) Suggest to patient to rise slowly with position changes
Cough	Step 1: Ensure etiology is not Pulmonary edema Step 2: Reduce ACE-I by 50% OR Consider switching to ARB Step 3: After one week, Consider D/C ACE-I Must Switch to ARB	For every medication change and dosage change Reassess: • Vital signs • Electrolytes • Renal function	
Nausea /vomiting	Step 1: Take with food Step 2: Take at night Step 3: D/C if N/V persists And switch to ARB	Assess for: If N/V persists need to assess: ▪ B/P, HR,RR ▪ Electrolytes ▪ Hydration	

Continued

Rise in creatinine	Step 1: Consider reducing ACE-I by 50%	Reduce until stable renal function	Monitor creatinine, allow a 30% increase in baseline If diabetic, may have to stop metformin once Cr > 200 umol/ Normal Creatinine levels
	Step 2: After one week If Cr remains increased consider reducing ACE-I by 50%		
	Step 3: If Cr remains elevated ≥200 umol/L consider D/C ACE-I and start Nitrate/Hydralazine		
Hyperkalemia	Step 1: D/C spirolactone Consider reducing ACE-I by 50%	Assess if patient is taking Na substitute as they can be high in K+ Assess if pt is eating food high in K+ Asses if patient is taking NSAID's and if they are D/C If K+ > 6.0 mmol/L then direct to acute care facility.	Normal K+ 3.5-5 mmol/L Assess for S& S of Hyperkalemia Caution in clinical conditions which could lead to dehydration (eg. intercurrent sepsis or infection)
	Step2: after 1 week If K + remains elevated reduce by another 50%		
	Step 3: D/C ACE		

Commonly used Vasodialatators

	Starting dose	Maximum total daily dose
Hydralazine	37.5 mg TID or QID	75 mg TID or QID
Isorbide dinitrate OR Nitro patch	20 mg TID 0.2mg/hr – 0.4mg/hr for 12hrs/per day	40 mg TID 0.6mg/hr-0.08mg/hr for 12 hrs per day
A combination of Hydralazine and Isorbide dinitrate is recommended: • As part of standard therapy in addition to beta blockers and ACE inhibitors for African Americans with HF and reduced LVEF NYHA III or IV HF • For patients who are unable to tolerate ACE/ARB.		
Has no effect on renal failure Does not cause Hyperkalemia	Hydralazine and Nitrates should be used concurrently Should not be used in patients on pulmonary vasodilators such as sildenafil or tadalafil	*Nitrates* require a drug free period to decrease tolerance (eg. Remove nitro patch for 12 hrs, or space Isorbide so there is a 12 hr nitrate free period)

Vasodialator Up Titration & Intervention Guidelines

Perform telephone or in clinic assessment 3-4 days after medication changes, may need to check blood work within 7-10 days depending on what other medications your patient is taking

S & S Assessment	Dose/Drug Changes	Actions	Comments
Step 1 Unable to tolerate ACE/ARB	Commence vasodilator therapy per recommended starting does (see above table)	Assess vital signs, watch for Signs • Hypotension • Tachycardia Symptoms • Dizziness • Lightheadedness • Syncope/Presyncope • Headache Continue to also assess HF S & S: • Auscultate lungs • Leg edema • Abdominal girth increase • Weight watch for gain of > 5 lbs (2.5 kg) in one week or 4 lbs (2kg) two days	Continue with patient self management education: • Review fluid intake, should be 6-8 cups (48-64 ounces) per day • Review Na intake, should be less than 2000mg per day
Step 2 After 7-10 days If tolerating starting dosage, continue with up titration to obtain target dose	Continue to increase dose by 50 – 100%	Assess vital signs, watch for Signs • Hypotension • Tachycardia Symptoms • Dizziness • Lightheadedness • Syncope/Presyncope • Headache	May need to consider down titration if : • symptomatic hypotension • headache Continue to also assess HF S & S: • Auscultate lungs • Leg edema • Abdominal girth increase Weight watch for gain of > 5 lbs (2.5 kg) in one week or 4 lbs (2kg) two days

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Beta blocker with Evidence in Heart Failure Populations

Drug	Starting Dose	Maximum total daily Dose
Carvedilol *(Special Authority required: call the below # 1-250-952-1216 (direct) or 1-877-657-1188)*	3.125mg BID	< 85 kg- 25mg BID >85 kg- 50mg BID
Metoprolol	12.5mg BID	100mg BID (when reached, consider change to SR)
Bisoprolol	1.25mg once daily	10mg OD at hs

Beta Blocker Up titration & Intervention Guidelines

Prior to initiation of Beta Blocker:

- Ensure volume status is Evolemic for 1-2 weeks
- Assess for contraindications for BB usage
  - Symptomatic Bradycardia (<60 bpm,
  - symptomatic hypotension, (systolic <85 mmHg)
  - heart block
  - reactive airway disease

Signs and Symptoms Assessment	Dose/Drug Changes	Actions	Comments
Step 1	Begin with recommended starting dose	Baseline assessment • VS/ baseline weight • Fluid assessment • Fatigue • Hx of Asthma • ECG	• BB are best tolerated when patients are euvolemic • Fatigue may worsen slightly, lasting 2 weeks for every up titration
Step 2	Increase dose by 50-100% every 2-4 weeks	Reassess: • Symptoms and vital signs	Watch for S& S • Hypotension • Bradycardia • Volume overload • Intolerable fatigue • Heart block • SOB
Step 3 Continue to up titrate until target dose is reached	Increase dose by 50-100% every 2-4 weeks	Reassess: • Symptoms and vital signs	Watch for S& S • Hypotension • Bradycardia • Volume overload • Fatigue • Heart block • SOB

Continued

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Beta Blocker Symptom Management Guideline

	Options for Dose/Drug Changes	Actions	Comments
Symptomatic hypotension	Step 1: Start with If evolemic decreasing diuretic by 50% Step 2: May need to space the timing of other medication Step 3 If S& S persist May need to reduce ACE, ARB 50% Step 4: If S& S persist May consider reducing BB by 50%	For every medication and dosage change Reassess: • Symptoms and vital signs	Give each down titration one week to see if symptoms resolve
Symptomatic Bradycardia	Step 1: Consider reducing or D/C other heart rate lower medications (eg, digoxin, antiarrhythmics, CCB) Step 2: If S&S persist consider reducing BB by 50% Step 3: If S& S persist consider D/C BB and/or reducing it	For every medication and dosage change Reassess: Symptoms and vital signs • ECG	Consider holter monitor for more accurate assessment of 24 hr HR control Give each down titration one week to see if symptoms resolve If profound symptomatic Bradycardia EHS transfer to acute care facility

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Heart Failure Clinic Referral Form

Indication for referral

RACE Information

To a Cardiologist/Internist:

- When healthcare provider needs further direction on how to medically manage the patient
- Advanced functional symptoms or signs of heart failure despite maximum medication therapy

To a Heart Function Clinic:

- They have had recent or repeated admissions to hospital
- Assessment of ASYMPTOMATIC left ventricular dysfunction
- Chronic heart failure management including lifestyle management skills and consideration for advanced therapies including defibrillator/cardiac resynchronization therapy
- Heart Failure with persistent symptoms but not decompensated,
- New diagnosis of heart failure and STABLE
- New diagnosis of heart failure and UNSTABLE
    - Post MI heart failure; hospitalization HF; worsening HF

- Patients experience long term benefits associated with referral to a *Heart Function Clinic's* as they offer inter-professional collaborative HF care, evidenced based medical therapy, ongoing close monitoring and individualized interventions tailored to the specific patients needs.
- Patients with NYHA I-III should be referred to a cardiac rehabilitation program

Continued

Heart Function Clinic Referral Form

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Health Authority Logo

*** Key Elements***

***Patient**	***Referring Provider**
Name _____	Name _____
Address _____	Phone _____
City_____	Fax # _____
Province_____	MSP # _____
Contact # _____	☐ GP , ☐ NP, ☐ ED ☐ In patient
PHN #_____	☐ ☐ Specialist Specify _____
DOB	

***Reason For Referral**	***Care Management**
☐ Assessment of ASYMPTOMATIC heart failure (HF) ☐ Chronic heart failure management ☐ Heart Failure with symptoms but Not decompensated, ☐ New diagnosis of heart failure and STABLE ☐ New diagnosis of heart failure and UNSTABLE o Post MI heart failure; hospitalization HF; worsening HF	☐ Shared care: (GP and Clinic physician/NP) ☐ HF physician/NP to stabilize and optimize medication therapy ☐ Optimize patient self-management/ education ONLY ☐ Advice only on care management **Additional health care professional who needs to be CC'd** Name _____ Address _____ Fax # _____

***Specific question referring provider would like answered?**

***Primary Language Spoken** **If not English please ensure there is someone with the patient who can speak English**

*** Please include/or attach a complete list of all medications your patient is taking**

***Co-morbidities:**

☐ Diabetes, ☐ Renal ☐ Hypertension ☐ Angina ☐ Thyroid Disease ☐ Respiratory

☐ Arrhythmias ☐ CABG ☐ TIA/CVA ☐ Arthritis ☐ Malignancy ☐ Other specify _____

*Please **attach available/relevant cardiac investigation results**

For example: Echo, MIBI, MUGA, ECG, Angiogram, CXR, consultation notes, Blood work (BNP, Lytes, etc.)

***Acknowledgement of Referral (Will be completed by HFC staff)**

☐ Our office will make an appointment with the heart function DR/NP in the next _____Week (s)
☐ Your patient is booked to be seen by the heart function ***Nurse*** on _____
☐ We require additional information _____
- o Before we can book the patient
- o Prior to the patient's appointment

***Referring Physician/ NP** _____ ***Date:** _____
# of pages faxed_____

***Fax to: ADD Health Authority Fax #**

To expedite care PLEASE ensure ALL aspects of this form are completed

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Digoxin

Starting dose	Maximum total daily dose	Monitor Digoxin levels Normal ranges= 0.65-1.0 nmol/L
0.0625mg PO daily	0.25mg PO daily	• 8-12 hrs. post starting of dose • Then every 5-7 days after dose adjusted or when there is an abrupt change in renal function

Has not shown any benefit on mortality and morbidity but has shown benefit on Quality of Life

Can be used with a patient who has:

- **Been diagnosed NYHA Class I-III**
- **An Ejection Fraction (EF) of <40% (Systolic Heart failure) or in patients with diastolic heart failure and concomitant atrial arrhythmias (e.g. atrial fibrillation/atrial flutter)**

Use with Caution: in the frail elderly, patients with impaired renal function, patients with low BMI, women, patients with increased K+,

There could be *dangerous interaction* with verapamil and erythromycin

REMBEMBER: Amiodarone increases plasma levels of digoxin so use with caution and monitor digoxin levels more closely

Digoxin is primarily cleared by the kidneys. When someone has impaired renal function, monitor the renal function and potassium levels more closely since kidney dysfunction and low levels of potassium can result in symptoms of digoxin toxicity

***Not recommended* in patient with EF ≥40% (Preserved systolic Heart failure [diastolic heart failure]) and with normal sinus rhythm (NSR)**	**In patients with renal dysfunction it may take 15-20 days to reach therapeutic levels**	***Signs & Symptoms of Digoxin toxicity:*** • **A:V heart blocks** • **Ventricular tachycardia, ventricular fibrillation** • PR interval prolongation • **Amblyopia,** • **Nausea, vomiting, diarrhea,** • **confusion, drowsiness,**

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Aldosterone Antagonists (with evidence in heart failure)

	Starting dose	Maximum total daily dose
Spironolactone	12.5mg-25mg	25 daily
Eplerenone (not covered by MSP)	25 mg daily	50 mg daily Within 4 weeks of starting the dose
Spironolactone may be used in patients with NYHA III-IV heart failure on optimal medical therapy, while Eplerenone has shown benefit in patients with NYHA II symptoms.		
Patients should be on maximum medical therapy including ACE/ARB and Beta Blocker prior to initiation of an aldosterone antagonist.		
Aldosterone Antagonists have the potential to effect kidney function and increase serum Potassium (K+) Gynecomastia is known to occur in up to 5-10 % of males treated with spironolactone. Gynecomastia is decreased with eplerenone		
Aldosterone antagonists are not recommended when creatinine is > 200umol/L, Creatinine clearance <50ml/min; serum potassium is > 6mmol/L,Severe hepatic impairment, potassium supplements or CYP34 inhibitors or in conjunction with other potassium-sparing diuretics		
Once clinically stabilized and on maximum Aldosterone Antagonist therapy assess K+, SCr, and eGFR q 4 weeks until these laboratory values are stable for three months.		

Aldosterone Antagonist Titration & Intervention Guidelines

Perform telephone or in clinic assessment of fluid status 7 days after medication changes, and check blood work within 7 days after medication changes

Signs and Symptoms Assessment	Dose/Drug Changes	Actions	Comments
Step 1 NYHA functional class III-IV symptoms and on maximal tolerated doses of ACE/ARB and BB	See above chart for starting dose	Aldosterone Antagonists have the potential to effect kidney function and increase serum Potassium (K+): BE AWARE OF K+ LEVEL PRIOR TO STARTING THE ALDOSTERONE ANTAGONIST • Order : Electrolytes, BUN, SCr, eGFR within 7 days after change in dose •	Things to review with your patient: • fluid intake, should be 6-8 cups (48-64 ounces) per day • Na intake, should be less than 2000mg per day • Instruct pt to decrease dietary potassium intake • Stop K+ supplements in favor of aldosterone antagonists
Step 2 After 7 days reassess fluid status, K+ and symptoms If wt still > 5 lbs (2.5kg) above target weight and K+ not elevated If patient at goal weight may consider down titration of Aldosterone antagonist	Continue to increase Aldosterone Antagonist to maximum doses based on renal function and K+	Keep a close watch on renal function, SCr, K+ • Evaluate electrolytes BUN, SCr, eGFR • after change in medication dose	May need to consider down titration if : • symptomatic hypotension • If potassium increases 5.5-5.9 mmol/L • If SCr > 30% from baseline

Continued

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	Eplerenone: **If K+ < 5mmol/L increase starting does by 50%** **If K+ 5.0-5.4 maintain starting does** **If K+ 5.5-5.9 decrease dose to:** • **50mg daily to 25mg daily** • **25mg daily to 25mg every 2nd day** • **25mg every 2nd day to HOLD** **If K+ > or equal to 6** • **HOLD dose** **Spironolactone** **If K+ is within normal range increase to** • **25mg daily**		
Step 3 **Assess fluid status, K+ and symptoms** **If volume overload persists despite optimal medication therapy**	**Continue up titration per Step # 2**	• **Evaluate Electrolytes, BUN, SCr, eGFR within 7 days after change in medication dose**	**May need to consider down titration if :** • **symptomatic hypotension** • **If potassium 5.5-5.9 mmol/L** • **If SCr > 30% from baseline** **Instruct patient to call if desired weight loss is achieved prior to having blood work done** **IF S&S of heart failure persist AFTER MAXIMUM MEDICATION THERAPY YOU MAY NEED TO CONSULT AN INTERNIST OR CARDIOLOGIST**

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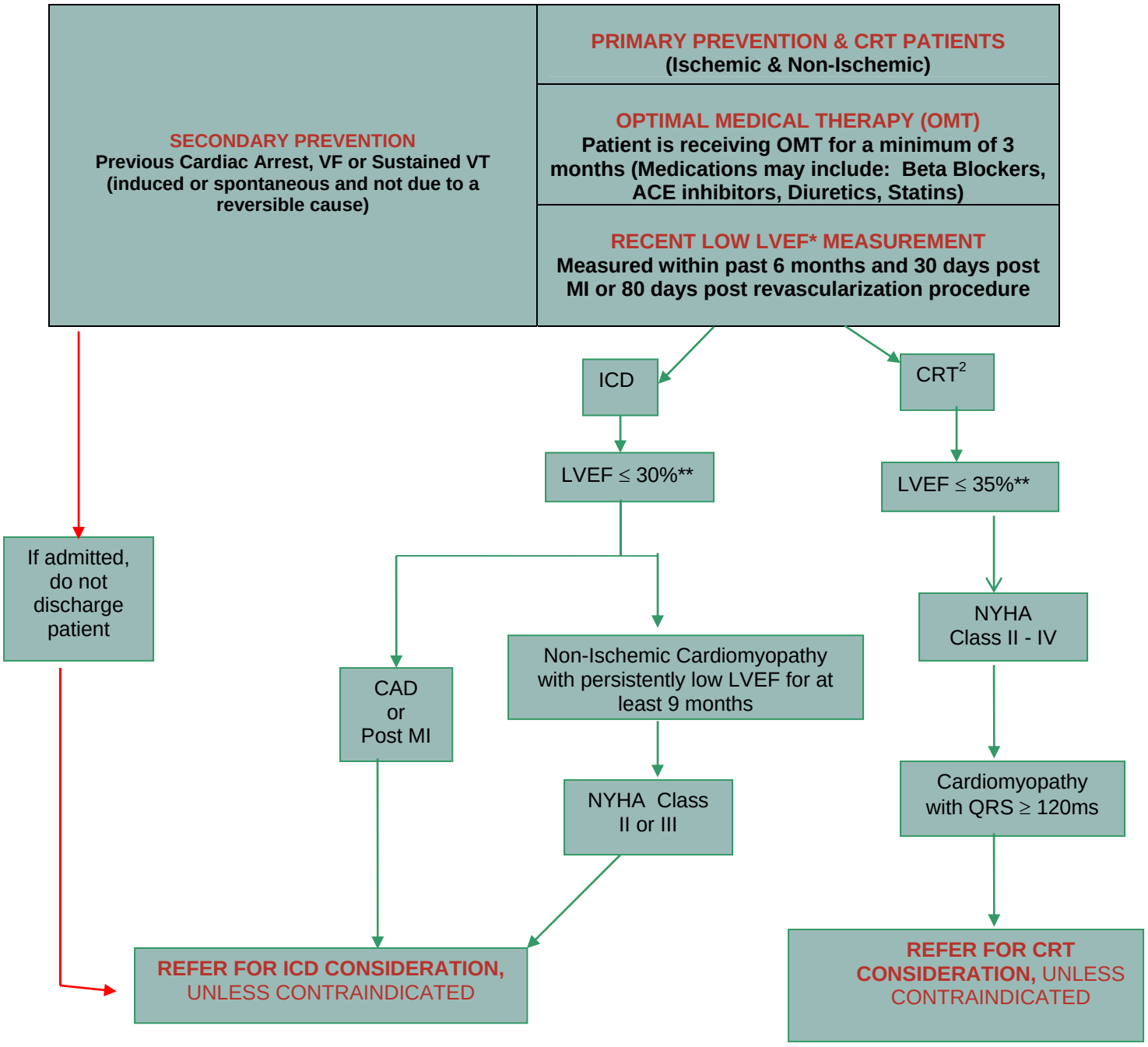
REFERRAL GUIDELINES FOR ICD & CRT CONSIDERATION



1 Tang A, et al. Canadian Cardiovascular Society/Canadian Heart Rhythm Society position paper on implantable cardioverter defibrillator use in Canada. Can J Cardiol 2005;21 (Suppl A):11A18A
2 Canadian Cardiovascular Society Consensus Conference Heart Failure Management 2006 CAN J Cardiol Vol 22 No1 January 2006
* LVEF – Left Ventricular Ejection Fraction
** For appropriate patients, EF of 31% to 35% will also be considered per CCS/CHRS Recommendations

Sept 2011: Adapted from Medtronic of Canada Ltd's Referral Guidelines for ICD and CRT Consideration

Continued

SUDDEN CARDIAC DEATH (SCD) FACTS

- SCD is a leading cause of death in Canada, claiming 45 000 lives a year – more than lung, colorectal, breast and prostate cancers combined [1, 2]

- Only 5% of SCD victims survive an out of hospital cardiac arrest[3] – defibrillation within 6 minutes is critical with each additional minute of delay reducing the change of survival by 7-10%[4]

- Randomized clinical trials have not shown that antiarrhythmic drug therapy can effectively reduce mortality in heart failure patients[5,6]

- Within an ICD, over 95% of SCD victims survive[7]

1. Davis DR, Tang ASL. CMAJ. 2004;171(9):1037-1038
2. Heart and Stroke Foundation Statistics
3. Myderberg R. Catellanos A. Cardiac Arrest and Sudden Cardiac Death. I: Braunwalk E, ed. Heart Disease: A Textbook of Cardiovascular Medicine. 5th Ed. New York:WB Saunders. 1997:742-779
4. Cummins RO. From concept to standard-of-care? Review of the clinical experience with automated external defibrillators. *Ann Emerg Med.* December 1989;18(12):1269-1275.
5. Moss AJ. Zareba W, Hall WJ, et al; Multicenter Automatic Defibrillator Implantation Trial II Investigators. Prophylactic implantation of a defibrillator in patients with myocardial infarction and reduced ejection fraction. *N Engl J Med.* March 21, 2002;346(12):877-883.
6. Bardy GH, Lee KL, mark DB, et al; Sudden Cardiac Death in Heart Failure Trial (SCD-HeFT) Investigators. Amiodarone or an implantable cardioverter-defibrillator for congestive heart failure. *N Engl J Med.* January 20, 2005;352(3):225-237.
7. Simpson, Christopher S. Implantable cardioverter defibrillators work – so why aren't we using them? In: CMAJ·July 3, 2007·177(1)

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Patient Resources

- Canadian Virtual Hospice www.virtualhospice.ca
- Health Link BC http://www.healthlinkbc.ca/
- Heart Failure Society of America Heart Failure teaching modules
  http://www.abouthf.org/education_modules.htm
  (These modules are intended for health care professionals/patient/families who would like more detailed information regarding heart failure. Please remember these modules were created under the auspice of the American health care system. If you have any questions please contact your doctor or Heart Function Clinic health care professional.)

Physician/Health Care Professional Links

- Ministry of Health's Heart Failure guideline
  http://www.bcguidelines.ca/guideline_heart_failure_care.html
- Canadian Cardiovascular Society's Heart Failure Guidelines
  Cardiovascular Library http://www.ccs.ca
- American Heart Association's Heart Failure Resources
  http://www.heart.org/HEARTORG/Conditions/HeartFailure/Heart-Failure_UCM_002019_SubHomePage.jsp
- Heart Failure Society of America – Heart Failure Guidelines
  http://www.heartfailureguideline.org/

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RACE

RAPID ACCESS TO CONSULTATIVE EXPERTISE

RACE means timely telephone advice from specialists for family practitioners, Community Specialists or Housestaff, all in one phone call.

Monday to Friday 0800-1700

Local Calls: 604-696-2131
Toll Free: 1-877-696-2131

Speak to a:

- **Nephrologist**
- **Heart Failure Specialist**
- **Cardiologist**
- **Respirologist**
- **Endocrinologist**
- **Cardiovascular Risk & Lipid Management Specialist**
- **General Internist**
- **Psychiatrist**
- **Geriatrician**
- **Gastroenterologist**

Provincial Services Include:

- **Chronic Pain**
- **Rheumatology**

RACE provides:

- **Timely guidance and advice regarding assessment, management and treatment of patients**
- **Assistance with plan of care**
- **Learning opportunity – educational and practical advice**
- **Enhanced ability to manage the patient in your office**
- **Calls returned within 2 hours and commonly within an hour**
- **CME credit through "Linking Learning to Practice" http://www.cfpc.ca/Linking_Learning_to_Practice/**

RACE does not provide:

- **Appointment booking**
- **Arranging transfer**
- **Arranging for laboratory or diagnostic investigations**
- **Informing the referring physician of results of diagnostic investigations**
- **Arranging a hospital bed.**

Unanswered Calls?

If you call the RACE line and do not receive a call back within 2 hours – call the number below. All unanswered calls will be followed up.

For questions or feedback related to RACE, call:

604-682-2344, extension 66522 or email mwilson@providencehealth.bc.ca

This work is made possible through a partnership between the Shared Care Committee and Providence Health Care in collaboration with Vancouver Coastal Health