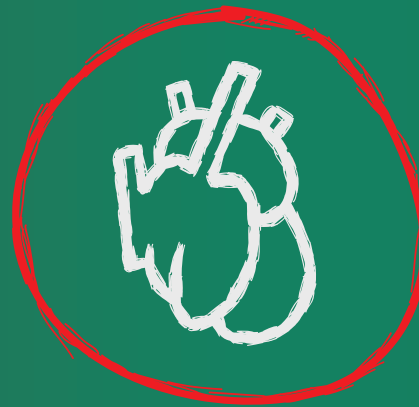


CHF PLAYBOOK

Main Line Health Physician Partners (MLHPP)



This clinical algorithm was developed by Main Line Health Physician Partners as a reference to help align congestive heart failure treatment across the continuum of care. These protocols are based on recently published clinical guidelines and evidence. They are not intended to supersede the independent clinical judgment of physicians or other providers in the context of circumstances that may otherwise influence a patient's care. © 2018 Main Line Health Physician Partners



Main Line Health[®]
Well ahead.[®]

[D I S E A S E] [STAGE A]

- At high risk for heart failure but without structural heart disease or symptoms of heart failure (Example: patients with hypertension, coronary artery disease, diabetes mellitus, family history of cardiomyopathy)
- Patients in this stage of “CHF” should be evaluated for disease progression every 3-12 months
 - If patient is identified as a different stage of CHF, update patient registry to reflect change

STABLE Outpatient

PCP visit every 3-6 months

Medication

- If diabetes: ACE or ARB
- Hypertension medication per guidelines (*see appendix*)

Labs

- Per protocol (*see appendix*)
- Evaluate for OSA

Optimize lifestyle

- Annual influenza vaccine
- Pneumonia vaccine per guideline

UNSTABLE Outpatient

Weight gain (3 lbs in 24 hrs
or 5 lbs in 1 week)

Shortness of breath

Assess for Stage C CHF
or other etiology

If

- BNP elevated
- or**
- Chest X-ray abnormal

Refer to STAGE C “PLAYS”

Recent **DISCHARGE** *from acute setting*

Transitional Care Management
appointment with PCP within 14 days

Reconcile medications

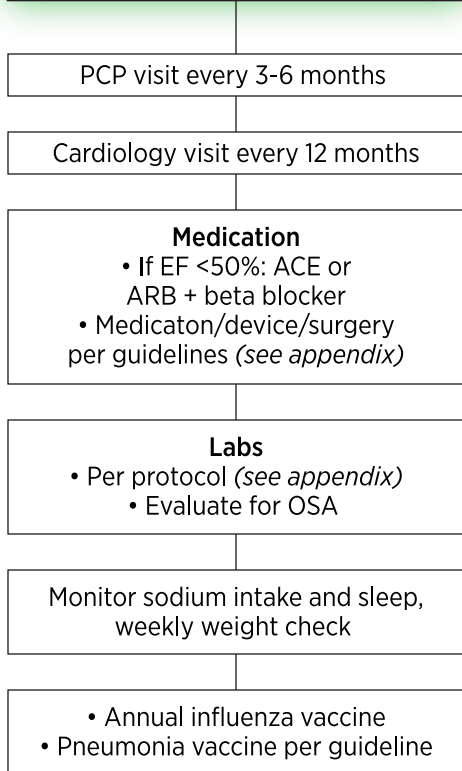
Review hospital records
for evidence of Stage B CHF,
obtain echo as needed

Resume PCP visit every 3-6 months

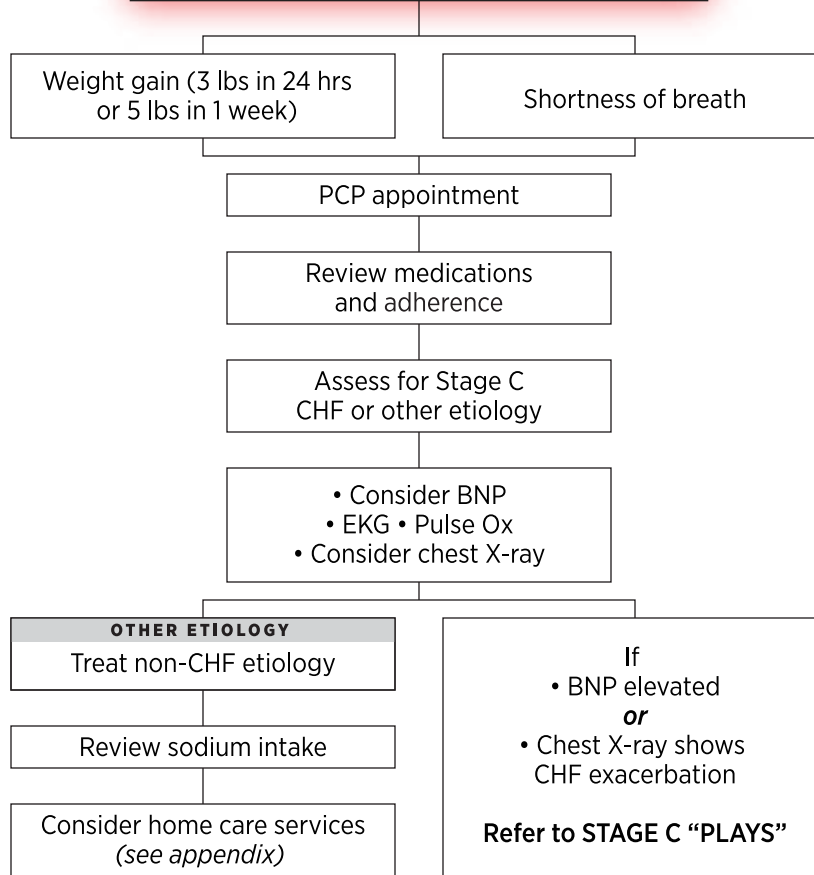
[D I S E A S E] [STAGE B]

- Structural heart disease (by echo/nuclear, etc.) but without current or prior symptoms of heart failure; heart is now abnormal; could be signified by EKG abnormal and/or arrhythmia symptoms (near syncope, palpitations)
- Patients in this stage of CHF should be evaluated for disease progression every 3-6 months
 - If patient is identified as a different stage of CHF, update patient registry to reflect change

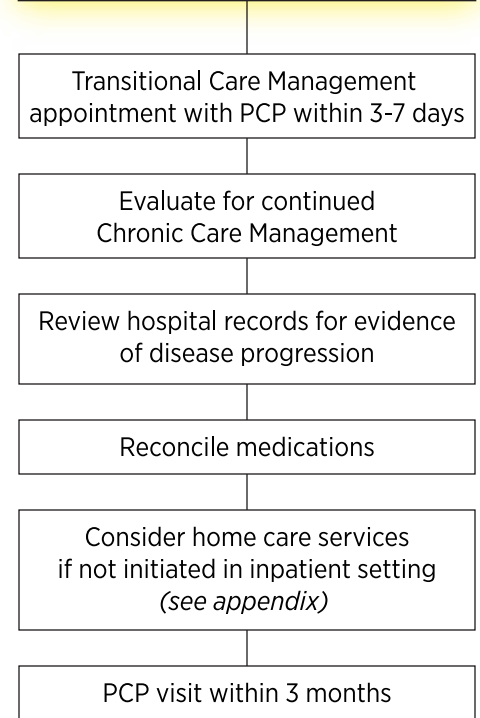
STABLE Outpatient



UNSTABLE Outpatient



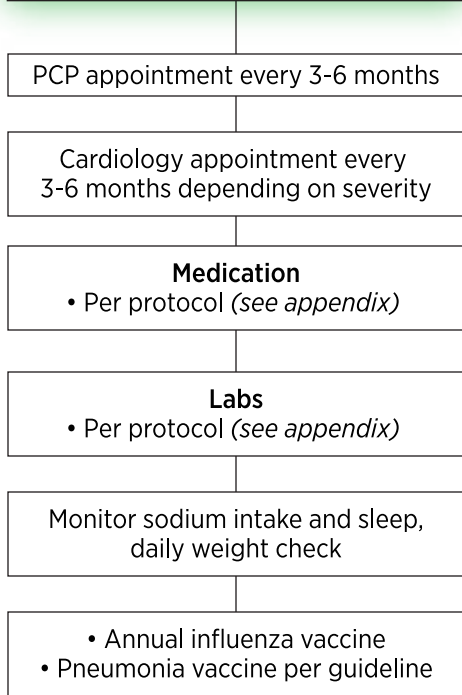
Recent DISCHARGE from acute setting



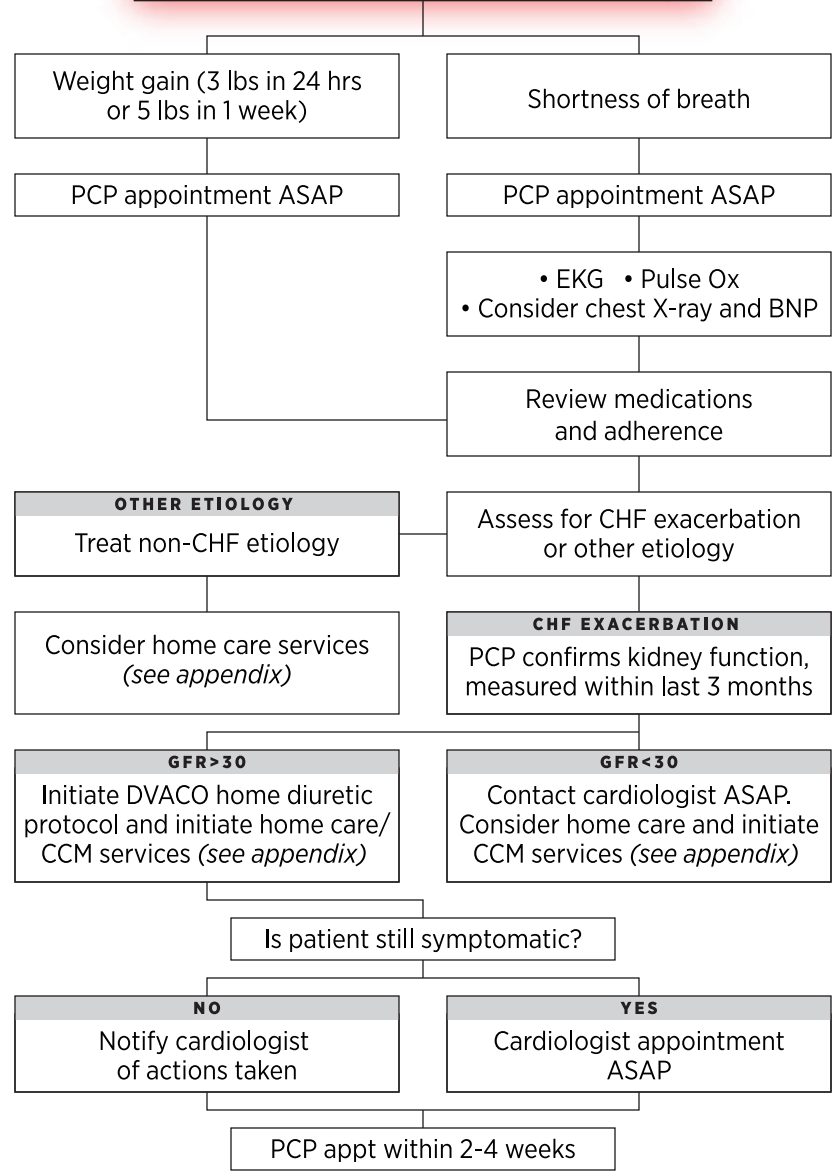
[D I S E A S E] [STAGE C]

- Structural heart disease with prior or current symptoms of heart failure, HFrEF or HFpEF (Example: patients with known structural heart disease, SOB, fatigue, reduced exercise tolerance)
- Patients in this stage of CHF should be evaluated for end stage (Stage D) every 3-6 months
 - If patient is identified as a different stage of CHF, update patient registry to reflect change

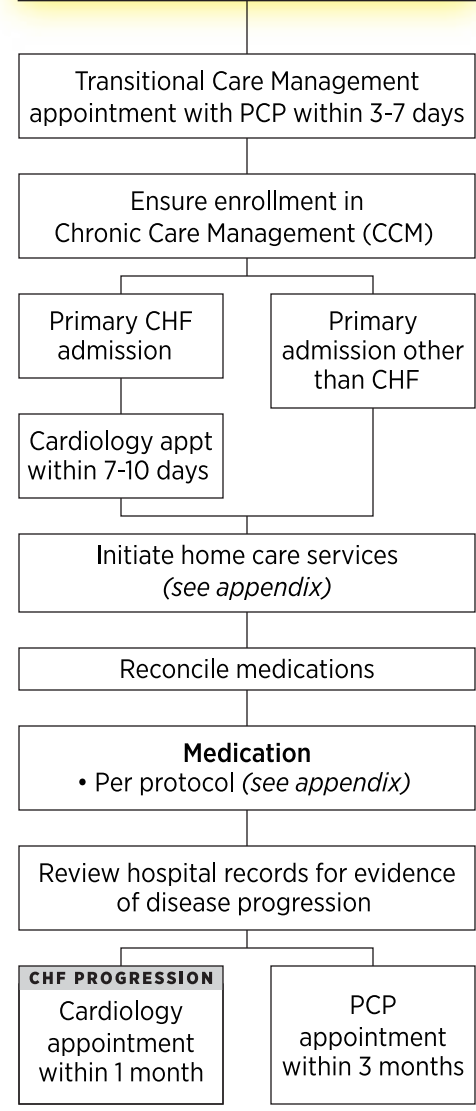
STABLE Outpatient



UNSTABLE Outpatient



Recent DISCHARGE from acute setting



[D I S E A S E] [STAGE D]

- Refractory heart failure requiring specialized interventions (Example: patients with marked symptoms at rest despite maximal medical therapy, frequent hospitalizations, unable to be discharged without special interventions)
- Patients in this stage of CHF should be evaluated for palliative care, transplant, or VAD as appropriate

STABLE Outpatient

Ensure enrollment in Chronic Care Management

Cardiology appointment every 1-3 months

PCP appointment for comorbidity management as appropriate

Medication
• Per protocol (*see appendix*)

Labs
• Per protocol (*see appendix*)

Monitor sodium intake and sleep, daily weight check

• Annual influenza vaccine
• Pneumonia vaccine per guideline

UNSTABLE Outpatient

Weight gain (3 lbs in 24 hrs or 5 lbs in 1 week)

PCP manages CHF condition **or** directs patient to cardiologist

Shortness of breath

Cardiologist triage ASAP

Recent **DISCHARGE** *from acute setting*

Ensure enrollment in Chronic Care Management

Primary CHF admission

Primary admission other than CHF

Transitional Care Management appointment with cardiologist within 7 days

Initiate home care (palliative) services (*see appendix*)

Consider hospice services

Reconcile medications

Review hospital records for evidence of disease progression

CHF PROGRESSION
Cardiology appointment within 1 month

PCP appointment within 3 months

Appendix: CHF staging and standardized therapy

**** NYHA FUNCTIONAL CLASS: At risk for Class I ****

[D I S E A S E] [STAGE A]

- At high risk for heart failure but without structural heart disease or symptoms of heart failure (Example: patients with hypertension, coronary artery disease, diabetes mellitus, family history of cardiomyopathy)
- Patients in this stage of “CHF” should be evaluated for disease progression every 3-12 months
 - If patient is identified as a different stage of CHF, update patient registry to reflect change

THERAPY

- Treat hypertension • Smoking cessation • Treat lipid disorders • Encourage exercise
- Low sodium diet • Influenza and pneumococcal vaccines • Use of the “STOPBANG” identification method for sleep apnea
- ACEI/ARB first line if diabetes, consider beta blocker if indicated for CAD or arrhythmia
- For hypertension CCB earlier, thiazide diuretic third line, beta blocker fourth line
- CMP/BMP every 6 months if diuretic or diabetic (on ACEI/ARB), or CKD Stage 3
- Lipids annual, A1C if diabetic every 3-4 months
- Evaluate for sleep apnea
- Consider EKG if not already on record as part of prior emergency, hospital, specialist or primary care visit; if abnormal → Stage B
- Consider baseline BNP

**** NYHA FUNCTIONAL CLASS: I with no prior or current symptoms or signs of CHF ****

[D I S E A S E] [STAGE B]

- Structural heart disease (by echo/nuclear, etc.) but without current or prior symptoms of heart failure; heart is now abnormal; could be signified by EKG abnormal and/or arrhythmia symptoms (near syncope, palpitations)
- Patients in this stage of CHF should be evaluated for disease progression every 3-6 months
 - If patient is identified as a different stage of CHF, update patient registry to reflect change

THERAPY

- All measures under Stage A • All Stage B referred to cardiology, follow-up with cardiology annually or sooner depending on other comorbid conditions • If EF >55 but abnormal diastolic function: trigger cardiology consult • If EF <55 = abnormal systolic function: trigger cardiology consult • In selected patients: ICD, revascularization or valvular surgery as appropriate
- ACEI or ARB as appropriate
- BBL as appropriate
- Echo baseline
- EKG annually or sooner if increased symptoms

** NYHA FUNCTIONAL CLASS: Any NYHA class; including Class I with prior symptoms, Class II or III with symptoms on mild to moderate exertion, Class IV with symptoms at rest **

DISEASE [STAGE C]

- Structural heart disease with prior or current symptoms of heart failure, HFrEF or HFpEF (Example: patients with known structural heart disease, SOB, fatigue, reduced exercise tolerance)
- Patients in this stage of CHF should be evaluated for end stage (Stage D) every 3-6 months
 - If patient is identified as a different stage of CHF, update patient registry to reflect change

THERAPY

- All measures under Stages A and B
- ICD if EF <35% and life expectancy >1 year
- CRT (biventricular pacemaker) if QRS >130 msec
- Evidence-based BBL (carvedilol, metoprolol succinate, or bisoprolol)
- Mineralocorticoid antagonist (spironolactone or eplerenone)
- Diuretics: furosemide/other loop diuretics
- Digoxin if recently readmitted (>1) to acute care hospital
- If African American: consider hydralazine and nitrate
- If NYHA Class II or III with LVEF ≤35%, normal sinus rhythm, HR >70: consider ivabradine (Corlanor)
- CMP/BMP every 3-6 months depending on renal function
- If digoxin: trough level (target 0.5 - 0.9ng/mL)
- Consider annual echo if clinically indicated

** NYHA FUNCTIONAL CLASS: IV with severe and refractory symptoms **

DISEASE [STAGE D]

- Refractory heart failure requiring specialized interventions (Example: patients with marked symptoms at rest despite maximal medical therapy, frequent hospitalizations, unable to be discharged without special interventions)
- Patients in this stage of CHF should be evaluated for palliative care, transplant, or VAD as appropriate

THERAPY

- All measures under Stage A, B, and C
- Mechanical assist devices, IV inotropic infusions, evaluate for cardiac transplantation
- Hospice/palliative care

STOPBANG SCREENING FOR OBSTRUCTIVE SLEEP APNEA

- S** snoring
- T** tired
- O** observed stop breathing/choking or gasping in sleep
- P** high blood pressure
- B** general / BMI >35
- A** age (older than 50)
- N** neck size (>17 inches male / >16 inches female)
- G** gender male

Scoring—OSA

Low risk: Yes to 1-2 questions

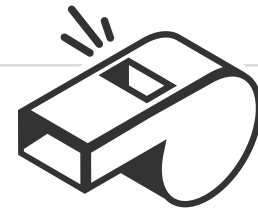
Intermediate risk: Yes to 3-4 questions

High risk: Yes to 5-8 questions **or**

Yes to 2 or more of STOP questions plus male gender

Yes to 2 or more of STOP questions plus BMI >35

Yes to 2 or more of STOP questions plus neck size criteria



Appendix: Labs and medications

1. Systolic heart failure or combined systolic/diastolic dysfunction (HF_rEF: heart failure with reduced EF < or = 40%)

- a. Loop diuretics preferred over thiazide—type diuretics to reduce fluid overload
 - i. Educate patient/family about use of additional diuretic PRN for fluid retention
 - ii. Addition of metolazone dosed intermittently for persistent fluid retention
 - iii. Monitor carefully for side effects including renal dysfunction, electrolyte abnormalities, and hypotension
- b. ACE Inhibitors: incremental dosing to target doses, not BP control, recommended:

AGENT	INITIAL DOSE	MAX DAILY DOSE
Captopril	6.25 mg TID	50 mg TID
Enalapril	2.5 mg BID	20 mg BID
Fosinopril	5-10 mg QD	40 mg QD
Lisinopril	2.5-5 mg QD	40 mg QD
Quinapril	5 mg BID	20 mg BID
Ramipril	1.25-2.5 mg QD	10 mg QD

- i. Check labs (Creatinine, BUN, Na+, K+) with each dosage adjustment
 - ii. Consider dose decrease or nephrology consultation for Cr >3 or K+ >5.3
 - iii. For patients intolerant of ACE Inhibitor with cough, an angiotensin receptor blocker (ARB) is recommended
 - iv. For patient intolerant of ACE Inhibitor with renal insufficiency or hyperkalemia, a combination of hydralazine and nitrate is recommended
- c. Beta blockers: incremental dosing to target does, not BP control, recommended:

AGENT	INITIAL DOSE	MAX DAILY DOSE
Bisoprolol	1.25 mg QD	10 mg QD
Carvedilol	3.125 mg BID	50 mg BID
Metoprolol succinate	12.5-25 mg QD	200 mg QD

- i. Beta blocker use is recommended with caution in patients with COPD, diabetes, or peripheral vascular disease
 - ii. It is recommended that beta blockers be continued in most patients experiencing heart failure exacerbation unless they develop cardiogenic shock, refractory volume overload, or symptomatic bradycardia
 - iii. If discontinued or reduced, beta blockers should be reinstated or returned to the previously tolerated dose as soon as safely possible



- d. Aldosterone antagonists (spironolactone or eplerenone) are recommended for patients with NYHA Class III-IV heart failure or post myocardial infarction
 - i. Avoid aldosterone antagonists when creatinine is ≥ 2.5 , creatinine clearance ≤ 30 , or serum potassium ≥ 5.0
 - ii. Monitor renal function and serum potassium frequently on initiation of aldosterone antagonist and regularly thereafter
 - iii. In the absence of persistent hypokalemia, supplemental potassium is not recommended with an aldosterone antagonist
- e. Digoxin may be considered for patients with persistent signs or symptoms of heart failure on optimized therapy with a diuretic, ACE Inhibitor, and beta blocker
 - i. Digoxin dose of 0.125 mg daily is recommended in the majority of patients, with a trough digoxin level < 1.0 ng/mL checked 1-2 weeks after initiation
 - ii. Digoxin dose up to 0.25 mg daily is recommended to achieve ventricular rate control in patients with atrial fibrillation
- f. Consider adding a combination of hydralazine and a nitrate in addition to standard therapy with an ACE Inhibitor and beta blocker in African Americans
- g. Consider replacing ACE Inhibitor or ARB therapy with Entresto (sacubitril/valsartan) in patients with reduced EF and NYHA class II-IV symptoms.
- h. Eliminate potentially harmful drugs:
 - i. Most calcium channel blockers; dihydropyridine CCBs may be used
 - ii. Nonsteroidal anti-inflammatory drugs (NSAIDs)
 - iii. Antiarrhythmic drugs except for amiodarone
 - iv. Tricyclic antidepressants
 - v. Thiazolidinediones

2. Diastolic heart failure (HFpEF: heart failure with preserved EF $> 40\%$)

- a. Thiazide or loop diuretics are recommended to reduce fluid overload
 - i. Educate patient/family about use of additional diuretic PRN for fluid retention
 - ii. Addition of metolazone dosed intermittently for persistent fluid retention
 - iii. Monitor carefully for side effects including renal dysfunction, electrolyte abnormalities, and hypotension
- b. Consider spironolactone as guideline recommendation to decrease hospitalizations for HF if $K < 5.0$ and $CrCl > 30$
- c. ACE Inhibitors should be considered in all patients who have symptomatic atherosclerotic cardiovascular disease or diabetes, and may be considered in other patients
 - i. Angiotensin receptor blockers (ARB) should be considered for patients who are not tolerant of an ACE Inhibitor
 - ii. Check labs (creatinine, BUN, Na^+ , K^+) with each dosage adjustment
 - iii. Consider dose decrease or nephrology consultation for $Cr > 3$ or $K^+ > 5.3$
- d. Beta blockers (BBL) are recommended in patients with prior myocardial infarction, hypertension or requiring control of ventricular rate
- e. Calcium channel blockers (CCB) should be considered in patients with:
 - i. Atrial fibrillation requiring ventricular rate control and intolerance to BBL; consider diltiazem or verapamil
 - ii. Symptom-limiting angina
 - iii. Hypertension
- f. Consider measures to restore/maintain sinus rhythm in patients with symptomatic atrial flutter-fibrillation; this should be an individualized decision

Appendix: Standing orders for home-based diuretic management of heart failure

SCOPE/PATIENT POPULATION:

This guideline for the management of diuretics can be utilized as standing provider orders for adult home-based patients with congestive heart failure. The intent of this is to standardize care plans that are used currently by many providers so that treatment can be recommended as soon as the condition is recognized and treatment delay is minimal. This may find potential use by practice nurses, CRNPs, and home health agencies.

*** Please note the PCP or other principal provider should initiate and/or approve the implementation of the protocol.***

PATIENT INCLUSION CRITERIA FOR CONSIDERATION:

1. Patient is on optimal medical therapy for heart failure
2. Patient is on a regular dose of diuretic, or not taking a diuretic
3. Patient can properly identify correct medication and reason for diuretics
4. Patient is able to monitor weight and symptoms, or has a caregiver who can assist
5. Patient environment is safe and patient is not at high risk for falls
6. Provider recommendation

PATIENT EXCLUSION CRITERIA FOR CONSIDERATION:

1. Patient with current or past history of renal insufficiency with GFR <30
2. Patient has shortness of breath significantly above their baseline or documented hypoxia (Pox <90%)
3. Provider recommendation

If patient meets above criteria:

[STEP 1] If weight increases by 3 lbs within 24 hours (2 lbs if symptomatic) or 5 lbs in one week

- Notify provider of initiation of flexible diuretic dosing orders.
- Instruct patient to take increased dose of current loop diuretic for 3 days. See next page for specific dose adjustment guidelines.
- Consider placing patient on telemonitoring when flexible diuretic protocol is initiated, if available and patient agrees.
- Assess patient daily while protocol is in place.
- Lab orders: Draw basic metabolic profile 2 days after the first increased diuretic dose (or as directed by provider) with a copy of lab results sent to provider.
- If weight returns to baseline, instruct patient to resume original dose of diuretics. Notify provider of outcome.

[STEP 2] If after 3 days the increased dose of loop diuretic is not effective

- Notify the provider.

The following dosing will be used for increased dosing of current loop diuretic unless otherwise indicated by physician:

[A] Dose adjustment of loop diuretic (furosemide)

<u>Regular dose</u>	<u>ADJUSTED DOSE</u>
20 mg daily oral	→ 40 mg once daily oral x 3 days
40 mg daily oral	→ 80 mg once daily oral x 3 days
80 mg daily oral	→ 80 mg twice daily* oral x 3 days
40 mg twice daily* oral	→ 80 mg twice daily* oral x 3 days

[B] Dose adjustment of loop diuretic (torsemide)

<u>Regular dose</u>	<u>ADJUSTED DOSE</u>
20 mg daily oral	→ 40 mg once daily oral x 3 days
20 mg twice daily* oral	→ 40 mg twice daily* oral x 3 days
40 mg twice daily* oral	→ 60 mg twice daily* oral x 3 days

[C] Dose adjustment of loop diuretic (bumetanide)

<u>Regular dose</u>	<u>ADJUSTED DOSE</u>
1 mg daily oral	→ 2 mg daily oral x 3 days
1 mg twice daily* oral	→ 2 mg twice daily* oral x 3 days
2 mg twice daily* oral	→ 3 mg twice daily* oral x 3 days



* Dosing times for twice daily dosing: morning and 2:00 pm.

Appendix: Choosing the right care for your patients with heart failure

	Traditional Home Health Care	Palliative Home Care	Hospice Care
Goals of care	Curative or rehabilitative primarily. Focused on medical needs.	Specialized medical care for people with serious illness. Goal is to reduce symptoms and improve quality of life for patient and family.	Holistic approach focused on comfort and enhanced quality of life for patient and family.
Criteria for admission	Must be under the care of a physician, homebound, and require intermittent skilled services to promote or maintain health status.	Same eligibility criteria as traditional home health care. Designed for those with life-limiting illness, who may be receiving life-prolonging treatment.	Provided to persons with a life expectancy measured in months rather than years. Does not need to be homebound.
Who provides the care?	A team of home care professionals including nurses, therapists, social workers, dietitians, and home health aides in collaboration with the physician. Plus, advanced illness management nurses offer oversight to HF patients at home with telehealth, tele-monitoring and video monitoring.	A specially trained team of hospice and palliative care experts including nurses, therapists, social workers, dietitians, and home health aides together with the physician. Plus, advanced illness management nurses offer oversight to HF patients at home with telehealth, tele-monitoring and video monitoring.	A specially trained team of hospice and palliative care experts including your physician, hospice medical director, nurses, social workers, hospice aides, spiritual counselors, dietitians, therapists, and volunteers.
What is covered?	Skilled services as listed above. Must qualify for equipment. Medications not covered.	Skilled services as noted above. Must qualify for equipment. Medications not covered.	All services, equipment, medications and supplies related to the hospice care. Short term inpatient care, bereavement support, and respite care for family is also covered.
Who pays for care?	Medicare, Medicaid, and most insurance companies.	Medicare, Medicaid, and most insurance companies.	Medicare, Medicaid, and most insurance companies.

Appendix: Preferred Home Health Organization Network

The **Delaware Valley ACO** is very pleased to announce our Preferred Home Health Organization Network. Our preferred organizations were selected to help our patients, our physicians, our hospitals and other health care collaborators identify home health organizations that achieve high standards for quality and demonstrate strong partnership and collaboration with partner organizations. Our preferred home health organizations were selected by our team of post-acute care experts and are tiered, based on cost efficiency measures with our Tier 1 organizations demonstrating superior cost efficiency compared to our entire panel of home health providers. Tier 2 providers meet quality metrics but are higher than average in cost measures.

Our preferred home health providers list will be reviewed and updated regularly to assure continued high quality of our partners in the DVACO preferred home health network.

[TIER 1] Preferred Home Health Providers:

Main Line Health HomeCare & Hospice

240 North Radnor Chester Road, Suite 100
Radnor, PA 19087
1.888.533.3999

mainlinehealth.org/homecare

Jefferson Health Home Care and Hospice

2510 Maryland Road, Suite 250
Willow Grove, PA 19090
215.481.5800

abingtonhealth.org/homecare

Kennedy Home Health Care

333 Laurel Oak Road, Suite D
Voorhees, NJ 08043
1.800.225.2112

kennedyhealth.org/services/home-health-care

[TIER 2] Preferred Home Health Providers:

BAYADA Home Health Care (Philadelphia office)

1020 North Delaware Avenue, Suite 301
Philadelphia, PA 19125
610.277.1100

bayada.com

Mercy Home Health

1001 Baltimore Pike #310
Springfield, PA 19064
610.690.2500

mercyhealth.org/home-health



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