



CLINICAL EVIDENCE REVIEW

Heart Failure with Reduced Ejection Fraction

(Systolic Heart Failure)

Adult, Non-Pregnant Care Guideline

Date to be reviewed

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Heart Failure (HF) care pathway acronyms

ACC/AHA- American College of Cardiology/American Heart Association

ACEI - angiotensin-converting enzyme inhibitors

ARB - angiotensin receptor blockers

ARNI - angiotensin receptor neprilysin inhibitors

ASCVD - atherosclerotic cardiovascular disease

CRT - cardiac resynchronization

CRT-D - cardiac resynchronization and defibrillator

CVD – cardiovascular disease

EF – ejection fraction

GDMT – guideline directed medical therapy

HFpEF – heart failure with preserved ejection fraction

HFrEF – heart failure with reduced ejection fraction

HYD/ISDN - hydralazine/isosorbide dinitrate

ICD - Implantable cardioverter-defibrillator

LVAD - left ventricular assist device

MALE – major adverse limb events

MACE – major adverse cardiac events

RAAS - Renin-Angiotensin-Aldosterone System

SCD – sudden cardiac death

SDOH – social determinants of health

SGLT2 inhibitors - Sodium-glucose transport protein 2 inhibitors

Care Pathway Purpose Statement

The purpose of the Care Pathway project is to achieve better understanding of the steps involved in heart failure (HF) prevention, assist with early identification and stratification of patients with systolic heart failure and help direct care and referral once identified. This is to be accomplished through consistent application of lifestyle modification, evidenced based medicine and guideline directed medical therapy.

Heart failure is a complex clinical syndrome with different etiologies and pathophysiology rather than a specific disease. This creates a disease process that cannot be diagnosed from one single test but rather after a careful history and physical examination. In addition, treatment will be nuanced and based on evidence of structural heart disease, history of symptoms and the patient's objective signs commonly seen in HF.

This pathway adopts the best practices described by the American Heart Association/American College of Cardiology and the European Society of Cardiology. The Heart Failure Care Pathway represents the best currently available information and will be updated periodically to reflect new findings.

The goals of the Heart Failure Care Pathway are as follows:

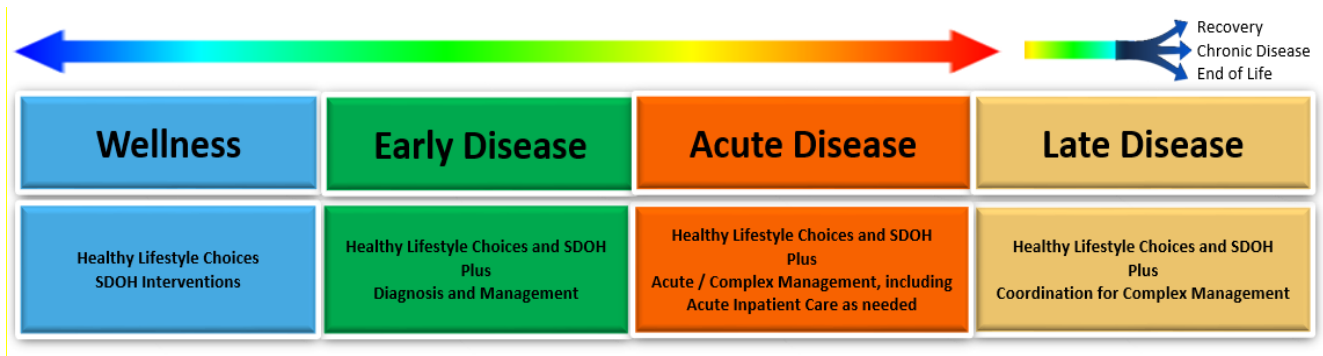
- Prevention of heart failure to the greatest degree possible by instituting primary prevention measures
- Early identification of patients with heart failure and appropriate stratification of disease to direct appropriate guideline directed care and potential referral.
- Provide framework for HF evidenced based care delivery in the most effective, efficient manner possible
- Raise awareness and education about HF in the medical and layperson community so that guideline directed medical care can be initiated in order to decrease major adverse cardiac events (MACE).

This Care Pathway should be used to facilitate conversations with patients and families to make optimal care decisions with respect to available resources, special circumstances, preferences and needs of each individual patient. This Care Pathway is not intended to replace sound clinical judgement.

The Heart Failure Care Pathway Metric adopts a continuum of care approach:

- Optimally identify and treat patients at risk for HF to prevent or delay the development of HF
- Recognize the pre-HF patient such as asymptomatic patients with elevated natriuretic peptide levels that would benefit from a cardiology referral for further diagnostic and treatment strategies to prevent HF progression
- Diagnosis and timely treatment of HF
- Referral to HF specialist for patients with advanced HF according to patient goals.

CARE PATHWAY MODEL
The Full Continuum of Care



In Every Phase of Care:

1. Educate / Support Healthy Lifestyle Choices
2. Seek to Understand and Refer to Social Resources as needed
3. Assess and Manage Underlying Causes and Co-Morbidities

*SDOH – social determinants of health

Heart Failure Classification systems American College of Cardiology (ACC)/American Heart Association (AHA) HF Classification

The development of HF can be characterized by considering four stages of the disease. This staging system recognizes that HF has established risk factors and structural prerequisites and that HF development has asymptomatic and symptomatic phases.

<i>At risk for Heart failure</i>	Stage A	At high risk for but without structural heart disease or symptoms of HF. This includes patients with hypertension, atherosclerotic disease, diabetes, obesity, metabolic syndrome or patients using cardiotoxins or with family history of cardiomyopathy
	Stage B	Structural heart disease but without signs and symptoms of HF. This includes patients with previous MI, LV remodeling including LV hypertrophy and low EF, and asymptomatic valve disease
<i>Heart Failure</i>	Stage C	Structural heart disease with prior or current symptoms of HF. This includes patients with known structural heart disease and shortness of breath and fatigue, reduced exercise tolerance
	Stage D	Refractory HF requiring specialized interventions. This includes patients who have marked symptoms at rest despite maximal medical therapy

NYHA Functional Classification

The NYHA functional classification is important to characterize symptoms and functional capacity of patients with symptomatic (Stage C) HF or advanced HF (Stage D). It is important to specify NYHA functional class along with the stage to illustrate how a patient may respond to treatment.

Class I	No limitation of physical activity
Class II	Slight limitation of physical activity
Class III	Marked limitation of physical activity
Class IV	Symptoms occur even at rest and discomfort with any physical activity

Determining the stage and classification of a patient is often helpful for tracking the impact of HF on a patient as well as determining next steps for treatment. Typically, this is not relevant until the patient is determined to be in stage C.

It should be noted that these classifications have been found to be lacking when it comes to a number of factors, including but not limited to: evolving evidence for preventative and treatment strategies; biomarkers in the definition of HF; the highly subjective issue of patient reported symptoms; and the unidirectional nature of the ACC/AHA stages with little appreciation of the possibility to revert to a lower stage. Our evidence review committee feels that this issue will be readdressed in subsequent reviews of the HF care pathway as a Universal definition and classification for HF is considered. Providers are encouraged to watch the literature as it evolves in light of classifications and treatment of patients with mildly reduced ejection fraction (HFmrEF).

[70,71]

Executive Summary

Wellness and Early Disease (ACC/AHA classification Stage A-stage B)

Prevention

- Teach, advocate and support Healthy Lifestyle choices as a means to prevent cardiovascular disease
- Assess Social Determinants of Health (SDOH) needs and make referrals as needed
- Prevent / manage emerging comorbidities

Screening/Treatment

- Ensure accurate cardiovascular disease risk factor identification
- Engage patients at high risk pre-disease and emphasize the importance of healthy lifestyle choices and medication as a means to prevent / delay cardiovascular disease
- Risk factor modification; guideline directed medical therapy (GDMT) for known disease/risk
- Early identification of sign/symptoms indicative of heart failure

Acute Disease (ACC/AHA classification Stage C – early Stage D)

Medical Evaluation and Diagnosis: Include all of the Wellness Prevention strategies PLUS

- Reassess SDOH needs to ensure care coordination is addressed as needed
- Physical assessment including biomarkers and echocardiography

Treatment:

- Encourage patient to continue with or to develop a Lifestyle management plan
- Up-titration of medications in a timely fashion to achieve maximum tolerated or target dose of GD
- Initiation of discussions about advanced care plan and goals of care

Late Disease (ACC/AHA classification late Stage D)

All of the Wellness Prevention strategies as appropriate for the situation, PLUS

- Develop effective system for care coordination for complex communication and care delivery

CALL TO ACTION

- The lifetime risk of developing HF is 20% for Americans ≥ 40 years of age. ^{1,2}
- HF prevalence is over 5.8 million in the USA and each year more than 550,000 new cases are diagnosed.³
- Heart failure is a staggering clinical and public health problem, associated with significant mortality, morbidity, and healthcare expenditures, particularly among those aged 65 and older.³
- After the diagnosis of HF, survival estimates are 50% and 10% at 5 and 10 years, respectively. ⁴
- A recent analysis of CMS data indicates that after an initial hospitalization, 25% of HF patients are readmitted within 30 days with 35% of readmissions also attributed to HF. ⁵
- Comorbidities play a major role in HF and in order to reduce the burden of HF, strategies must consider both cardiac disease and non-cardiac conditions.
- A large proportion of HF cases is accounted for by antecedent coronary heart disease (CHD) and hypertension, suggesting that predictors of CHD and hypertension might influence the risk of HF. ⁶

WELLNESS/EARLY DISEASE (ACC/AHA classification Stage A-B)

This care pathway is unusual in that the Wellness and Early Disease sections are combined. The evidence review committee feel this is appropriate because the Early Disease stage is often not recognized until after the patient has moved to Stage C (acute disease) and identified due to their symptoms. Prevention and lifestyle management continue to be the key parts of these two sections with the understanding that early recognition of symptomatology can improve the patient's individual trajectory. Stage A and B patients are best defined as those with risk factors that clearly predispose towards the development of the syndrome of heart failure.

HEALTHY LIFESTYLE: Although HF has various etiologies and pathways, the greatest contributor to a patient's risk of developing heart failure is the traditional risk factors of cardiovascular disease (CVD). It should be acknowledged that this risk is cumulative rather than a one to one relationship with CVD risk.

Healthy Lifestyle prevention strategies include:

Prevention Strategy	Recommendation
Weight reduction ⁷⁻¹¹	There is a dose-dependent relationship between increasing body mass index (BMI) and risk of HF. It is recommended that patients maintain normal body weight (BMI of 18.5kg – 24.9kg / m ²)
Healthy Nutrition ^{7, 10, 12}	Diets containing greater amounts of plant-based foods including fruits, vegetables, nuts, seeds and legumes and fewer animal derived foods and processed foods appear to be beneficial for both atherosclerosis and HF.
Regular physical activity ^{7, 13, 19}	Adults should engage in at least 150 minutes per week of accumulated moderate-intensity physical activity or 75 minutes per week of vigorous-intensity physical activity.
Cholesterol management ^{14, 16, 33, 34}	To reduce the risk of Atherosclerotic cardiovascular disease (ASCVD) it is recommended that medical providers follow cholesterol management guidelines established by ACC/AHA. In addition adherence to statins when indicated is associated with a significant reduction in the rate of heart failure.
Diabetes management ^{15, 17}	Diabetes is a strong risk factor for heart failure. In patients with diabetes mellitus, blood sugars should be controlled with contemporary

RECOMMENDATIONS:

- Each patient should receive counseling and participate in the development of a lifestyle plan with the provider, a health coach, dietitian, exercise specialist and/or the appropriate specialist
- The plan should be documented and follow up updated with each office visit

RESOURCES:

<https://tools.acc.org/ascvd-risk-estimator-plus/#/calculate/estimate/>

<https://medinsteadofmeds.com>

<https://www.nhlbi.nih.gov/health-topics/dash-eating-plan>

<https://pcna.net/clinical-resources/patient-handouts/heart-failure-tools-and-handout/>

https://www.aahfn.org/mpage/who_we_are

	guidelines. See the Vidant Health (VH) Diabetes Care pathway for more details.
Blood Pressure management ¹⁵	Elevated levels of diastolic and especially systolic blood pressure are major risk factors for the development of HF and long term treatment for both have been shown to reduce the risk of HF. See VH Hypertension Care pathway for more details.
Smoking cessation ^{18,19}	Smoking has been independently associated with an increased risk of developing HF.
Adequate sleep	Adults need at least 7 or more hours of sleep / night to maintain good health
Maintain good mental health ²⁰⁻²⁴	Develop and maintain mental health resilience through stress management, connectivity and purposeful living
Assess social determinants of health (SDOH) and support patient with identified issues ^{15,25}	Socioeconomic inequalities are strong determinants of cardiovascular disease (CVD) risk. Examples of upstream social determinants of health include treatment adherence, health literacy, exposure to home/community exposures, safety concerns, financial strain, inadequate housing conditions, lack of food security (i.e., access to affordable and nutritious food), and inadequate social support. https://nccare360.org/
Sleep Disordered Breathing (SDB) ²⁶	A bidirectional relationship exists between HF and both phenotypes of SDB (central and obstructive sleep apnea). Screening for SDB and appropriate treatment is recommended if indicated.

RESOURCES:

https://www.exerciseismedicine.org/support_page.php/heart-failure/

<https://www.cardiosmart.org/News-and-Events/2011/02/Exercise-for-PAD-Trying-it-at-Home>

<https://www.quitlinenc.com/>

www.uptodate.com/contents/quitting-smoking-beyond-the-basics?topicRef=3866&source=see_link

https://www.heartfailurematters.org/en_GB

<https://www.ruralhealthinfo.org/toolkits/sdoh/4/assessment-tools>

https://www.aafp.org/dam/AAFP/documents/patient_care/everyone_project/team-based-approach.pdf

<https://nccare360.org/>

<https://innovation.cms.gov/files/worksheets/ahcm-screeningtool.pdf>

Lifestyle factors such as smoking, high calorie diets, high intake of saturated fats, low intake of fruits and vegetables, being sedentary and psychological factors are associated with the development of atherosclerotic disease and subsequently heart failure. Lifestyle interventions such as those listed below play an important role in prevention of cardiovascular disease outcomes and its promotion has been emphasized in many prevention guidelines.

Wellness Resources:

Wellness activities can occur in many different venues, including clinics, health departments and through medical and non-medical resources. Some resources in eastern North Carolina that may be potential partners for ASCVD are:

- Hospital sponsored programs
- Wellness centers
- Faith based programs
- Nonprofit organizations
- Free websites
- Employers
- State sponsored programs
- Insurance carriers
- Grants
- Mental Health programs
- NC Cooperative extension offices
- Eat Smart, Move More NC
- Local health departments
- National Institute of Health

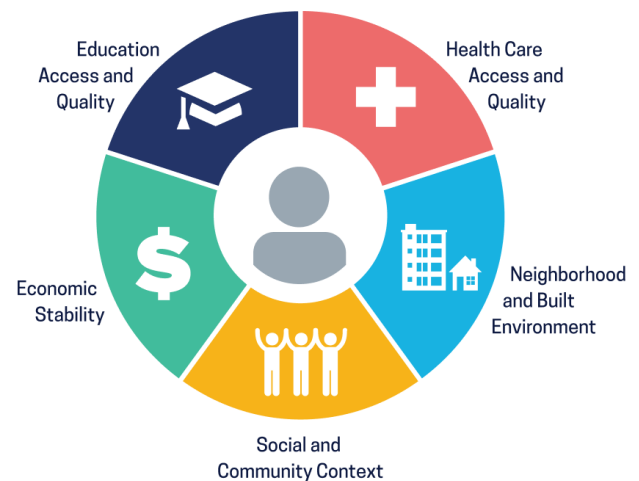
Social Determinants of Health [SDOH] resources:

Research has also shown that despite the decline in CAD mortality over the past several decades many disadvantaged groups are disproportionately burdened with poor cardiovascular health [27]. A potential reason for this burden maybe the influence of social factors on the incidence, treatment and outcomes of atherosclerotic disease and the potential behavioral, biological and psychological pathways linking them. We must now broaden the focus of disease management to incorporate another arm of risk, the social determinants of health. Examples of upstream social determinants of health that affect treatment adherence and ASCVD health outcomes include comorbid mental illness, lack of health literacy, exposure to adversity (e.g., home/community violence, trauma exposures, safety concerns), financial strain, inadequate housing conditions, lack of food security (i.e., access to affordable and nutritious food), and inadequate social support [1].

The North Carolina Department of Health and Human Services and the Foundation for Health Care Leadership and Innovation launched a robust, web-based Resource Directory including local and state resources. The program, called NCCARE360, includes:

- Real Time Communication via a call center
- Capacity for Electronic Referrals
- Secure sharing of information [the patient must consent]
- Ability to track outcomes

Social Determinants of Health



Social Determinants of Health
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Healthy People 2030

Recommendations for SDOH

Each patient should have a documented SDOH assessment/ If SDOH resources are needed, a consent should be obtained and SDOH referrals initiated

SDOH follow up at least once per year unless otherwise indicated

- Use the tools provided within the EHR to assess and track SDOH
- Inpatient and Ambulatory settings of Vidant Health have access to the SDOH via the histories section of the chart
- the SDOH wheel can found on the HP LPOC snapshot report. All SDOH needs are found under the Social History section of a patients chart.

SCREENING AND TREATMENT FOR ASCVD RISK FACTORS:

Assessment of ASCVD risk remains the foundation of primary and secondary HF prevention. After age 20 years, traditional risk factors should be measured at least every 4 to 6 years [14].

All individuals should be encouraged to follow a heart-healthy lifestyle and assessing an individual's 10-year absolute ASCVD risk enables providers to match prevention interventions to the patient's absolute risk. In addition, patients with hypertension and lipid disorders should be controlled in accordance with contemporary guidelines to lower the risk of HF. See the appendix for the ACC/AHA recommendations for treatment of patients in Stage B.

Nutrition, Physical Activity and Weight:

Screening: At each visit, a healthcare provider should have a discussion with the patient around their nutritional status, daily physical activity and weight. Counseling and comprehensive lifestyle interventions should be recommended for patients if the patient is^[28]:

- determined to be obese (BMI ≥ 30 kg/m²) or overweight (BMI=25 to 29.9 kg/m²)
- achieving less than 150 minutes of activity per week
- not consuming a diet emphasizing intake of vegetables, fruits, legumes, nuts, whole grains, and fish (nutritional resources can be found in the appendix)

Treatment:

More than 80% of chronic conditions, including CAD, could be avoided through the adoption of healthy lifestyle recommendations. Management of adverse lifestyles and related comorbidities seems to be most important in Stage A HF, when patients are at high risk of developing left ventricular (LV) dysfunction (Stage B HF) or symptomatic HF (Stages C to D).^[7]

At the very least treatment should include a referral to a health coach and/or exercise and nutrition professionals to guide patients' healthy lifestyle adoption.

A more thorough response can include Lifestyle medicine which further addresses principles that are the cornerstone of health and well-being.

Research has shown us that intensive lifestyle programs:

(10%-fat vegetarian diet, moderate aerobic exercise, stress management training, smoking cessation, and group psychosocial support) can not only have a positive impact on cardiac risk factors but in fact, intensive lifestyle

RESOURCES:

Lifestyle Medicine

<https://www.lifestylemedicine.org/>

<https://www.ornish.com/proven-program/the-research/>

Exercise

<https://www.acsm.org/acsm-positions-policy/official-positions/ACSM-position-stands>

<https://exerciseismedicine.org/>

Nutrition

<https://medinsteadofmeds.com/>

<https://health.gov/our-work/food-nutrition>

<https://www.eatsmartmovement.com/>

Tobacco

<https://www.quitlinenc.com/>

changes can delay, stop or reverse the progression of CAD in ambulatory patients over prolonged periods. [29-31]

Tobacco:

Screening: All adults should be assessed at every healthcare visit for tobacco use, and those who use tobacco should be assisted and strongly advised to quit. See Appendix for additional resources on counseling/support for patients.

Treatment: Use the “5-A” framework for counseling:

1. Ask about tobacco use.
2. Advise to quit through clear personalized messages.
3. Assess willingness to quit.
4. Assist to quit.
5. Arrange follow-up and support.

Combination therapy with counseling and medications is more effective than either component alone. FDA-approved pharmacotherapy includes nicotine replacement therapy, sustained-release bupropion, and varenicline [32].

Blood pressure:

Screening and Treatment:

Providers should follow the Vidant Health Hypertension care pathway

Cholesterol:

Screening: After age 20 years, it is reasonable to measure traditional risk factors at least every 4 to 6 years.

Treatment: It is recommended that providers consult ACC/AHA Guidelines for the Treatment of Blood Cholesterol to Reduce Atherosclerotic Cardiovascular Risk in Adults [34].

Blood Glucose:

Screening and Treatment:

Providers should follow the Vidant Health Diabetes Care pathway.

Adequate sleep:

Research shows that sleep alters autonomic nervous system function and other physiologic events that influence blood pressure. In addition, sleep disorders such as sleep apnea alter the blood pressure response and increase hypertension risk [34]. The American Academy of Sleep Medicine (AASM) and Sleep Research Society (SRS) recommend that adults should sleep 7 or more hours per night on a regular basis to promote optimal health [35].

Treatment: It is suggested that the provider discuss sleep quality with patients and work with them to improve sleep quality including but not limited to: practicing good sleep hygiene, cognitive behavioral therapy or relaxation techniques, pharmacotherapy, and evaluation and treatment for sleep apnea.

RESOURCES:

Blood pressure

<https://www.nhlbi.nih.gov/files/docs/guidelines/phycard.pdf>

<https://jamanetwork.com/journals/jama/fullarticle/1791497>

Cholesterol

<https://www.ahajournals.org/doi/full/10.1161/CIR.0000000000000678>

<https://www.aafp.org/afp/2009/1201/p1273.html>

Diabetes

<https://www.uspreventiveservicestaskforce.org/uspstf/recommendation/screening-for-abnormal-blood-glucose-and-type-2-diabetes>

Maintain good mental health

The psychological state of a patient can influence physical health. Depression is present in 1 of 5 patients with coronary artery disease, peripheral artery disease, and heart failure. Depression complicates the optimal management of CVD by worsening cardiovascular risk factors and decreasing adherence to healthy lifestyles and evidence-based medical therapies. [27] Screening for early detection and treatment of mental illness (or behavioral issues) and substance use disorders in primary care settings can improve quality of life, help contain health care costs, and reduce complications from co-occurring behavioral health and medical comorbidities [36].

In regards to CVD, it is known that depression is a major cause of morbidity and poor quality of life among patients with CVD and is considered an independent risk factor for major adverse cardiovascular events. Depression can also complicate the optimal management of CVD by decreasing adherence to healthy lifestyles and evidence based medical therapies [37].

Treatment

Providers should be prepared to screen for and address mental health issues. Addressing mental health issues should include referral to behavioral health specialist (e.g. psychologist or health psychologist) for a positive screen for mood-related signs and symptoms (anxiety, depression, stress, etc.). It is important to note that primary care providers are becoming the primary psychiatric care physician for many patients [69] and this is a very useful service for their patients for a plethora of reasons including decreased stigma discussing mental health concerns in a primary setting. However, referrals to a psychiatrist or other psychiatric provider should be offered for patients with mental health concerns beyond a primary care provider's scope of practice or comfort (e.g. symptoms of psychosis, bipolar disorder, etc.).

ACUTE DISEASE (ACC/AHA classification early Stage C)

Patients often declare their movement into ACC/AHA classification Stage C when they present to the provider's office with low activity tolerance or other cardiac symptoms indicative of cardiac failure or they are hospitalized due to their heart failure exacerbation. Recognizing heart failure early and early referral when the patient is deteriorating or becoming too complex is the key to positively influencing patient outcomes.

MEDICAL EVALUATION AND DIAGNOSIS A thorough history and physical examination should be performed to identify cardiac and non-cardiac disorders (see Appendix for Key Comorbid conditions to consider) as well as to assess volume status and vital signs.

Initial evaluation should include:

- a complete blood count
- urinalysis
- serum electrolytes (including calcium and magnesium)
- blood urea nitrogen
- serum creatinine, glucose
- fasting lipid profile
- liver function tests
- thyroid-stimulating hormone
- 12 lead EKG

Measurement of BNP or NT-proBNP is useful to support clinical decision-making. The usefulness of serial measurement of BNP/ NT-proBNP to reduce hospitalizations or mortality is not well established.

Noninvasive Cardiac Imaging:

Chest Xray – to assess heart size, pulmonary congestion and to detect alternative cardiac, pulmonary and other disease that may cause/contribute to the patient's symptoms.

2-Dimensional Echocardiogram – to assess ventricular function, size, wall thickness, wall motion and valve function.

TREATMENT

Self-care: Self-care management is part of a successful HF treatment and can significantly impact symptoms, functional capacity, well-being, morbidity and prognosis. Self-care is defined as actions aimed at maintaining physical stability, avoidance of behavior that can worsen the condition and detection of the early symptoms of deterioration. [40] A table of self-care behaviors specific to heart failure can be found in the appendix.

- Exercise: Exercise training (or regular physical activity) is recommended as safe and effective for patients with HF in order to improve functional status. A referral to Cardiopulmonary Rehabilitation can assist with a patient's adoption of an exercise program, increasing the patient's confidence in their ability to be active, and learning techniques for managing their disease process(es).

EHR workflow

EHR should help identify patients who are at risk for HF. For those at risk we would recommend

- an alert to the provider if there has been a recent hospital admission with elevated BNP (> 400 pg/mL), LVEF < 40%, NT-proBNP > 1000 pg/mL
- a trigger to measure physical activity to establish baseline data as well as assess subsequent changes that may occur.

- Providers should revisit the topics of mental health, tobacco cessation, glycemic control, sleep disordered breathing, and weight loss.
- Dietary sodium restrictions in stable outpatients with HF has been a commonly prescribed self-care management strategy. However supporting evidence for a prescribed sodium restricted diet is limited and current recommendations from national organizations are inconsistent.^[43] Rather than focusing just on salt restriction, we recommend talking with the patient about a balanced diet and possibly making a referral to a nutritionist if needed.
- Reassessment of SDOH and referral as needed should be completed at each subsequent appointment.

Recommendations

Providers should regularly revisit the need for referrals to the following services:

- Cardiopulmonary rehabilitation
- Registered dietitian
- Psychologist or health psychologist
- Case management/social work

Pharmacotherapy:

Established therapies for Heart Failure with reduced ejection fraction (HFrEF), also known as GDMT, include angiotensin receptor neprilysin inhibitors (ARNIs), angiotensin-converting enzyme inhibitors (ACEIs), angiotensin receptor blockers (ARBs), beta-blockers, loop diuretics, aldosterone antagonists, hydralazine/isosorbide dinitrate (HYD/ISDN), and ivabradine, an I_f channel blocker highly selective for the sinoatrial node pacemaker current. ^[42] Starting and target doses of select GDMT and novel therapies for HF can be found in the appendix.

HF is a complex syndrome typically associated with multiple comorbidities, which means that most patients are on multiple medications. There are no clinical trials that have evaluated the potential for greater benefit or excessive risk of indicated therapies among patients with multimorbidity. To assess tolerability of medications and best assess the trajectory of HF, it is often necessary for patients to have more frequent follow ups, especially after initiation or titration of therapy. ^[42]

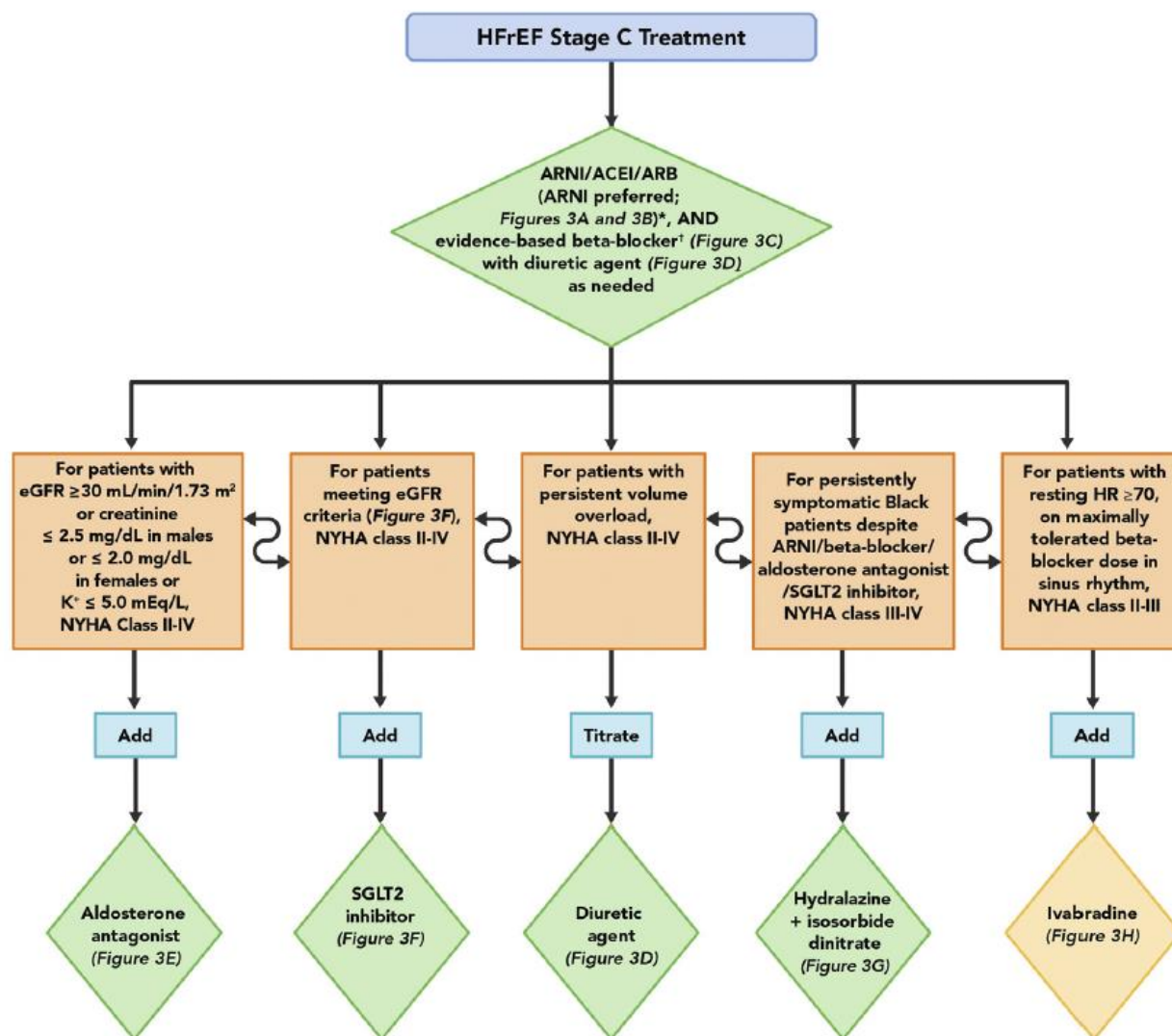
In a patient with new-onset stage C HFrEF it is often questioned whether to initiate a beta-blocker or ARNI/ACEI/ARB first. Providers should assess the patient's volume status prior to initiation of beta-blocker therapy. Guidelines direct the provider to start with either and in many cases, they can be started at the same time. The biggest focus should be on up-titration in a timely fashion to achieve maximum tolerated or target dose. The idea is to titrate as tolerated to optimize cardiac performance while minimizing adverse effects. Adjustments of therapies should occur every 2 weeks and some patients may tolerate a more rapid titration of GDMT. The aim is to achieve optimal GDMT within 3 to 6 months of the initial diagnosis of HF, as tolerated.^[42]

Providers should recognize the access challenges that exist for some patients with regards to payer coverage and associated costs of medications and be prepared to have conversations about that and strategies/resources to deal with that. See the appendix for additional resources. Another barrier to GDMT titration is the development of hypotension. A helpful step by step guide for how to address this while considering GDMT optimization can be found in the appendix.^[66]

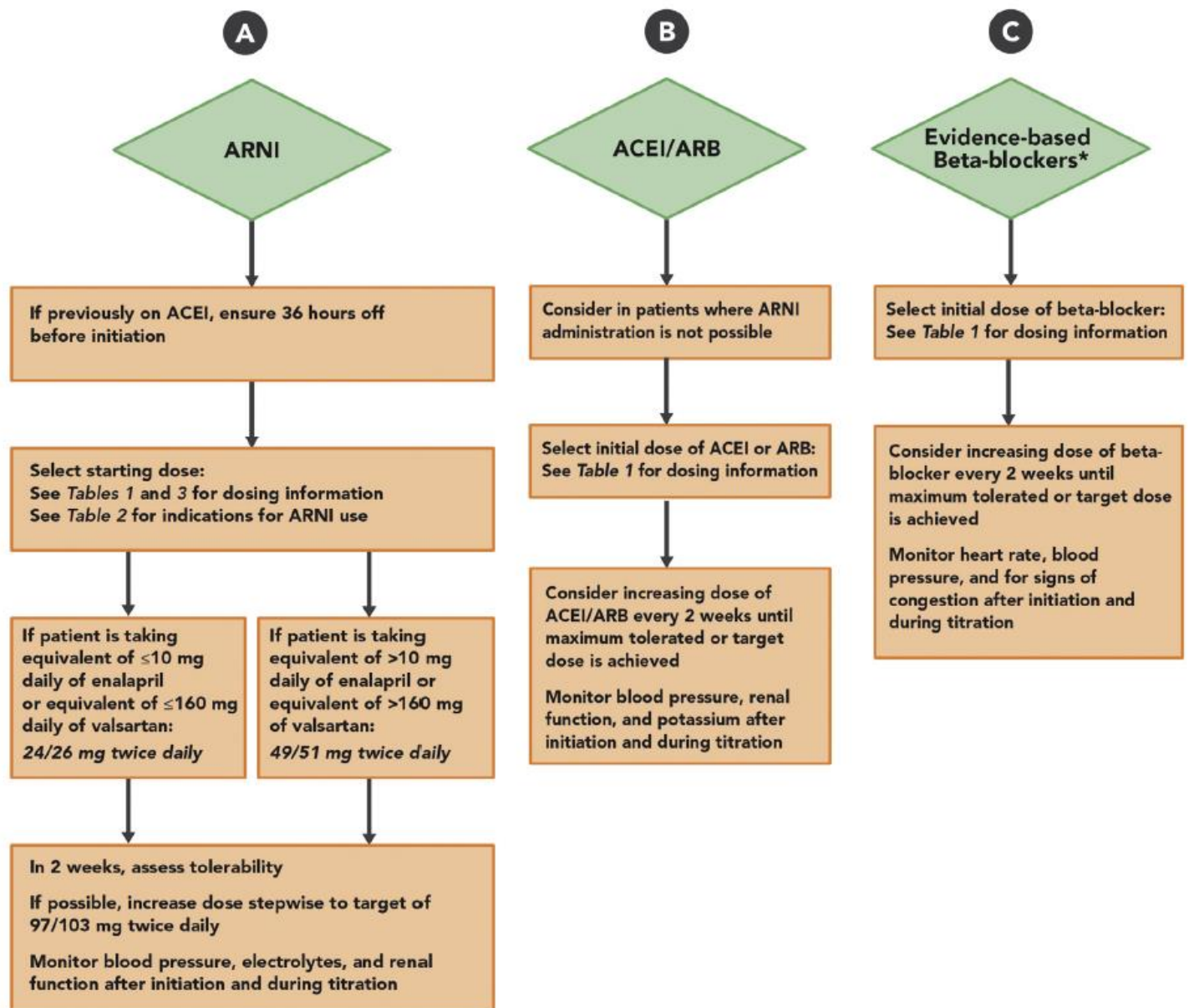
ARNI, ACEI or ARB reduce morbidity and mortality in patients with chronic HFrEF and patients who can tolerate ACEI or ARB should transition to an ARNI to further achieve a reduction in morbidity and mortality. ARNIs have been associated with improvement in diastolic function left ventricular (LV) function, quality of

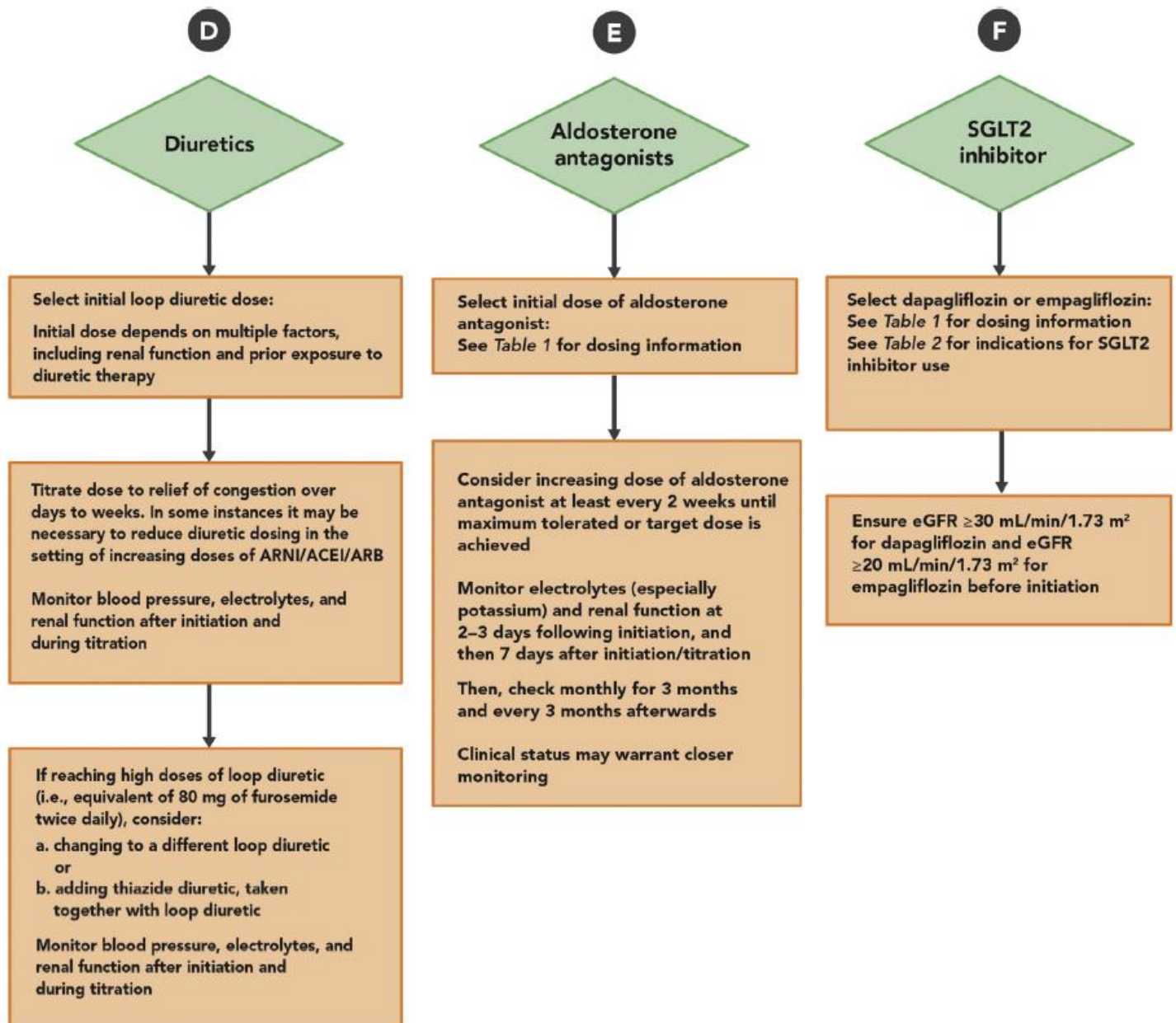
life, and burden of ventricular arrhythmias. If a patient is not already on an aldosterone antagonist, there is no data to suggest that it is mandatory before ARNI therapy. [42] If a transition from ACEI to an ARNI is being made, a 36-hour washout period should be strictly observed to avoid angioedema, a delay that is not required when switching from an ARB to an ARNI.

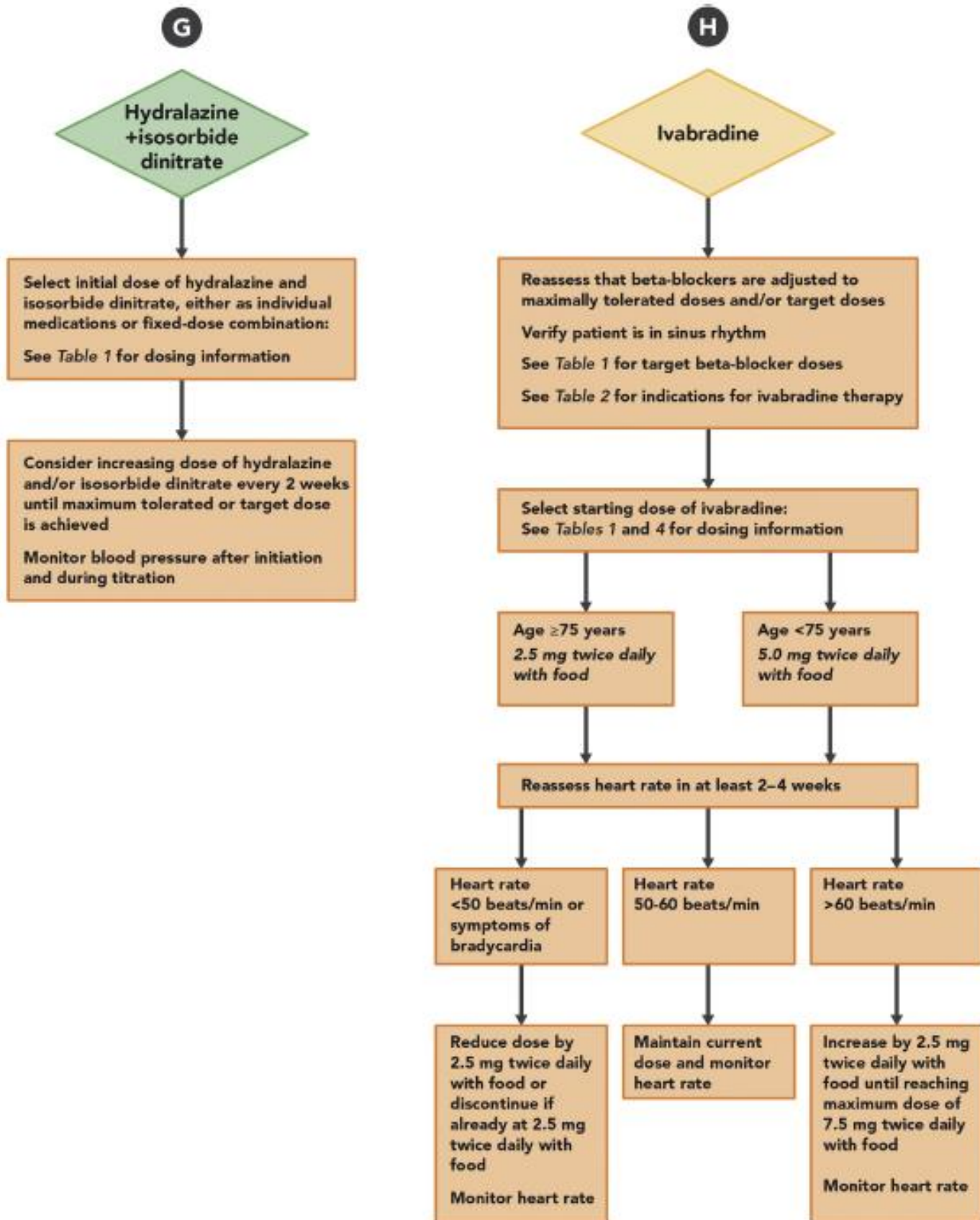
Recommendations for starting GDMT in a patient with a new diagnosis of symptomatic HFrEF can be found below [42] Please see the appendix for Table 1,2,4 referenced in these algorithms.



If patient is intolerant to ACE/ARB/ARNI then hydralazine/isosorbide dinitrate should be initiated.







Comorbidities ^[44]

In many cases, there is a bidirectional relationship between HF and certain comorbidities whereby the presence of one may increase the risk of the other, and the prognosis for the patient may be worse if both are present simultaneously. Those included in the list below have been shown to have a strong association with HF outcomes as well as strong to intermediate clinical trial evidence for modulating comorbidity.

Coronary artery disease: evaluate and vascularize in appropriate patients.

Diabetes: It is recommended that providers ensure that diabetes therapy is optimized, consider a consult with an endocrinologist and see the Vidant Health (VH) Diabetes Care pathway for more details.

Atrial fibrillation/flutter: Treat according to AHA/ACC/HRS Guideline for the management of Patients with Atrial Fibrillation. The VH Atrial fibrillation care pathway may be used as a tool to assist with management.

Aortic stenosis/Mitral regurgitation: Patients with aortic stenosis should be referred to a structural heart disease expert and treated according to AHA/ACC guidelines.

Chronic kidney disease: optimize RAAS inhibitor therapy, use hydralazine/ISDN if an ARNI/ACEI/ARB cannot be used, consider SGLT2 inhibitor (if not contraindicated) as well as a nephrology consult.

Device Therapy

The following devices are commonly used in heart failure management. These are the indications for these therapies.

Implantable cardioverter-defibrillator (ICDs), cardiac resynchronization (CRT) and combination (CRT-D) therapy have become an integral part of the management of patients with heart failure with reduced ejection fraction (HFrEF).

- ICD therapy is recommended for primary prevention of sudden cardiac death (SCD) in selected patients with HFrEF at least 40 days post MI who have a left ventricular ejection fraction (LVEF) $\leq 35\%$ and NYHA class I-III symptoms on chronic GDMT who are expected to live > 1 year.^[1]
- CRT is indicated for patients who have LVEF of 35% or less, sinus rhythm, left bundle branch block (LBBB) with QRS duration of 150 ms or greater and NYHA class II, III or ambulatory IV symptoms while on GDMT.

CardioMEMS can prevent heart failure hospitalization by remotely monitoring pulmonary artery pressures. It may be considered for patients:

- NYHA Class III HF symptoms due to systolic or diastolic heart failure.
- Hospitalized for HF in previous 12 months. Must be an inpatient admission.
- GFR >25 /min or responsive to diuretics. Must have options for management available-cannot be on inotropes or maximum dose diuretics.
- BMI <35 . If BMI >35 , chest circumference measured at axillary line <165 cm (above the breasts) Recommend referral to implanting physician to determine candidacy for implant due to additional contraindications/considerations.

When to Refer to a HF specialist

In the appendix is a list to guide when to refer to a HF specialist for consultation or co-management. It is also recommended that primary care providers consider a referral to cardiology if they are not able to schedule appointments frequently enough to meet the needs of the patient during times of medication up titration, to meet the increasing needs of patients as they become more symptomatic or the patient does not seem to be responding to GDMT.

Timely referral can ensure that patients can be considered for more advanced therapies such as left ventricular assist device (LVAD) and transplant if appropriate. Possible triggers for a referral to cardiology could include hospitalizations due to HF exacerbations, continued issues with ischemic symptoms or arrhythmias.

Mental Health

Depression may be present in over 20% of all HF patients, with rates doubling among patients with more severe HF. Patients with depression were also more than twice as likely to experience premature death or secondary events over time. [47] In addition, the presence of depression correlates with higher symptom burden and increased risk of adverse outcomes, including hospitalizations and mortality. Depressed patients also tend to be less adherent to medications and behavioral interventions. [48]

Evaluation: Medical providers can easily and quickly ascertain whether a patient is experiencing mental health concerns:

- screening measures (include but aren't limited to GAD-7, PHQ, SF-36)
- ask the patient brief, open-ended questions to screen for psychosocial risk factors: ("how would you describe your energy level?"
"How have you been sleeping?" "How has your mood been recently?"
"What kind of pressure have you been under at work or at home?"
"What do you do to unwind after work or at the end of the day?"
Do you have difficulty unwinding?"
"Who do you turn to for support?" "Are there any personal issues that we have not covered that you would like to share with me?") [49]

Treatment: If issues are identified, both psychotherapeutic and medication treatments are available. Cognitive behavioral therapy has been shown to improve mental health outcomes in patients with HF, and selective serotonin reuptake inhibitors appear safe in this cohort. Psychotherapy offers several advantages over pharmacotherapy. First, it can be customized for individual patients. Second, it has no known side effects or interactions with patients' cardiac medications. Finally, it may help patients to develop long-

Recommendations:

Mental health follow up: If antidepressants are prescribed, patient education topics should include:

- expected time line for response to medications to establish
- encouragement to take it every day rather than "as needed".

A follow up appointment should be set within 4-6 weeks to check in regarding the patient response to counseling and/or medication and to discuss possible titration.

If patient has not followed through with referral for counseling, please consider referral to Primary Care behavioral health or health coach.

Advanced Care Planning

Conversation scripts for providers
<https://www.vidanthealth.com/Manage-My-Health/Advance-Care-Planning/Conversation-Scripts-for-Providers>
Advanced Care Planning toolkit
<https://www.vidanthealth.com/wp-content/uploads/2020/11/Advance-Care-Planning-Toolkit-1-7-20-Web.pdf>

term skills to improve symptoms and prevent relapse.^[48]

Advanced Care Planning (ACP)

The ACC and AHA recommend that heart failure patients engage in ACP early in their illness. Advanced care planning is most effective as an iterative process that begins with the basic legal document of the health care power of attorney and uses this to launch shared decision-making based on the goals and values of the patient and family.^[61] Effective ACP is associated with improved quality of life and satisfaction with care, lower rates of depression and anxiety amongst bereaved family members and lower health care costs. ACP is the process a person uses to reflect on their values and beliefs to establish wishes that guide decision-making in the future particularly in End of Life (EOL).^[60]

Shared Decision Making

The Shared Decision Making (SDM) Model is the preferred approach in heart failure care where both the provider and the patient/family assume an active role. The clinician educates the patient on the diagnosis and prognosis, the nature of any proposed intervention, the risk and benefits of that intervention, and all reasonable alternatives and their associated risks and benefits.^[59] Then the provider addresses any concerns the patient and family may have. The SDM model begins with prognostic information, which is integral to SDM. Different patients may hold different values in regards to what is important to them and this information can shape treatment decisions. If the patient is interested, the provider may also make recommendations about what treatment plan will best achieve desired goals. In the setting of multiple reasonable options for medical care, shared decision-making involves clinicians working with patients to ensure that patients' values, goals and preferences guide informed decisions that are right for the individual patient.^[59]

Patient education

In HF treatment, lifestyle changes, self-care, health-promoting practices and symptom monitoring and management are as important as pharmaceutical treatment. Considering the complexity of HF and its treatment, relevant knowledge is a major factor in effective therapy. Education is therefore a component of the treatment process in HF.^[63] The main areas of education can include how to best partner with the healthcare team, following medication regimens, healthy eating, exercise, daily weighing, fluid intake restrictions, monitoring symptoms and reacting to exacerbations. Resources can be found in the appendix that can assist this process.^[64] Providers will need to keep in mind the importance of the health literacy of their patients. A consensus statement from the Heart Failure Society of America states that clinicians should focus on five steps: recognizing the consequences of low health literacy, identifying and screening patients at risk, documenting literacy levels, learning preferences and integrating effective strategies to enhance patient understanding.^[65]

Care Management

Unfortunately for many patients the presence of multiple co-morbidities make it more difficult to manage treatments plans on their own. The primary care provider and medical home team oversees the care plan and overall direction of patient management. Collaboration with the health care team is needed to coordinate complex care needs across numerous disciplines and specialties.

RECOMMENDATIONS

Whenever possible, connect the patient with care coordination or case management to assist with the many needs that can impact a patient's ability to engage in their care: transportation, medication assistance, housing, insurance coverage, etc.

In addition, heart failure guidelines can contain expensive medications and patients with HFrEF may face substantial out-of-pocket medication costs. Because cost can be a factor for a patient's non-adherence to the recommended medication regimen, suggestions for lower-cost medications or financial assistance programs should be provided. Connecting patients with a social worker and case manager can also be helpful to work through other limitations brought on by the social determinants of health such as transportation, housing, etc.

The goal is to maximize wellbeing and comfort to the greatest degree possible, while providing effective and efficient care.

LATE DISEASE (ACC/AHA classification late Stage D)

Stage D heart failure is defined as HF in which refractory symptoms persist despite guideline directed therapies. At this stage of HF providers should focus on adequate decongestion, symptom management, palliative coordination and psychosocial support for the patient and care givers.

Symptom management and Adequate Decongestion

Patients with stage D heart failure are likely to encounter worsening of symptoms or development of new symptoms. The key is to medically optimize to the fullest extent achievable with guideline-based medical therapy and then to add therapies directed at the underlying root cause of symptoms that are still present after traditional medical therapy has been exhausted. [66]

Psychosocial support

Providers should ensure that any escalation of disease burden should result in a reassessment of a patient's psychological status. This should also trigger an evaluation of the effectiveness of/need for medications and/or counseling. In addition, providers should be prepared to address the impact that a decreased ability to function may have on a patient, despite the possible absence of depression and anxiety. Discussions about QOL and the importance of coping can often normalize the feelings that the patient is having about changes and result in great acceptance and patient engagement.

Family/Caregiver support is especially important at this time and they should be encouraged to seek resources to take care of themselves.

Advanced Care Planning/Palliative Care Coordination

As mentioned above, the ACP process should be iterative and be readdressed throughout the course of the illness as patient preference can change as illness worsens. [66] Providers can find a resource within the appendix with discussion points and useful language for initiating decision-making conversations.

During these types of conversations, it can be helpful to understand the prognosis for an individual patient. The Seattle Heart Failure Model is one among many available risk-predicting calculators in heart failure. [68] Another tool that is available is the Meta-Analysis Global Group in Chronic Heart Failure (MAGGIC) which predicts the risk for heart failure with preserved ejection fraction and HFrEF.

Resources

Seattle Heart Failure Model

<https://depts.washington.edu/shfm/?width=1920&height=1080>

MAGGIC calculator

<https://www.hfriskcalc.in/>

HF Care Pathway Appendix

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Social Determinants of Health (SDOH) tools

Multiple tools exist to assist providers in evaluating SDOH. This list not intended to be comprehensive:

<https://www.chcs.org/resource/screening-social-determinants-health-populations-complex-needs-implementation-considerations/>

<https://www.ruralhealthinfo.org/toolkits/sdoh/4/assessment-tools>

https://www.aafp.org/dam/AAFP/documents/patient_care/everyone_project/hops19-physician-guide-sdoh.pdf

<https://innovation.cms.gov/files/worksheets/ahcm-screeningtool.pdf>

Tools for doing Psychological screenings

Primary care practices with multiple co-occurring behavioral health conditions in their patient population may wish to consider the screening tools derived from the PHQ. Practices can combine these tools to assess for the most common conditions. The PHQ-9 is one of the few tools endorsed by the National Quality Forum for behavioral health screening. Its administration is reimbursed by Medicare and Medicaid, and some commercial insurance, though practices must always emphasize the need for diagnostic follow-up. Practices that serve a high proportion of seriously ill patients on an outpatient basis might consider tools that were originally developed for patients with co-occurring physical health disorders (e.g., HADS). These are only suggestions there is a lack of evidence to recommend one screening instrument over another.

PHQ9 or PHQ2: <https://www.apa.org/pi/about/publications/caregivers/practice-settings/assessment/tools/patient-health>

GAD 7 <https://www.mdcalc.com/gad-7-general-anxiety-disorder-7>

Screening and Management of depression in patients with CVD

<https://www.sciencedirect.com/science/article/pii/S0735109719305133>

Medication Assistance

The high cost of prescription drugs is what drives 67 percent of patients into medication non-adherence, according to the latest Truven Health Analytics-NPR Health Poll. Providers who are able to provide information and support for medication assistance have the opportunity to improve compliance and ultimately patient outcomes.

<https://medassist.org/>

www.healthwellfoundation.org

www.needymeds.org

www.panfoundation.org

Exercise Resources

Exercise is Medicine Healthcare Providers' Action Guide

https://www.exerciseismedicine.org/assets/page_documents/Complete%20HCP%20Action%20Guide.pdf

	Aerobic and/or Resistance	Neuromotor**	Flexibility	The New ACSM FITT Exercise Recommendations	
Frequency	≥2-3 sessions per week	≥2-3 sessions per week	≥2-3 session per week	≥2-3 sessions per week with daily being most effective	***On most, preferably all, days of the week
Intensity	*Moderate (i.e., 40% - 59% VO2R or HRR; RPE 12-13 on a 6–20 scale to Vigorous (i.e., 60% - 80% VO2R or HRR; RPE 14-16 on a 6–20 scale)	Moderate (i.e., 60% - 70% 1-RM; may progress to 80% 1-RM. For older adults and novice exercisers begin with 40-50% 1RM)	Low to Moderate	Stretch to the point of feeling tightness or slight discomfort	Low, Moderate, or Vigorous with an emphasis on Moderate
Time	≥20-30 min per session of continuous or accumulated exercise of any duration	2-4 sets of 8-12 repetitions of 8-10 resistance exercises of each of the major muscle groups per session to total ≥20 min per session with rest days interspersed depending on the muscle groups being exercised	≥20-30 min per session	Hold static stretch for 10-30 s with 2-4 repetitions of each exercise targeting the major muscle tendon units to total 60 s of total stretching time for each exercise; ≤10 min per session	≥20 to 30 min per day to total ≥90 to 150+ min per week of continuous or accumulated exercise of any duration

Type	Prolonged, rhythmic activities using large muscle groups (e.g., walking, cycling, swimming)	Resistance machines, free weights, resistance bands, and/or functional body weight exercise	Exercise involving motor skills and/or functional body weight and flexibility exercise such as yoga, pilates, and tai chi	Static, dynamic, and/or proprioceptive neuromuscular facilitation	An emphasis on aerobic or resistance exercise alone or combined in addition to neuromotor and flexibility depending on personal preference
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VO_2R =oxygen uptake reserve; HRR= heart rate reserve; RPE=rating of perceived exertion; 1-RM=one repetition maximum.

* The magnitude of the BP reductions resulting from aerobic exercise are directly proportional to intensity such that the greatest BP reductions occur after vigorous intensity exercise if the patient/client is willing and able to perform vigorous intensity exercise (4).

** Neuromotor functional body weight exercise can be substituted for resistance exercise, and depending on the amount of flexibility exercise integrated into a session, neuromotor flexibility exercise can be substituted for flexibility exercise depending on patient/client preference. The evidence is promising but limited for neuromotor exercise to be recommended alongside aerobic and resistance exercise as a primary exercise modality at this time (6).

*** The frequency recommendation is made due to the immediate blood pressure lowering effects of exercise, termed *postexercise hypotension* (4).



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Tobacco Cessation counseling and support

Million Hearts change package

https://millionhearts.hhs.gov/files/Tobacco_Cessation_Change_Pkg.pdf

Center for Disease Control and Prevention

Healthcare Provider tools and resources:

<https://www.cdc.gov/tobacco/campaign/tips/partners/health/index.html>

NC Med Assist

NC MedAssist offers free support and assistance to individuals seeking help with smoking cessation, as determined on a case by case basis. The request for smoking cessation support must be documented on an intake application with NC MedAssist, and then a worker will contact them directly to offer them resources. Here's the link to NC MedAssist that includes the online application as well as an electronic application portal: <https://medassist.org/>

Patient resources:

How to Quit Smoking

This “How to Quit Smoking” page has a variety of resources, including apps, that you can share with members to share with patients.

Taking Care/Caregivers Resources

Learn the real stories of people taking care of loved ones living with a smoking-related disease or disability.

Quit Guide Handout

The Quit Guide has many helpful pieces of content, in English and Spanish, and can be embedded into provider’s offices and clinic's websites, newsletters, and emails.

E-Cigarette Information

Here is the CDC's latest information on e-cigarettes, which is available in both English and Spanish and includes a Powerpoint presentation that providers can share with patients

NC Tobacco Prevention and Control

Patient Resources: <https://www.quitlinenc.com/>

QuitlineNC provides free cessation services to any North Carolina resident who needs help quitting tobacco use. Quit Coaching is available in different forms, which can be used separately or together, to help any tobacco user give up tobacco.

Tobacco Treatment standards for Healthcare providers

<https://www.quitlinenc.com/health-professionals/tobacco-treatment-standard-of-care.html>

Agency for Healthcare Research and Quality

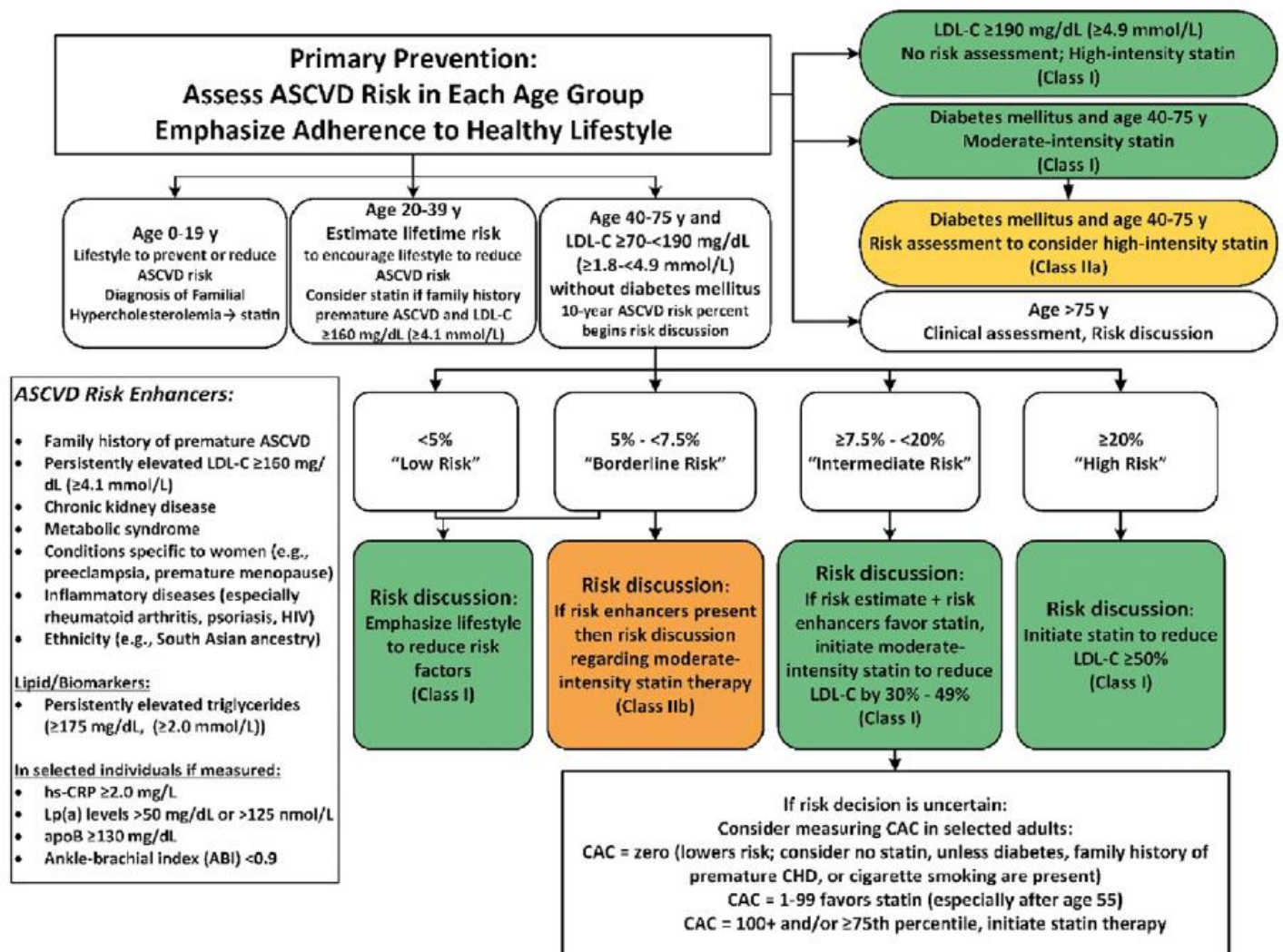
Quick Reference Guide for Clinicians

<https://www.ahrq.gov/professionals/clinicians-providers/guidelines-recommendations/tobacco/clinicians/references/quickref/index.html>

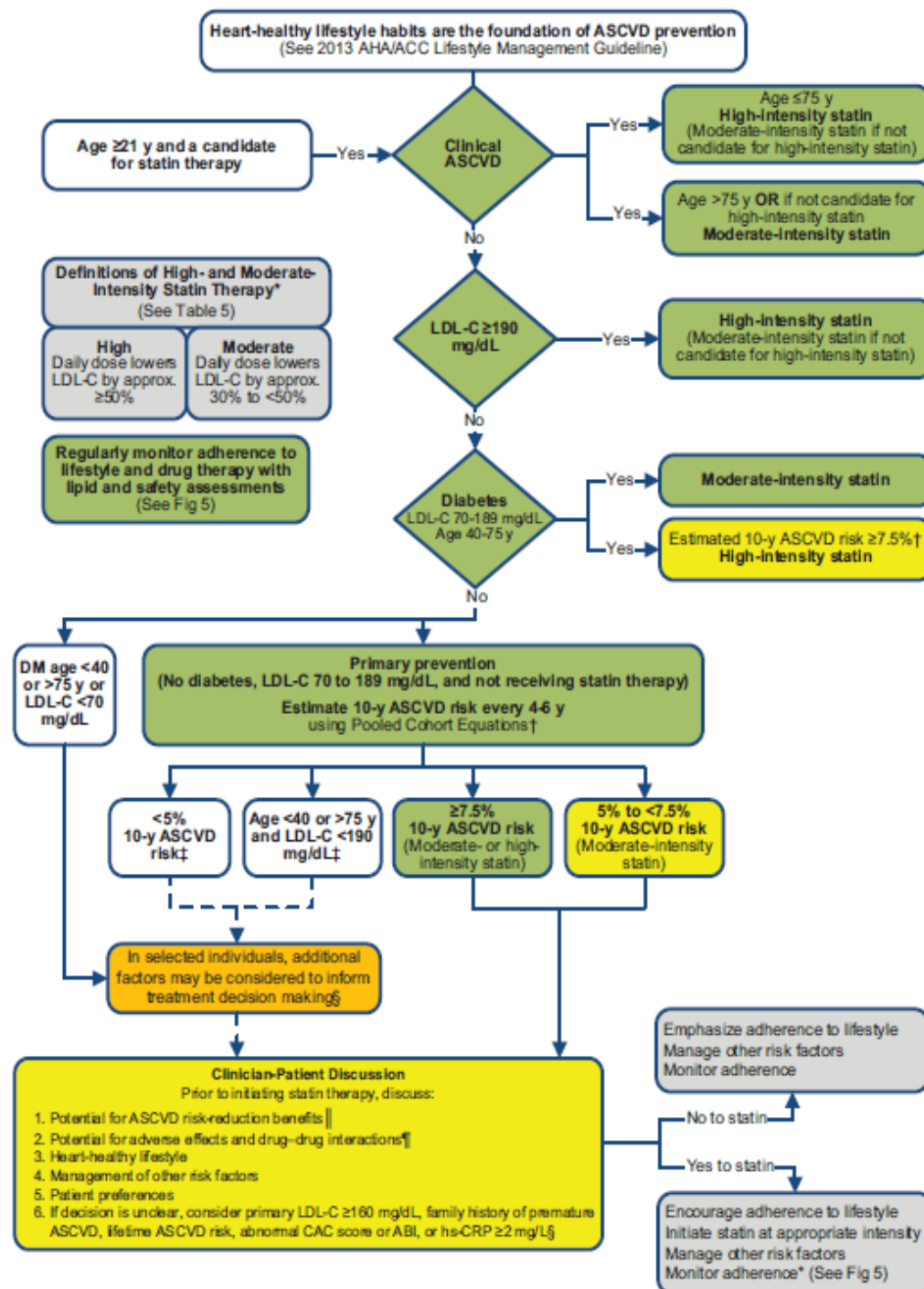
Helping Smokers Quit: A Guide for Clinicians

<https://www.ahrq.gov/professionals/clinicians-providers/guidelines-recommendations/tobacco/clinicians/references/clinhlpsmkqt/index.html>

Primary prevention [22]



Summary of Statin Initiation Recommendations for the Treatment of Blood Cholesterol



<http://www.stopbang.ca/osa/screening.php>

STOP BANG Questionnaire

Height _____ inches/cm Weight _____ lb/kg

Age _____

Male/Female

BMI _____

Collar size of shirt: S, M, L, XL, or _____ inches/cm

Neck circumference* _____ cm

1. Snoring

Do you snore loudly (louder than talking or loud enough to be heard through closed doors)?

Yes No

2. Tired

Do you often feel tired, fatigued, or sleepy during daytime?

Yes No

3. Observed

Has anyone observed you stop breathing during your sleep?

Yes No

4. Blood pressure

Do you have or are you being treated for high blood pressure?

Yes No

5. BMI

BMI more than 35 kg/m²?

Yes No

6. Age

Age over 50 yr old?

Yes No

7. Neck circumference

Neck circumference greater than 40 cm?

Yes No

8. Gender

Gender male?

Yes No

* Neck circumference is measured by staff

High risk of OSA: answering yes to three or more items

Low risk of OSA: answering yes to less than three items

Adapted from:

STOP Questionnaire

A Tool to Screen Patients for Obstructive Sleep Apnea

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Key Comorbid Conditions to Consider [39]

TABLE 4 Key Comorbid Conditions to Consider

Comorbidity	Management	Relevant Guidelines/Pathways
<i>Cardiovascular</i>		
Coronary artery disease/acute coronary syndrome	Assess and treat ischemia, and consider revascularization.	2014 AHA/ACC Guideline for the Management of Patients With Non-ST-Elevation Acute Coronary Syndromes 2013 ACCF/AHA Guideline for the Management of ST-Elevation Myocardial Infarction
Atrial fibrillation/flutter	Achieve optimal rate control. Consider restoration of normal sinus rhythm. Anticoagulation as warranted.	2014 ACC/AHA/HRS Guideline for the Management of Patients with Atrial Fibrillation 2019 AHA/ACC/HRS Focused Update of the 2014 AHA/ACC/HRS Guideline for the Management of Patients With Atrial Fibrillation
Cerebrovascular disease, TIA/stroke	Treat according to current guidelines.	Guidelines for the Prevention of Stroke in Patients With Stroke and Transient Ischemic Attack
Peripheral vascular disease	Treat according to current guidelines.	2016 AHA/ACC Guideline on the Management of Patients With Lower Extremity Peripheral Artery Disease
Aortic stenosis	Treat according to current guidelines.	2017 AHA/ACC Focused Update of the 2014 AHA/ACC Guideline for the Management of Patients with Valvular Heart Disease
Mitral regurgitation	Refer to structural heart disease expert and treat according to current guidelines.	2017 AHA/ACC Focused Update of the 2014 AHA/ACC Guideline for the Management of Patients with Valvular Heart Disease
Hypertension	Optimize GDMT for HF for control of BP. consider IV vasodilators in addition to IV diuretics if hypertensive urgency or emergency. ACEI/ARB/ARNI/beta-blocker/aldosterone antagonists are first line in HFrEF. Avoid nondihydropyridine calcium channel blockers (CCB) and alpha blockers in HFrEF; dihydropyridine CCB are acceptable for BP control if on maximum evidence-based therapy.	2017 ACC/AHA/AAPA/ABC/ACPM/AGS/APHA/ASH/ASPC/NMA/PCNA Guideline for the Prevention, Detection, Evaluation, and Management of High Blood Pressure in Adults 2017 ACC/AHA/HFSA Focused Update of the 2013 ACCF/AHA Guideline for the Management of Heart Failure
<i>Systemic Disease</i>		
Diabetes mellitus	Monitor hyperglycemia throughout hospitalization, optimize therapy, avoid thiazolidinediones, consider metformin, SGLT2 inhibitors, follow current standards of care.	American Diabetes Association Standards of Medical Care in Diabetes- 2019 2018 ACC Expert Consensus Decision Pathway on Novel Therapies for Cardiovascular Risk Reduction in Patients With Type 2 Diabetes and Atherosclerotic Cardiovascular Disease
Chronic kidney disease	Evaluate etiology, avoid nephrotoxic agents. Can consider potassium binders to maximize neurohormonal blockade. Comanagement with nephrologist. Patients on dialysis are especially problematic.	KDIGO 2012 Clinical Practice Guideline for the Evaluation and Management of Chronic Kidney Disease
Acute worsening of kidney function	Evaluate etiology, recognize that transient rise in creatinine with appropriate decongestion strategies or RAAS initiation is not usually associated with worse outcomes.	KDIGO 2012 Clinical Practice Guideline for the Evaluation and Management of Chronic Kidney Disease
Liver disease	Evaluate for etiology and appropriate treatment strategies if primary liver disease. Note increasing prevalence of nonalcoholic fatty liver disease that may progress to nonalcoholic steatohepatitis.	The Diagnosis and Management of Nonalcoholic Fatty Liver Disease: Practice Guidance From the American Association for the Study of Liver Diseases

Key Comorbid Conditions to Consider [39] cont'd

Acute exacerbation of chronic lung disease	Monitor oxygenation, optimize therapy, treat hypoxia, consider noninvasive ventilation.	Global Strategy for the Diagnosis, Management, and Prevention of Chronic Obstructive Pulmonary Disease: 2019 Report
Infection	Diagnose and treat as needed.	
Sleep apnea	Facilitate diagnosis by sleep study to distinguish central from obstructive sleep apnea, initiate appropriate treatment.	Management of obstructive sleep apnea in adults: A clinical practice guideline from the American College of Physicians.
Anemia/iron deficiency	Evaluate and treat according to underlying etiology. Consider intravenous ferric carboxymaltose or nondextran IV iron intravenous iron replacement for improvement in symptoms and functional capacity, even if anemia is mild. Consider transfusion for severe and symptomatic anemia.	Treatment of anemia in patients with heart disease: a clinical practice guideline from the American College of Physicians.
Rheumatologic diseases	Treat according to current guidelines, recognize that some biological agents may have cardiotoxicity or adverse effects in HF patients.	2015 American College of Rheumatology Guideline for the Treatment of Rheumatoid Arthritis
Amyloidosis	Screen for cardiac or systemic amyloidosis with or without polyneuropathy, with genetic testing as appropriate; consider treatment for ATTR and AL.	Guidelines on the management of AL amyloidosis
Cancer	Assess for cardiac involvement or cardiotoxicity of chemotherapy or radiotherapy.	2016 ESC Position Paper on cancer treatments and cardiovascular toxicity developed under the auspices of the ESC Committee for Practice Guidelines: The Task Force for cancer treatments and cardiovascular toxicity of the European Society of Cardiology (ESC)
Thyroid	Gradually try to achieve euthyroid state.	Guidelines for the Treatment of Hypothyroidism 2016 American Thyroid Association Guidelines for Diagnosis and Management of Hyperthyroidism and Other Causes of Thyrotoxicosis

CARE PATHWAY | SYSTOLIC HEART FAILURE IN ADULTS

Comorbidity	Management	Relevant Guidelines/Pathways
<i>General Condition</i>		
Obesity	Screen for diabetes and sleep apnea, educate on lifestyle modification. Referral to nutritionist. Consider gastric bypass surgery. Exercise program/cardiac rehabilitation.	Behavioral Weight Loss Interventions to Prevent Obesity-Related Morbidity and Mortality in Adults: US Preventive Services Task Force Recommendation Statement
Malnutrition	Assess for protein calorie malnutrition. Referral to dietician.	Guidelines for the Provision and Assessment of Nutrition Support Therapy in the Adult Critically Ill Patient
Frailty, deconditioning	Assess for frailty, consider physical therapy and/or referral for rehabilitation.	
<i>Psychosocial</i>		
Dementia /cognitive decline	Assess precipitating factors, possible delirium, evaluate cognitive and mental executive function.	Report of the Guideline Development, Dissemination, and Implementation Subcommittee of the American Academy of Neurology
Depression	Screen for depression and other mood disorders. Consider referral (87) for counseling and potential pharmacotherapy.	Nonpharmacologic Versus Pharmacologic Treatment of Adult Patients With Major Depressive Disorder: A Clinical Practice Guideline From the American College of Physicians
Substance abuse	Monitor and treat for cardiotoxicity and withdrawal, educate on cardiotoxicity, refer for substance abuse rehabilitation.	Health and Public Policy to Facilitate Effective Prevention and Treatment of Substance Use Disorders Involving Illicit and Prescription Drugs: An American College of Physicians Position Paper
Tobacco abuse	Smoking cessation counseling.	Behavioral and pharmacotherapy interventions for tobacco smoking cessation in adults, including pregnant women: U.S. Preventive Services Task Force recommendation statement 2018 ACC Expert Consensus Decision Pathway on Tobacco Cessation Treatment
Alcohol abuse	Monitor and treat for withdrawal, educate on cardiotoxicity, refer for rehabilitation.	Guidelines for biological treatment of substance use and related disorders, part 1: Alcoholism, first revision
Inadequate social support	Assess for self-neglect, barriers to care, ability and necessary support systems for self-care. Referral to social work.	
Nonadherence	Assess for reasons for nonadherence, including health illiteracy; address goals of care; provide education and support to overcome barriers.	2017 ACC Expert Consensus Decision Pathway for Optimization of Heart Failure Treatment: Answers to 10 Pivotal Issues About Heart Failure With Reduced Ejection Fraction (Table 9, Table 10, Table 11)

Recommendations for treatment of Stage B HF ^[1]**Table 9. Recommendations for Treatment of Stage B HF**

Recommendations	COR	LOE	References
In patients with a history of MI and reduced EF, ACE inhibitors or ARBs should be used to prevent HF	I	A	132–136
In patients with MI and reduced EF, evidence-based beta blockers should be used to prevent HF	I	B	137–139
In patients with MI, statins should be used to prevent HF	I	A	140–146
Blood pressure should be controlled to prevent symptomatic HF	I	A	28, 128–131
ACE inhibitors should be used in all patients with a reduced EF to prevent HF	I	A	135, 147
Beta blockers should be used in all patients with a reduced EF to prevent HF	I	C	N/A
An ICD is reasonable in patients with asymptomatic ischemic cardiomyopathy who are at least 40 d post-MI, have an LVEF $\leq 30\%$, and on GDMT	IIa	B	148
Nondihydropyridine calcium channel blockers may be harmful in patients with low LVEF	III: Harm	C	N/A

ACE indicates angiotensin-converting enzyme; ARB, angiotensin-receptor blocker; COR, Class of Recommendation; EF, ejection fraction; GDMT, guideline-directed medical therapy; HF, heart failure; ICD, implantable cardioverter-defibrillator; LOE, Level of Evidence; LVEF, left ventricular ejection fraction; MI, myocardial infarction; and N/A, not available.

Topics in patient education with skills and appropriate self care behaviors [40]

Educational topics	Skills and self-care behaviours
Definition and aetiology of heart failure	Understand the cause of heart failure and why symptoms occur
Symptoms and signs of heart failure	Monitor and recognize signs and symptoms Record daily weight and recognize rapid weight gain Know how and when to notify healthcare provider Use flexible diuretic therapy if appropriate and recommended
Pharmacological treatment	Understand indications, dosing, and effects of drugs Recognize the common side-effects of each drug prescribed
Risk factor modification	Understand the importance of smoking cessation Monitor blood pressure if hypertensive Maintain good glucose control if diabetic Avoid obesity
Diet recommendation	Sodium restriction if prescribed Avoid excessive fluid intake Modest intake of alcohol Monitor and prevent malnutrition
Exercise recommendations	Be reassured and comfortable about physical activity Understand the benefits of exercise Perform exercise training regularly
Sexual activity	Be reassured about engaging in sex and discuss problems with healthcare professionals Understand specific sexual problems and various coping strategies
Immunization	Receive immunization against infections such as influenza and pneumococcal disease
Sleep and breathing disorders	Recognize preventive behaviour such as reducing weight of obese, smoking cessation, and abstinence from alcohol Learn about treatment options if appropriate
Adherence	Understand the importance of following treatment recommendations and maintaining motivation to follow treatment plan
Psychosocial aspects	Understand that depressive symptoms and cognitive dysfunction are common in patients with heart failure and the importance of social support Learn about treatment options if appropriate
Prognosis	Understand important prognostic factors and make realistic decisions Seek psychosocial support if appropriate

Table 14. Oral Diuretics Recommended for Use in the Treatment of Chronic HF

Drug	Initial Daily Dose(s)	Maximum Total Daily Dose	Duration of Action
Loop diuretics			
Bumetanide	0.5 to 1.0 mg once or twice	10 mg	4 to 6 h
Furosemide	20 to 40 mg once or twice	600 mg	6 to 8 h
Torsemide	10 to 20 mg once	200 mg	12 to 16 h
Thiazide diuretics			
Chlorothiazide	250 to 500 mg once or twice	1000 mg	6 to 12 h
Chlorthalidone	12.5 to 25.0 mg once	100 mg	24 to 72 h
Hydrochlorothiazide	25 mg once or twice	200 mg	6 to 12 h
Indapamide	2.5 mg once	5 mg	36 h
Metolazone	2.5 mg once	20 mg	12 to 24 h
Potassium-sparing diuretics*			
Amiloride	5 mg once	20 mg	24 h
Spironolactone	12.5 to 25.0 mg once	50 mg†	1 to 3 h
Triamterene	50 to 75 mg twice	200 mg	7 to 9 h
Sequential nephron blockade			
Metolazone‡	2.5 to 10.0 mg once plus loop diuretic	N/A	N/A
Hydrochlorothiazide	25 to 100 mg once or twice plus loop diuretic	N/A	N/A
Chlorothiazide (IV)	500 to 1000 mg once plus loop diuretic	N/A	N/A

*Eplerenone, although also a diuretic, is primarily used in chronic HF.

†Higher doses may occasionally be used with close monitoring.

‡See Section 8.4.

HF indicates heart failure; IV, intravenous; and N/A, not applicable.

[42]

TABLE 1**Starting and Target Doses of Select GDMT and Novel Therapies for HF (choice and timing of each therapy and in whom they should be added discussed in the text)***

	Starting Dose	Target Dose
Beta-Blockers		
Bisoprolol	1.25 mg once daily	10 mg once daily
Carvedilol	3.125 mg twice daily	25 mg twice daily for weight <85 kg and 50 mg twice daily for weight ≥85 kg
Metoprolol succinate	12.5–25 mg daily	200 mg daily
ARNIs		
Sacubitril/valsartan	24/26 mg–49/51 mg twice daily	97/103 mg twice daily
ACEIs		
Captopril	6.25 mg 3× daily	50 mg 3× daily
Enalapril	2.5 mg twice daily	10–20 mg twice daily
Lisinopril	2.5–5 mg daily	20–40 mg daily
Ramipril	1.25 mg daily	10 mg daily
ARBs		
Candesartan	4–8 mg daily	32 mg daily
Losartan	25–50 mg daily	150 mg daily
Valsartan	40 mg twice daily	160 mg twice daily
Aldosterone antagonists		
Eplerenone	25 mg daily	50 mg daily
Spironolactone	12.5–25 mg daily	25–50 mg daily
SGLT2 inhibitors		
Dapagliflozin	10 mg daily	10 mg daily
Empagliflozin	10 mg daily	10 mg daily
Vasodilators		
Hydralazine	25 mg 3× daily	75 mg 3× daily
Isosorbide dinitrate [†]	20 mg 3× daily	40 mg 3× daily
Fixed-dose combination isosorbide dinitrate/hydralazine [‡]	20 mg/37.5 mg (1 tab) 3× daily	2 tabs 3× daily
Ivabradine		
Ivabradine	2.5–5 mg twice daily	Titrate to heart rate 50–60 beats/min. Maximum dose 7.5 mg twice daily

[42]

TABLE 2	Indications for ARNI, Ivabradine, and SGLT2 Inhibitor Use
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Indications for Use of an ARNI

- HFrEF (EF ≤40%)
- NYHA class II–IV HF
- Administered in conjunction with a background of GDMT for HF in place of an ACEI or ARB

Indications for Use of Ivabradine

- HFrEF (EF ≤35%)
- On maximum tolerated dose of beta-blocker
- Sinus rhythm with a resting heart rate ≥70 beats/min
- NYHA class II or III HF

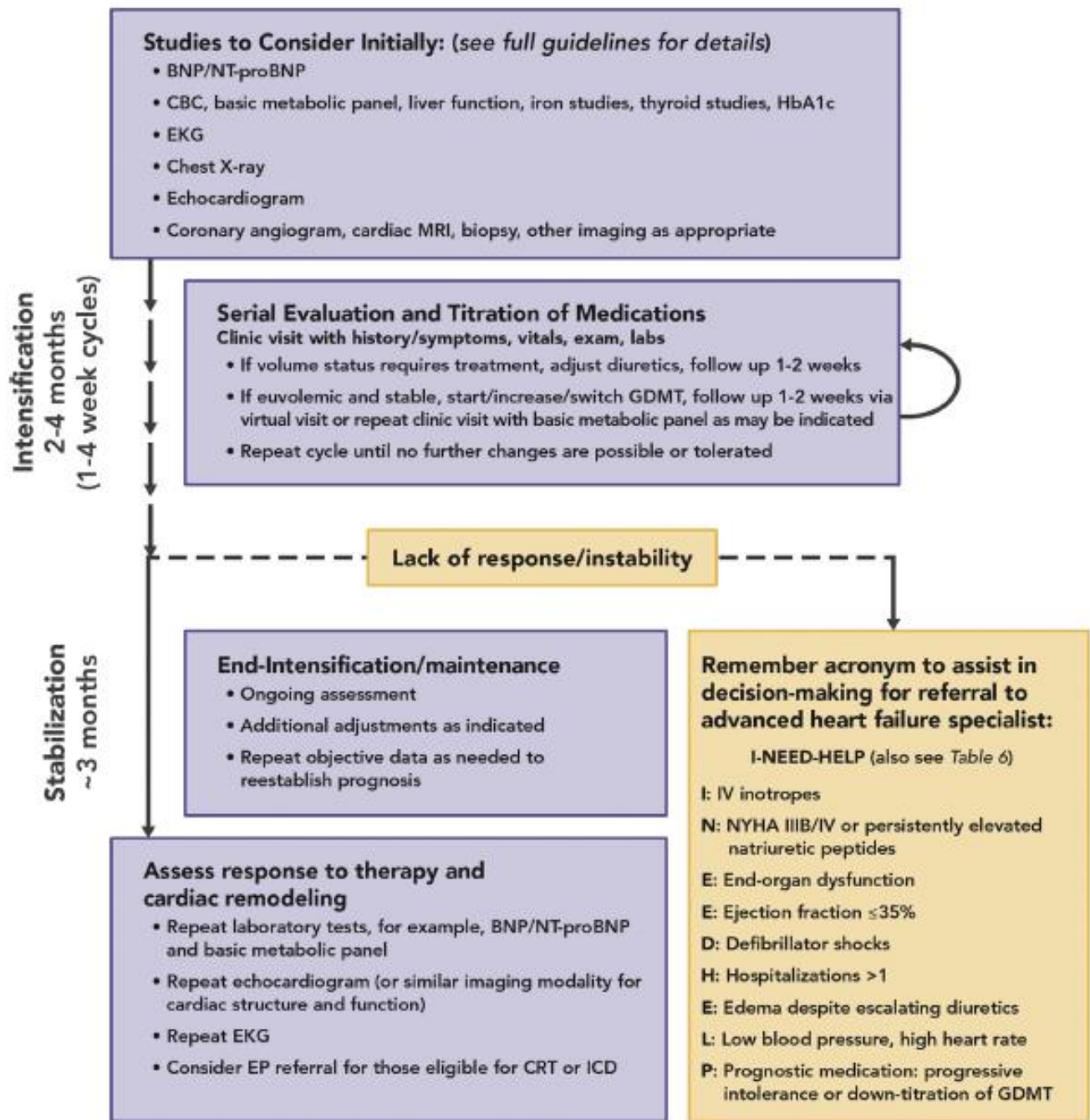
Indications for Use of an SGLT2 Inhibitor

- HFrEF (EF ≤40%) with or without diabetes
- NYHA class II–IV HF
- Administered in conjunction with a background of GDMT for HF

[42]

TABLE 4 Contraindications and Cautions for Sacubitril/Valsartan, Ivabradine, and SGLT2 inhibitors

A) Sacubitril/Valsartan	
Contraindications	Cautions
<ul style="list-style-type: none"> ■ Within 36 hours of ACEI use ■ History of angioedema with or without an ACEI or ARB ■ Pregnancy ■ Lactation (no data) ■ Severe hepatic impairment (Child-Pugh C) ■ Concomitant aliskiren use in patients with diabetes ■ Known hypersensitivity to either ARBs or ARNIs 	<ul style="list-style-type: none"> ■ Renal impairment: <ul style="list-style-type: none"> – Mild-to-moderate (eGFR 30-59 mL/min/1.73 m²): no starting dose adjustment required – Severe* (eGFR <30 mL/min/1.73 m²): reduce starting dose to 24/26 mg twice daily; double the dose every 2-4 weeks to target maintenance dose of 97/103 mg twice daily, as tolerated ■ Hepatic impairment: <ul style="list-style-type: none"> – Mild (Child-Pugh A): no starting dose adjustment required – Moderate (Child-Pugh B): reduce starting dose to 24/26 mg twice daily; double the dose every 2-4 weeks to target maintenance dose of 97/103 mg twice daily, as tolerated ■ Renal artery stenosis ■ Systolic blood pressure <100 mm Hg ■ Volume depletion
B) Ivabradine	
Contraindications	Cautions
<ul style="list-style-type: none"> ■ HFrEF ■ Presence of angina with normal EF ■ Hypersensitivity ■ Severe hepatic impairment (Child-Pugh C) ■ Acute decompensated HF ■ Blood pressure <90/50 mm Hg ■ Sick sinus syndrome without a pacemaker ■ Sinoatrial node block ■ 2nd or 3rd degree block without a pacemaker ■ Resting heart rate <60 beats/min ■ Persistent AF or flutter ■ Atrial pacemaker dependence 	<ul style="list-style-type: none"> ■ Sinus node disease ■ Cardiac conduction defects ■ Prolonged QT interval
C) SGLT2 Inhibitors	
Contraindications	Cautions
<ul style="list-style-type: none"> ■ Not approved for use in patients with type 1 diabetes due to increased risk of diabetic ketoacidosis ■ Known hypersensitivity to drug ■ Lactation (no data) ■ On dialysis 	<ul style="list-style-type: none"> ■ For HF care, dapagliflozin, eGFR <30 mL/min/1.73 m² ■ For HF care, empagliflozin, eGFR <20 mL/min/1.73 m² ■ Pregnancy ■ Increased risk of mycotic genital infections ■ May contribute to volume depletion. Consider altering diuretic dose if applicable ■ Ketoacidosis in patients with diabetes: <ul style="list-style-type: none"> ■ Temporary discontinuation before scheduled surgery is recommended to avoid potential risk for ketoacidosis ■ Assess patients who present with signs and symptoms of metabolic acidosis for ketoacidosis, regardless of blood glucose level ■ Acute kidney injury and impairment in renal function: consider temporarily discontinuing in settings of reduced oral intake or fluid losses ■ Urosepsis and pyelonephritis: evaluate patients for signs and symptoms of urinary tract infections and treat promptly, if indicated ■ Necrotizing fasciitis of the perineum (Fournier's gangrene): rare, serious, life-threatening cases have occurred in both female and male patients; assess patients presenting with pain or tenderness, erythema, or swelling in the genital or perineal area, along with fever or malaise

FIGURE 4 Testing and Medication Titration Following Diagnosis of HFrEF

BNP = B-type natriuretic peptide; CBC = complete blood count; CRT = cardiac resynchronization therapy; ECG = electrocardiogram; EP = electrophysiologist; GDMT = guideline-directed medical therapy; HbA1c = hemoglobin A1c; HF = heart failure; HFrEF = heart failure with reduced ejection fraction; ICD = implantable cardioverter-defibrillator; IV = intravenous; NT-proBNP = N terminal pro B-type natriuretic peptide); NYHA = New York Heart Association.

TABLE 10 Ten Considerations to Improve Adherence

1. Capitalize on opportunities when patients are most predisposed to adherence
■ In-hospital/pre-discharge initiation following decompensation
2. Consider the patient's perspective
■ Start with the goals of therapy (feeling better and living longer) and then discuss how specific actions (medication initiation, intensification, monitoring, and adherence) support those goals (example: ACC's My Heart Failure Action Plan)
■ Use decision aids when available (example: CardioSmart Heart Failure Resources)
■ Ask patient how they learn best and provide education accordingly
■ Use culturally relevant patient education materials
3. Simplify medication regimens whenever possible
4. Consider costs and access
■ Become familiar with and advocate for systems that help make cost sharing automatic, immediate, and transparent
■ Prescribe lower-cost medications if of similar efficacy
■ Facilitate access to copay assistance
■ Discuss out-of-pocket copays proactively
■ Prescribe 90-day quantities for refills
5. Communicate with other clinicians involved in care, ideally facilitated by electronic health records
6. Educate using practical, patient-friendly information
■ Provide a written explanation of the purpose of each medication prescribed
■ Plan pharmacist visits for complex medication regimens
■ Use the "teach back" principle to reinforce education
7. Recommend tools that support adherence in real time
■ Pill boxes to be filled by patient or care partner a week at a time
■ Alarms for each time of the day medications are due
■ Smartphone or other mobile health applications that provide an interactive platform for education, reminders, warnings, and adherence tracking
8. Consider behavioral supports
■ Motivational interviewing
■ Participate in engaged benefit designs
9. Anticipate problems
■ Communicate common side effects
■ Provide instructions on when to call for refills or report problems
■ Remind patients using pharmacy assistance programs that refills/reorders are not automatic
10. Monitor adherence and target patients at risk
■ Inquire patients directly (e.g., "How many times in a week do you miss taking your medications?" "Have you run out of your medications recently?")
■ Carry out medicine reconciliation at visits, with focus on discrepancies
■ Assess remaining dosage units (i.e., count excess remaining tablets)
■ Monitor pharmacy fills, using available clinical databases or automated alerts for failed fills and refills
■ Review available drug levels (e.g., digoxin, INR) or concentrations of BNP/NT-proBNP
■ Plan home-based nursing visits for appropriate patients

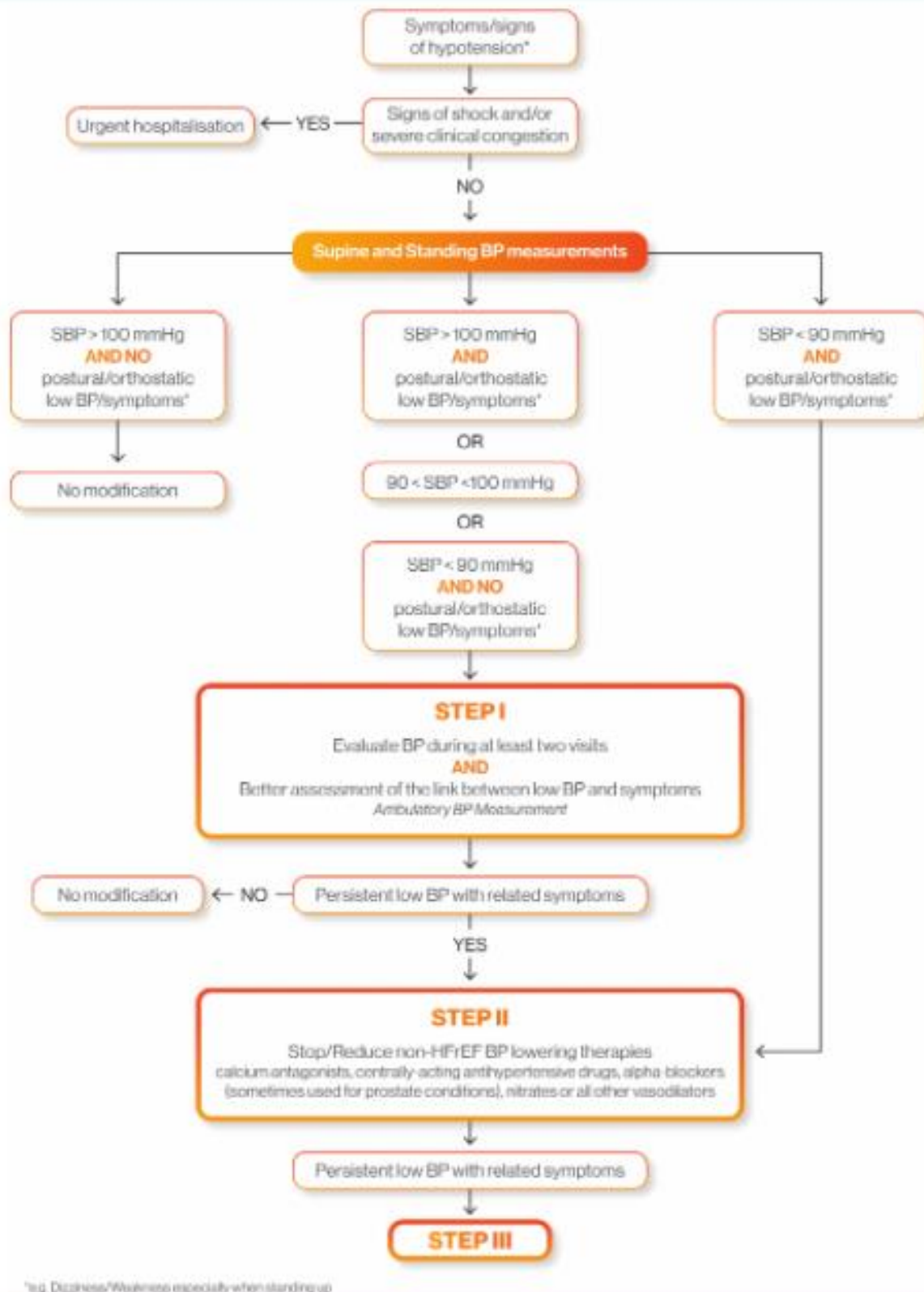


Figure 1 Decision tree for a heart failure with reduced ejection fraction patient with low blood pressure (Step I and Step II). BP, blood pressure; HFrEF, heart failure with reduced ejection fraction; SBP, systolic blood pressure.



Figure 2 Decision tree for a heart failure with reduced ejection fraction patient with low blood pressure (Step III and Step IV). ACEi, angiotensin-converting enzyme inhibitor; ARB, angiotensin receptor blocker; ARNi, angiotensin receptor–neprilysin inhibitor; BB, beta-blocker; BNP, B-type natriuretic peptide; BP, blood pressure; GFR, glomerular filtration rate; HR, heart rate; MRA, mineralocorticoid receptor antagonist; NT-proBNP, N-terminal B-type natriuretic peptide; RAAS, renin–angiotensin–aldosterone system.

[67]

The following are triggers for patient referral to a HF specialist [42]

TABLE 6	Triggers for HF Patient Referral to a Specialist/Program
Clinical Scenario	<ol style="list-style-type: none"> 1. New-onset HF (regardless of EF): Refer for evaluation of etiology, guideline-directed evaluation and management of recommended therapies, and assistance in disease management, including consideration of advanced imaging, endomyocardial biopsy, or genetic testing for primary evaluation of new-onset HF 2. Chronic HF with high-risk features, such as development or persistence of one or more of the following risk factors: <ul style="list-style-type: none"> ■ Need for chronic intravenous inotropes ■ Persistent NYHA functional class III-IV symptoms of congestion or profound fatigue ■ Systolic blood pressure ≤ 90 mm Hg or symptomatic hypotension ■ Creatinine ≥ 1.8 mg/dL or BUN ≥ 43 mg/dL ■ Onset of atrial fibrillation, ventricular arrhythmias, or repetitive ICD shocks ■ Two or more emergency department visits or hospitalizations for worsening HF in the prior 12 months ■ Inability to tolerate optimally dosed beta-blockers and/or ACEI/ARB/ARNI and/or aldosterone antagonists ■ Clinical deterioration, as indicated by worsening edema, rising biomarkers (BNP, NT-proBNP, others), worsened exercise testing, decompensated hemodynamics, or evidence of progressive remodeling on imaging ■ High mortality risk using a validated risk model for further assessment and consideration of advanced therapies, such as the Seattle Heart Failure Model 3. Persistently reduced LVEF $\leq 35\%$ despite GDMT for ≥ 3 months: refer for consideration of device therapy in those patients without prior placement of ICD or CRT, unless device therapy is contraindicated or inconsistent with overall goals of care 4. Second opinion needed regarding etiology of HF; for example: <ul style="list-style-type: none"> ■ Coronary ischemia and the possible value of revascularization ■ Valvular heart disease and the possible value of valve repair ■ Suspected myocarditis ■ Established or suspected specific cardiomyopathies (e.g., hypertrophic cardiomyopathy, arrhythmogenic right ventricular dysplasia, Chagas disease, restrictive cardiomyopathy, cardiac sarcoidosis, amyloid, aortic stenosis) 5. Annual review needed for patients with established advanced HF in which patients/caregivers and clinicians discuss current and potential therapies for both anticipated and unanticipated events, possible HF disease trajectory and prognosis, patient preferences, and advanced care planning 6. Assessment of patient for possible participation in a clinical trial

Shared Decision Making Tools for HF

ACC/Cardiosmart

Drug Options for HF

https://www.cardiosmart.org/docs/default-source/assets/decision-aid/heart-failure-drug-options.pdf?sfvrsn=aaff9c98_1

ICD

<https://www.cardiosmart.org/topics/heart-failure/assets/decision-aid/icds-for-patients-with-heart-failure>

LVAD

<https://www.cardiosmart.org/topics/heart-failure/assets/decision-aid/left-ventricular-assist-device-lvad>

Colorado program for Patient Centered Decisions

Heart Failure Medications

<https://patientdecisionaid.org/heart-failure-medication-arni/>

CRT

<https://patientdecisionaid.org/icd-crt/>

LVAD

<https://patientdecisionaid.org/lvad/>

Patient Support and Education resources

Stay Well “Living Well with HF”

<https://staywell.mydigitalpublication.com/publication/?i=460873>

AHA “Rise Above HF”

<http://rahf.ksw-gtg.com/publication/?m=46677&i=451482&p=10&ver=html5>

AHA Life’s Simple 7

<https://www.heart.org/en/healthy-living/healthy-lifestyle/my-life-check--lifes-simple-7>

Preventative Cardiovascular Nursing Association

<https://pcna.net/clinical-resources/patient-handouts/heart-failure-tools-and-handout/>

American College of Sports Medicine

[https://www.exerciseismedicine.org/assets/page_documents/EIM%20Rx%20series Exercising%20with%20Heart%20Failure.pdf](https://www.exerciseismedicine.org/assets/page_documents/EIM%20Rx%20series%20Exercising%20with%20Heart%20Failure.pdf)

American College of Cardiology/Cardiosmart

<https://www.cardiosmart.org/topics/heart-failure>

Henry Ford

https://www.youtube.com/watch?v=x8LmqxqoPb0&feature=youtu.be&list=PLelzx72H9_229Z6WCn-FA74SSDXDTxwrY

AAHFN

https://www.aahfn.org/mpage/patient_tip_sheet

Vidant Health Library

<https://healthlibrary.vidanthealth.com/>

Zone tool for patients

Green Zone = All Clear	Green Zone Means:
<p>I have:</p> <ul style="list-style-type: none"> • No new or worse shortness of breath. • No unintended weight gain. • No cough. • No new swelling in feet or legs OR swelling is not getting worse. • No chest pain or tightness in my chest. • No change in energy or activity level. 	<p>My symptoms are under control.</p> <p>What I should do:</p> <ul style="list-style-type: none"> • Continue taking my medications as prescribed. • Continue to check my weight daily. • Follow low-salt diet. • Keep all scheduled appointments. • Continue to check for swelling in my feet and legs.
Yellow Zone = Caution	Yellow Zone Means:
<p>I have these symptoms:</p> <ul style="list-style-type: none"> • Increased shortness of breath with activity. • Weight gain of 3 or more pounds in 1 day. • More coughing or my cough is worse. • Increased swelling in feet or legs. • New or more frequent chest pain or tightness. • Need more pillows to sleep at night. • I feel dizzy or lightheaded after I stand up. • I feel abdominal bloating or a full feeling in my stomach. 	<p>My symptoms are in the caution zone. I may need to adjust my medications, activity or diet.</p> <p>What I should do:</p> <ul style="list-style-type: none"> • Call one of the following. <p>Doctor: _____</p> <p>Phone Number: _____</p> <p>Other: _____</p> <p>Phone Number: _____</p> <p>Other: _____</p> <p>Phone Number: _____</p>
Red Zone = Emergency	Red Zone Means:
<p>I have these symptoms:</p> <ul style="list-style-type: none"> • Cannot catch my breath when I am still OR when I am moving. • Chest pain that does not go away. • Wheezing or chest tightness when I am still and quiet. • Confusion. • I fell because I was dizzy or lightheaded. • Need to sit in a chair to sleep OR sit up to breathe easier. 	<p>My symptoms are in the emergency zone.</p> <p>What I should do:</p> <ul style="list-style-type: none"> • Call my doctor right away. <p>_____</p> <ul style="list-style-type: none"> • If unable to contact my doctor: Call 911 or go to the Emergency Room

End of Life Resources

Vidant Advanced Care planning <https://www.vidanthealth.com/Manage-My-Health/Advance-care-planning>

- Conversation scripts for providers <https://www.vidanthealth.com/Manage-My-Health/Advance-Care-Planning/Conversation-Scripts-for-Providers>
- Advanced Care Planning toolkit <https://www.vidanthealth.com/wp-content/uploads/2020/11/Advance-Care-Planning-Toolkit-1-7-20-Web.pdf>

Institute for Health “Conversation ready”

<http://www.ihl.org/engage/initiatives/ConversationProject/Pages/ConversationReady.aspx>

National Institute on Aging

<https://www.nia.nih.gov/health/caregiving/advance-care-planning>

Respecting Choices

<https://respectingchoices.org/>

<https://www.heart.org/en/health-topics/heart-failure/living-with-heart-failure-and-managing-advanced-hf/planning-ahead-advanced-heart-failure>

Goals of care discussions

https://thecarenet.ca/docs/ACP%20Just%20Ask%20Booklet-rev-May8_FINAL-web.pdf

Contents of a Comprehensive Heart Failure ACP conversation [66]

Table 1: Contents of a Comprehensive Heart Failure Advance Care Plan with Language Useful for Initiating Decision-making Conversations

Healthcare proxy	"If you were unable to make decisions on your own, who would you like to make decisions for you?"
Values and preferences	"What is important to you at this point in your life?" "As you look back, what has given your life value?"
Current and future goals of care	"Would you like to receive noninvasive therapies for easily reversible problems, such as antibiotics?" "If you became very ill and needed a lot of care, would you want to go to an intensive care unit?" "Would you like to avoid further hospitalizations?" "At your current health state, we should set goals that we can work on with you. Based on what I heard you say, we should focus on helping you feel as good as you can, but when the time comes, allow you to die outside the hospital, at home."
Symptom palliation	"As your disease progresses, your shortness of breath and pain may worsen, we should have a plan in place for what to do if that happens."
Device deactivation	"If you were dying of another process, such as cancer, would you like to have the shock function of your implantable cardioverter defibrillator turned off so that you may die naturally?" "If your disease worsens and we change the focus of our efforts to making you comfortable, may we turn off the shock function of your implantable cardioverter defibrillator to allow you to pass naturally?" "Because you have a device, we should make a plan for a time that we would like to turn off the device."
Location of death	"Have you thought about where you would ultimately like to die?"
Code status	"When your heart stops beating, should we allow you to die naturally or try to revive you?"

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