

Heart Failure Hospitalization Pathway Toolkit: Key Tables and Figures for Point-of-Care

This toolkit serves as a companion to the *2019 ACC Expert Consensus Decision Pathway on Risk Assessment, Management, and Clinical Trajectory of Patients Hospitalized with Heart Failure*.

The goal of the pathway is to help clinicians consider the short-term and long-term outlook for their patients hospitalized with heart failure (HF), to institute therapies to reduce symptoms and optimize outcomes, to ensure that those plans are conveyed clearly to caregivers after discharge, and to engage patients to share in decisions and become active participants in their care.

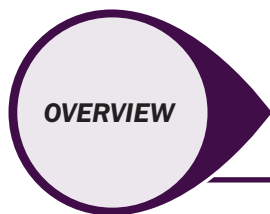
The toolkit provides the tables and figures from the document, adapted to help clinicians implement key principles from the pathway at the point of care by posting them for reference, filling in provided forms and checklists to help standardize processes, or using these figures as templates for your institution's EHR programming teams.



AMERICAN
COLLEGE *of*
CARDIOLOGY[®]

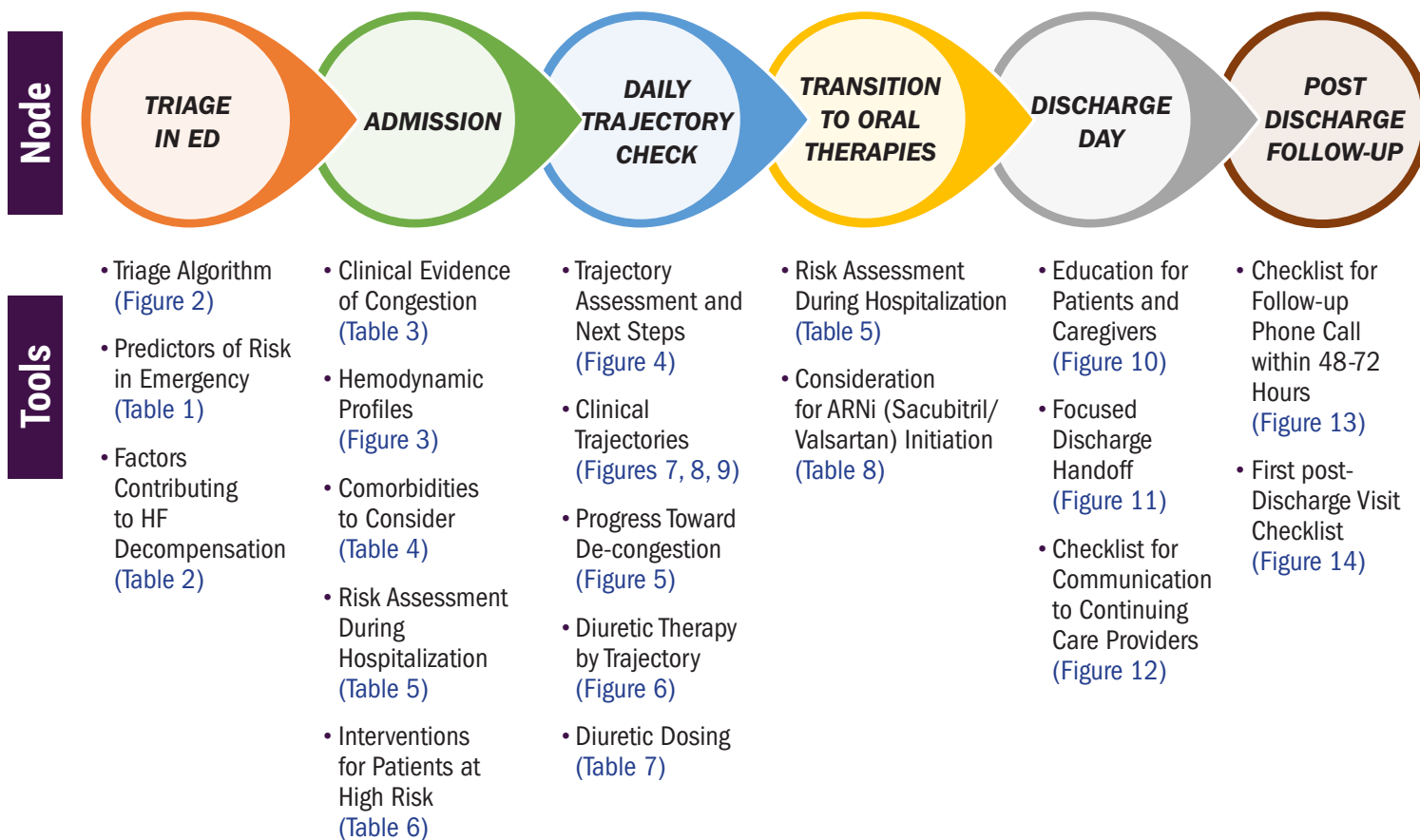
Heart Failure Hospitalization Pathway Toolkit: Key Tables and Figures for Point-of-Care

<u>Table of Contents</u>	<u>Page</u>
<u>OVERVIEW:</u>	
Roadmap: Major Nodes and Tools	3
Figure 1. Pathway Summary Graphic	4
<u>Node: TRIAGE in ED</u>	
Figure 2. Triage Algorithm for Emergency Department Patients With Acute Heart Failure	5
Table 1. Predictors of Risk in Emergency Care Studies Evaluating Patients With Acute Heart Failure	6
Table 2. Common Factors That Can Contribute to Worsening Heart Failure	7
<u>Node: ADMISSION</u>	
Table 3. Clinical Evidence of Congestion	8
Figure 3. Classification of Patients Presenting With Acutely Decompensated Heart Failure	9
Table 4. Key Comorbid Conditions to Consider	10
Table 5. Assessing Risk During Hospitalization	11-12
Table 6. Interventions for Patients at High Risk of Unfavorable Outcomes	13
<u>Node: DAILY TRAJECTORY CHECK</u>	
Figure 4. Clinical Trajectories and Their Implications for Therapy	14
Figure 7. Clinical Trajectory: <i>in Patients Improving Toward Target</i>	15
Figure 8. Clinical Trajectory: <i>in Patients Who May Have Had Initial Improvement in Symptoms and Congestion, But Who Are Now Stalled</i>	15
Figure 9. Clinical Trajectory: <i>in Patients Who Are Not Improved or Are Worsening</i>	15
Figure 5. Evaluation of the Degree of Clinical Congestion, With Common Reasons for Residual Congestion Listed in the Text Box	16
Figure 6. Diuretic Therapy in Different Clinical Trajectories	17
Table 7. Diuretic Dosing	18
<u>Node: TRANSITION TO ORAL THERAPIES</u>	
Table 5. Assessing Risk During Hospitalization	19-20
Table 8. Eligibility and Initial Dosing for the PIONEER-HF Trial	21
<u>Node: DISCHARGE DAY</u>	
Figure 10. Education for Patients, Families, and Caregiver	22
Figure 11. Model Focused Discharge Handoff	23
Figure 12. Checklist for Communication to Continuing Care Providers	24
<u>Node: EARLY POST-DISCHARGE FOLLOW UP</u>	
Figure 13. Checklist for Follow-Up Phone Call	25
Figure 14. First Post-Discharge Visit Checklist	26
<u>PALLIATIVE CARE</u>	
Figure 15. Aspects of Palliative Care	27
Table 9. Goals of Care/Advance Care Planning	28
<u>LINKS TO ADDITIONAL RESOURCES</u>	29



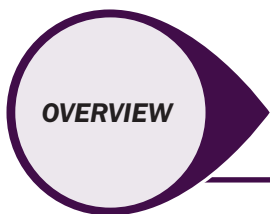
Major Nodes and Tools

Roadmap for Risk Assessment, Management, and Clinical Trajectory of Patients Hospitalized with Heart Failure



PALLIATIVE CARE

- Aspects of Palliative Care (Figure 15)
- Goals of Care/Advanced Care Planning (Table 9)



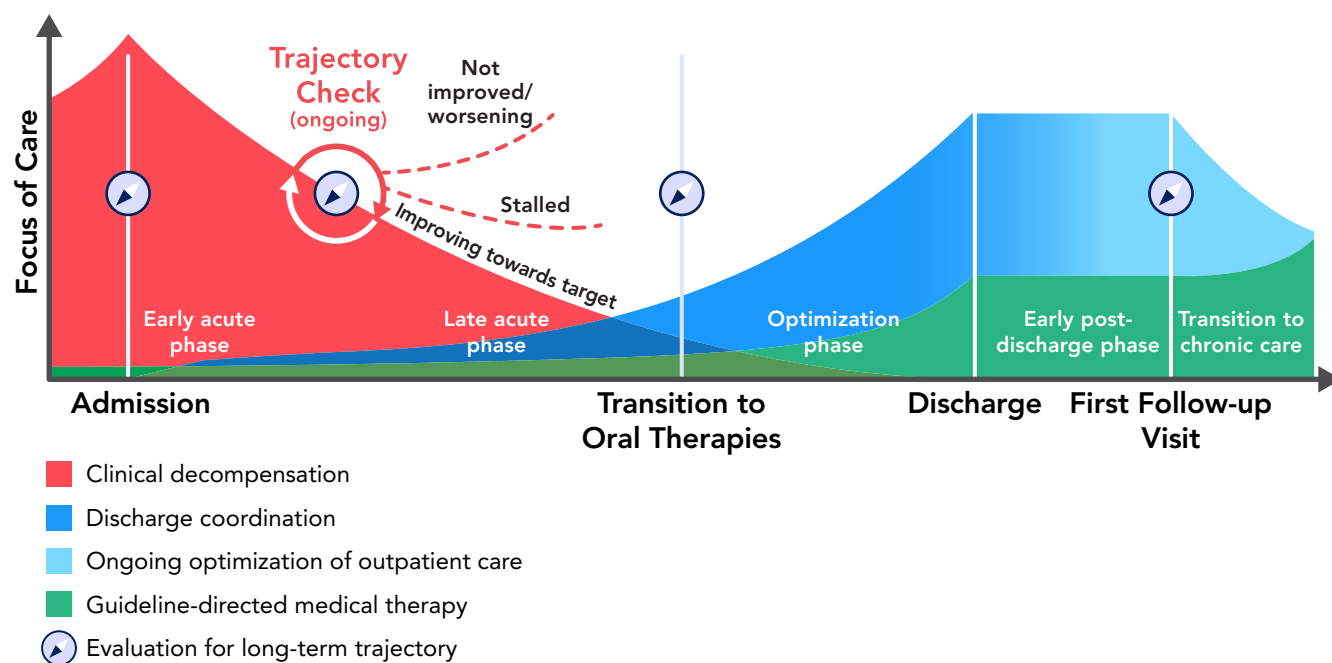
Pathway Summary Graphic

Figure 1

This shows the degree of focus on clinical decompensation (*red*), discharge coordination (*blue*), ongoing coordination of outpatient care (*light blue*), and optimization of guideline-directed medical therapy (*green*), with ongoing assessment of the clinical course (*circle with arrows*), and key time points for review and revision of the long-term disease trajectory for the HF journey (*compass signs*).

→ For optimization of guideline directed medical therapy, refer to the 2017 ECDP for Optimization of Heart Failure Treatment and the 2017 ACCF/AHA/HFSA Heart Failure Guidelines.

Graphic Depiction of Course of Heart Failure Admission

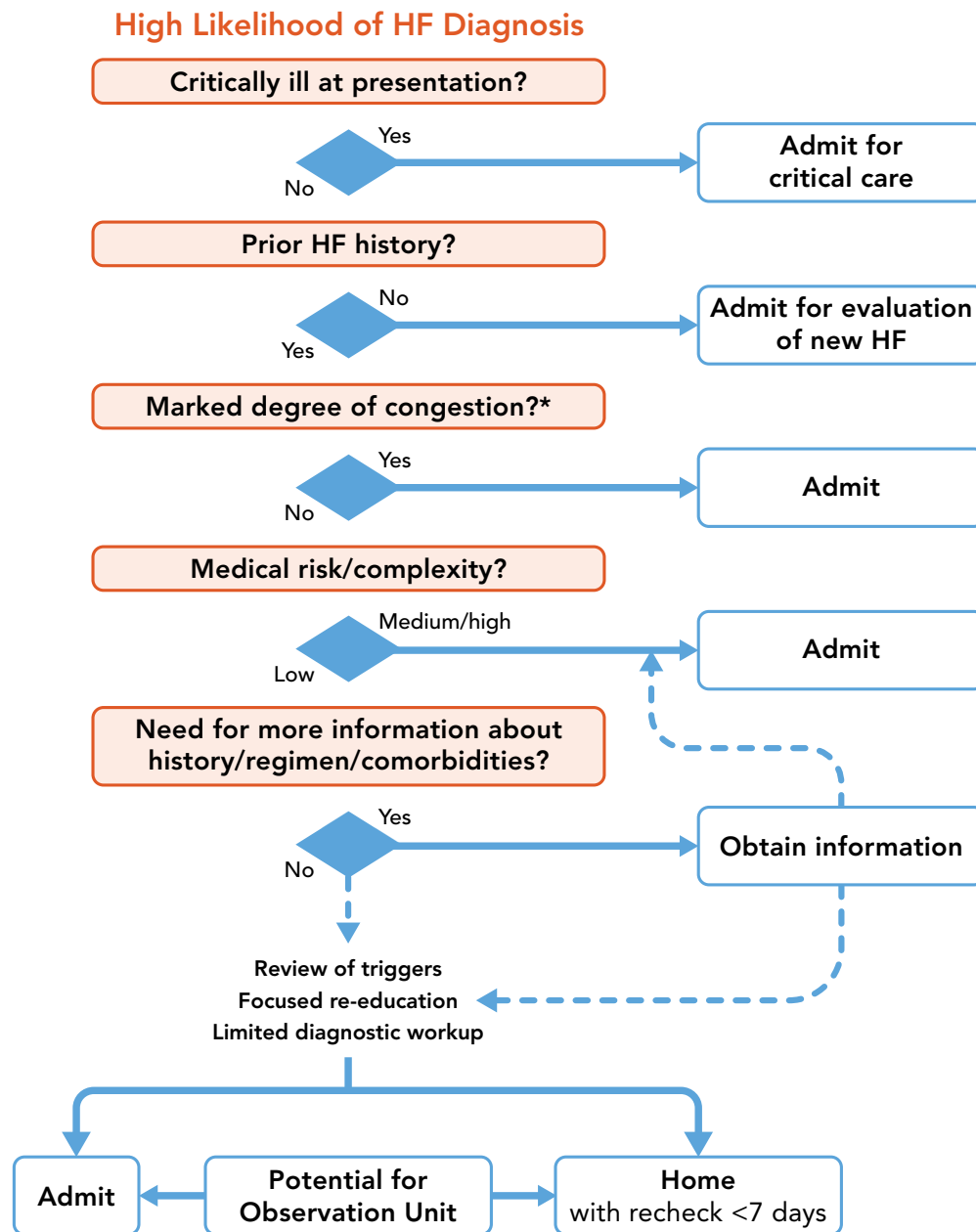




Triage Algorithm for Emergency Department Patients With Acute Heart Failure

Figure 2

Use this triage algorithm about admission and initial therapy to guide thought processes during admission evaluations rather than as a formal description of admission criteria and administrative processes surrounding admission.



* Marked leg edema, ascites, or scrotal or perineal edema may be clinical signs of marked congestion. The degree of radiographic and biochemical abnormalities may also indicate the degree of congestion.

ED = emergency department; HF = heart failure



**TRIAGE
IN ED**

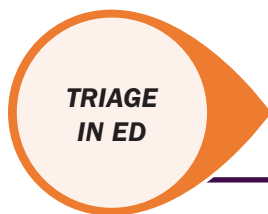
Predictors of Risk in Emergency Care Studies Evaluating Patients With Acute Heart Failure

Table 1

Use this table to evaluate a patient's risk and help determine additional next steps.

<p>Immediate Risk (measures of acute severity)</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Hypoxia <input type="checkbox"/> Shock/hypoperfusion <input type="checkbox"/> Respiratory distress <input type="checkbox"/> Anuria <input type="checkbox"/> Acute and worsening condition (sepsis, stroke, acute coronary syndrome, hemodynamically significant arrhythmia)
<p>Intermediate Risk (predictors of events through 30 days)</p>	<ul style="list-style-type: none"> <input type="checkbox"/> New onset heart failure <input type="checkbox"/> Low BP without shock or hypoperfusion <input type="checkbox"/> Tachycardia <input type="checkbox"/> Kidney dysfunction <input type="checkbox"/> Hyponatremia <input type="checkbox"/> Elevated cardiac troponin without ACS <input type="checkbox"/> Degree of BNP elevation <input type="checkbox"/> Liver dysfunction
<p>Lower Risk</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Normal BP and HR <input type="checkbox"/> Brisk response to initial intravenous diuretic with diuresis and symptom relief <input type="checkbox"/> Rapid resolution of symptoms in the ED <input type="checkbox"/> Normal kidney and liver function without recent decline <input type="checkbox"/> Normal BNP and cardiac troponin

ACS = acute coronary syndrome; BP = blood pressure; BNP = B-type natriuretic peptide; HR = heart rate; ED = emergency department



Common Factors That Can Contribute to Worsening Heart Failure

Table 2

Use this table to support the evaluation of patients for factors, both cardiac and non-cardiac, that may contribute to worsening heart failure.

Common Factors That Can Contribute to Worsening Heart Failure
<input type="checkbox"/> Acute myocardial ischemia
<input type="checkbox"/> Uncontrolled hypertension
<input type="checkbox"/> Atrial fibrillation and other arrhythmias
<input type="checkbox"/> Medications with negative inotropic effect
<input type="checkbox"/> Medications that increase sodium retention (NSAIDs, thiazolidinediones, steroids)
<input type="checkbox"/> Non-adherence with medication regimen, sodium or fluid restriction
<input type="checkbox"/> Anemia
<input type="checkbox"/> Acute infections (upper respiratory infection, pneumonia, urinary tract infections)
<input type="checkbox"/> Additional acute cardiovascular diagnoses (aortic valve disease, endocarditis, myopericarditis)



ADMISSION

Clinical Evidence of Congestion

Table 3

Use this table to identify signs and symptoms of congestion, which may be tracked as targets during decongestion and may serve as sentinel symptoms for recurrent congestion after discharge.

Clinical Evidence of Congestion	
Symptoms	Signs [†]
<ul style="list-style-type: none"> • Orthopnea • Dyspnea on minimal exertion • Paroxysmal nocturnal dyspnea • Nocturnal cough* • Bendopnea • Abdominal swelling • Early satiety • Anorexia, nausea • Right upper quadrant pain • Peripheral swelling • Rapid weight gain 	<ul style="list-style-type: none"> • Elevated jugular venous pressure • Rales[‡] • Pleural effusion[‡] • Increased intensity of pulmonary component of second sound • Third heart sound • Murmurs of mitral and/or tricuspid regurgitation • Pulsatile hepatomegaly • Ascites[§] • Pre-sacral, scrotal, or perineal edema • Peripheral edema

* Often when supine; † JVP is the most sensitive sign. Rales may not always be present; ‡ Not common in chronic HF;

§ May be difficult to distinguish from central adiposity

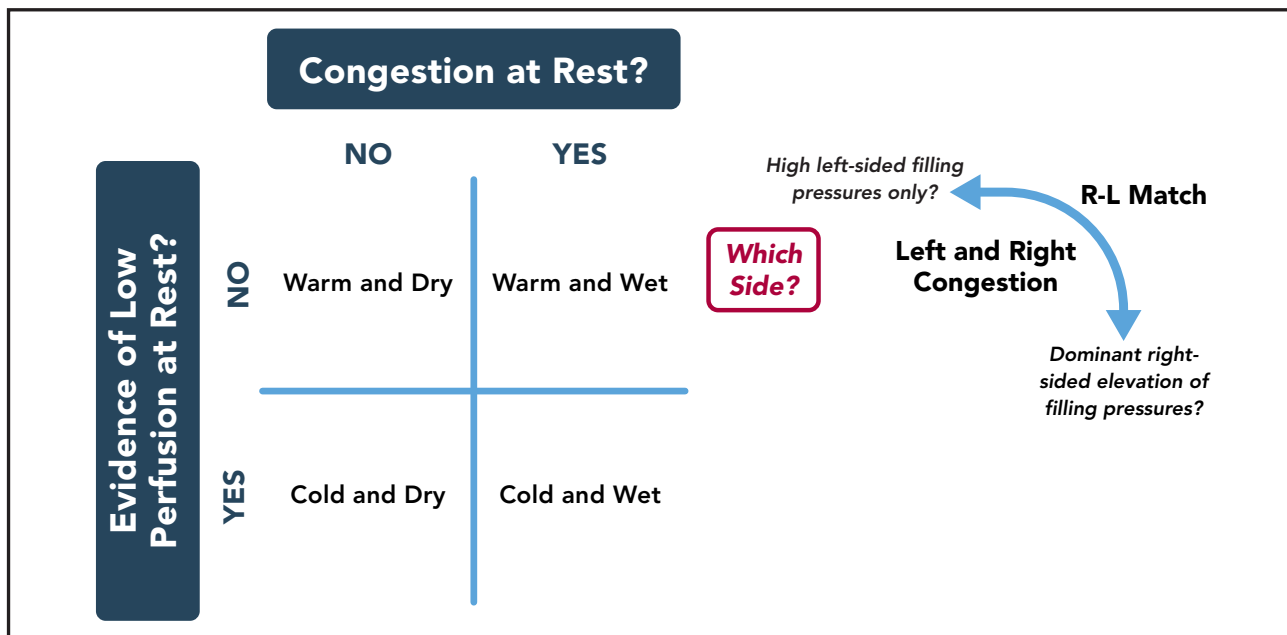


Classification of Patients Presenting With Acutely Decompensated Heart Failure

Figure 3

Use this figure to identify signs and symptoms of congestion, which may be tracked as targets during decongestion and may serve as sentinel symptoms for recurrent congestion after discharge.

Hemodynamic Profiles





Key Comorbid Conditions to Consider

Table 4

Evaluation of patient comorbidities is a key component of patient assessment. Consider this list of comorbidities and their therapies in relation to their role in HF decompensation and as independent targets for intervention.

Key Comorbid Conditions to Consider	
Cardiovascular	<input type="checkbox"/> Coronary artery disease/acute coronary syndrome
	<input type="checkbox"/> Atrial fibrillation/flutter
	<input type="checkbox"/> Cerebrovascular disease, TIA/stroke
	<input type="checkbox"/> Peripheral vascular disease
	<input type="checkbox"/> Structural valvular heart disease
Systemic Disease	<input type="checkbox"/> Hypertension
	<input type="checkbox"/> Diabetes mellitus
	<input type="checkbox"/> Chronic kidney disease
	<input type="checkbox"/> Chronic lung disease
	<input type="checkbox"/> Liver disease
	<input type="checkbox"/> Infection
	<input type="checkbox"/> Sleep apnea
	<input type="checkbox"/> Anemia/iron deficiency
	<input type="checkbox"/> Rheumatologic diseases
	<input type="checkbox"/> Amyloidosis
	<input type="checkbox"/> Cancer
	<input type="checkbox"/> Thyroid disease
General Conditions	<input type="checkbox"/> Obesity
	<input type="checkbox"/> Malnutrition
	<input type="checkbox"/> Frailty, deconditioning
Psychosocial	<input type="checkbox"/> Dementia/cognitive decline
	<input type="checkbox"/> Depression
	<input type="checkbox"/> Substance abuse
	<input type="checkbox"/> Tobacco abuse
	<input type="checkbox"/> Alcohol abuse
	<input type="checkbox"/> Inadequate social support
	<input type="checkbox"/> Nonadherence



Assessing Risk During Hospitalization

Table 5

Use this table to identify risk factors that are most likely to be modifiable. These should help to set patient goals, guide in-hospital management, and re-assess integrated risk at discharge. (Table will continue on the next page)

Modification of bolded/italicized items decreases risk. Note that the references for risk factors are provided as examples and are not meant to list all sources of validation.

Chronic History Prior to Admission	
<input type="checkbox"/> Older Age (robust in all models) <input type="checkbox"/> Number of Previous HF hospitalizations <input type="checkbox"/> Comorbidities, especially diabetes, COPD, liver disease, cancer, dementia <input type="checkbox"/> Frailty <input type="checkbox"/> Known low LVEF in HFrEF <input type="checkbox"/> RV dysfunction	
Assessment at Admission	Re-Assessment at Discharge
<i>Class IV symptoms</i>	Effective decongestion improves prognosis.
<i>Non-adherence to medications or salt/fluid restriction</i>	Focused education during hospitalization with increased home and community support may improve adherence.
<i>Progressively higher risk with higher admission natriuretic peptide (NP) levels</i>	Larger % reduction (>30-60%) in NP levels associated with better outcomes. Progressively higher risk with higher discharge NP levels.
Renal dysfunction markers: <ul style="list-style-type: none"> • Elevated serum creatinine or low clearance • Additional risk of high BUN • Low spot urine sodium after first IV diuretic dose • Diuretic resistance with high outpatient doses 	Risk increased, but small increases in creatinine accompanying successful decongestion are associated with better prognosis. High BUN at discharge increases risk. Low total urinary sodium excretion may be a more important marker than total urine output during hospitalization. Diuretic resistance in-hospital associated with longer LOS and worse outcomes. High risk if discharged on high loop diuretic doses.
<i>Degree of congestion at admission not predictive of outcome except longer length of stay with greater excess volume</i>	Residual congestion after treatment confers high risk. <ul style="list-style-type: none"> • High measured filling pressures • Orthopnea • Edema • Composite congestion scores • Lack of hemoconcentration



Assessing Risk During Hospitalization

Table 5 (Continued)

Assessment at Admission	Re-Assessment at Discharge
Hemodynamic profile of “Cold and Wet” at admission	Discharge with either cold or wet profile associated with higher risk.
Low systolic blood pressure	Low systolic blood pressure at discharge also identifies high risk.
Troponin elevation	Risk if elevated at any time during hospitalization.
Hyponatremia	Lower sodium at discharge predicts higher risk.
Increased risk at admission if: - No RAS therapy - No beta blocker therapy	Discontinuation of ACEI/ARB in hospital for hypotension or kidney dysfunction is associated with poor outcomes. Unknown impact of re-initiation after discontinuation for circulatory and/or renal reasons. Discharge without RAS inhibition or discharge without beta-blocker associated with high risk.
Unexpected In-hospital Events Conferring Additional Risks	
<ul style="list-style-type: none"> • Resuscitation or Intubation • Intravenous inotropic therapy even if brief 	
<p>Integrated Risk at Transition to Discharge = {</p> <ul style="list-style-type: none"> • Admission Risk • In-hospital Trajectory • Unexpected Events 	

ACEI = angiotensin-converting enzyme inhibitor; ARB = angiotensin receptor blocker; BUN = blood urea nitrogen; COPD = chronic obstructive pulmonary disease; eGFR = estimated glomerular filtration rate; HF = heart failure; IV = intravenous; LOS = length of stay; LV = left ventricular; NP = natriuretic peptide; RAS = renin-angiotensin system; RV = right ventricular.



Interventions for Patients at High Risk of Unfavorable Outcomes

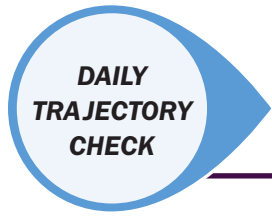
Table 6

Once you have assessed a patient’s comorbidities and other risk factors, and determined them to be at high risk for unfavorable outcomes, use this table to guide additional steps.

Interventions for Patients at High Risk of Unfavorable Outcomes
<ul style="list-style-type: none"> • Discussion of prognosis • Evaluation for advanced <i>therapies</i>* if appropriate • Review/revision of goals of care and advanced directives • Consideration before interventions† that may be difficult to discontinue • Education regarding palliative care and hospice options

* Transplantation, mechanical circulatory support

† Intravenous inotropic therapy, temporary circulatory support, mechanical ventilation, dialysis

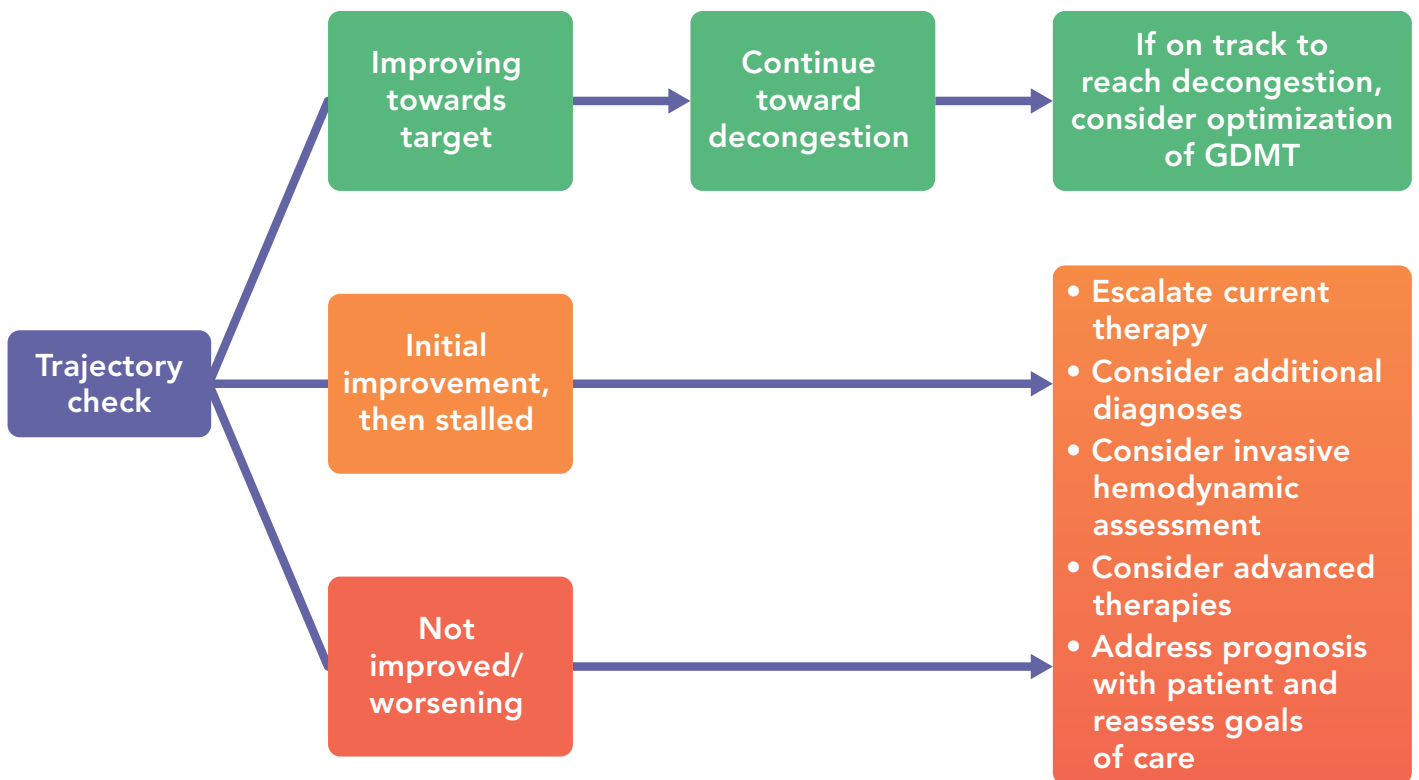


Clinical Trajectories and Their Implications for Therapy

Figure 4

Use figures 4 (this page) 7, 8, and 9 (next page) to assess a patient’s daily clinical trajectory. These trajectories translate into different management strategies throughout the hospitalization and post-discharge.

Trajectory Assessment and Next Steps



GDMT= guideline-directed medical therapy



**DAILY
TRAJECTORY
CHECK**

Clinical Trajectories

Identification of patient’s clinical trajectory translates into different management strategies throughout hospitalization and post-discharge.

→ To optimize GDMT, refer to the *2017 ECDP for Optimization of Heart Failure Treatment*.

Figure 7 – Clinical Trajectory: in Patients Improving Toward Target.

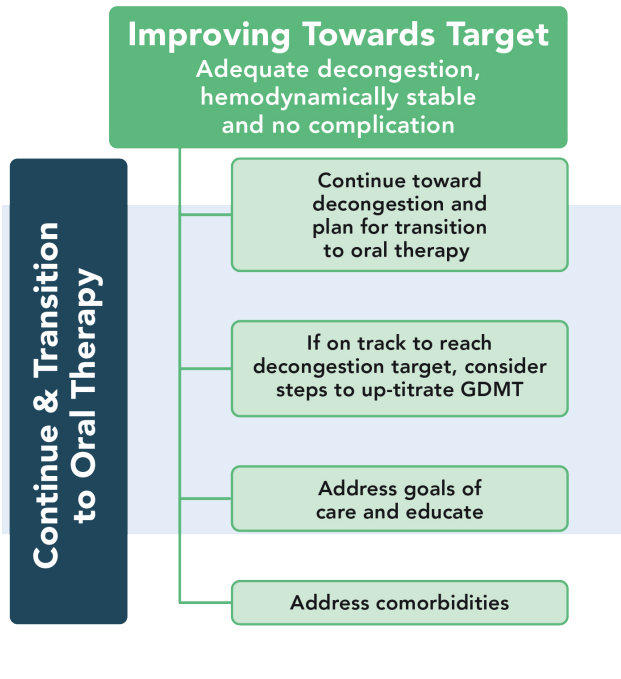


Figure 8 – Clinical Trajectory: in Patients Who May Have Had Initial Improvement in Symptoms and Congestion, But Who Are Now Stalled.

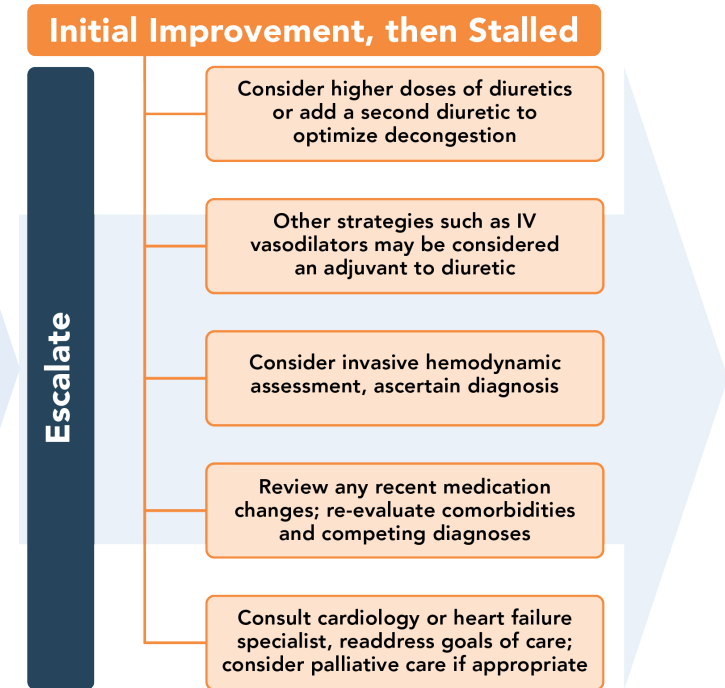
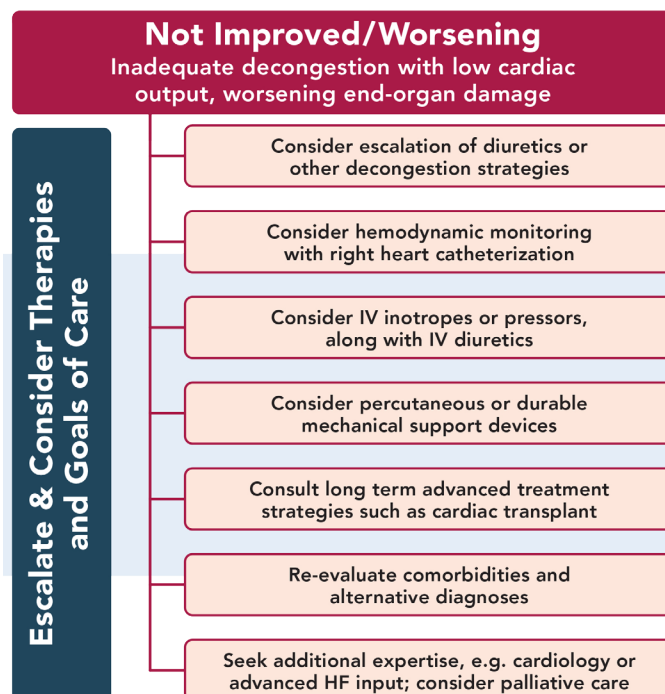
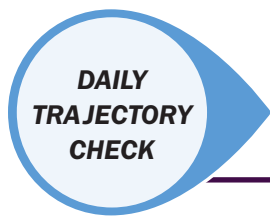


Figure 9 – Clinical Trajectory: in Patients Who Are Not Improved or Are Worsening.



IV = intravenous;
HF = heart failure;
GDMT= guideline-directed medical therapy

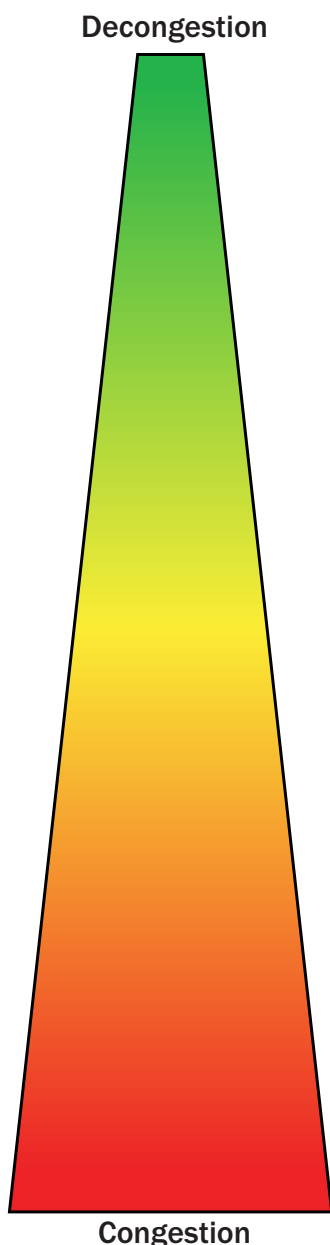


Evaluation of the Degree of Clinical Congestion, With Common Reasons for Residual Congestion Listed in the Text Box

Figure 5

Inpatient trajectories are primarily defined by the pace and extent of decongestion. Use the figure below for evaluation of the success of de-congestion for a patient.

Progress Toward De-congestion



Freedom from clinical congestion

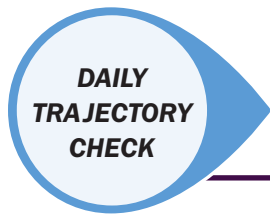
- No peripheral edema
- No rales
- No dyspnea on minimal exertion
- No hepatomegaly or congestive GI symptoms
- No orthopnea or bendopnea
- Jugular venous pressure $\leq 6-8$ mm Hg
- No hepatojugular reflex

Common reasons for Residual Congestion

- Low cardiac output state*
- Dominant right heart failure*
- Advanced renal disease*
- Symptomatic hypotension*
- Limitations to patient engagement in self-care*

- Lack of improvement in signs/symptoms of HF**
- Lack of decrease in natriuretic peptide levels**
- Lack of decrease in weight**

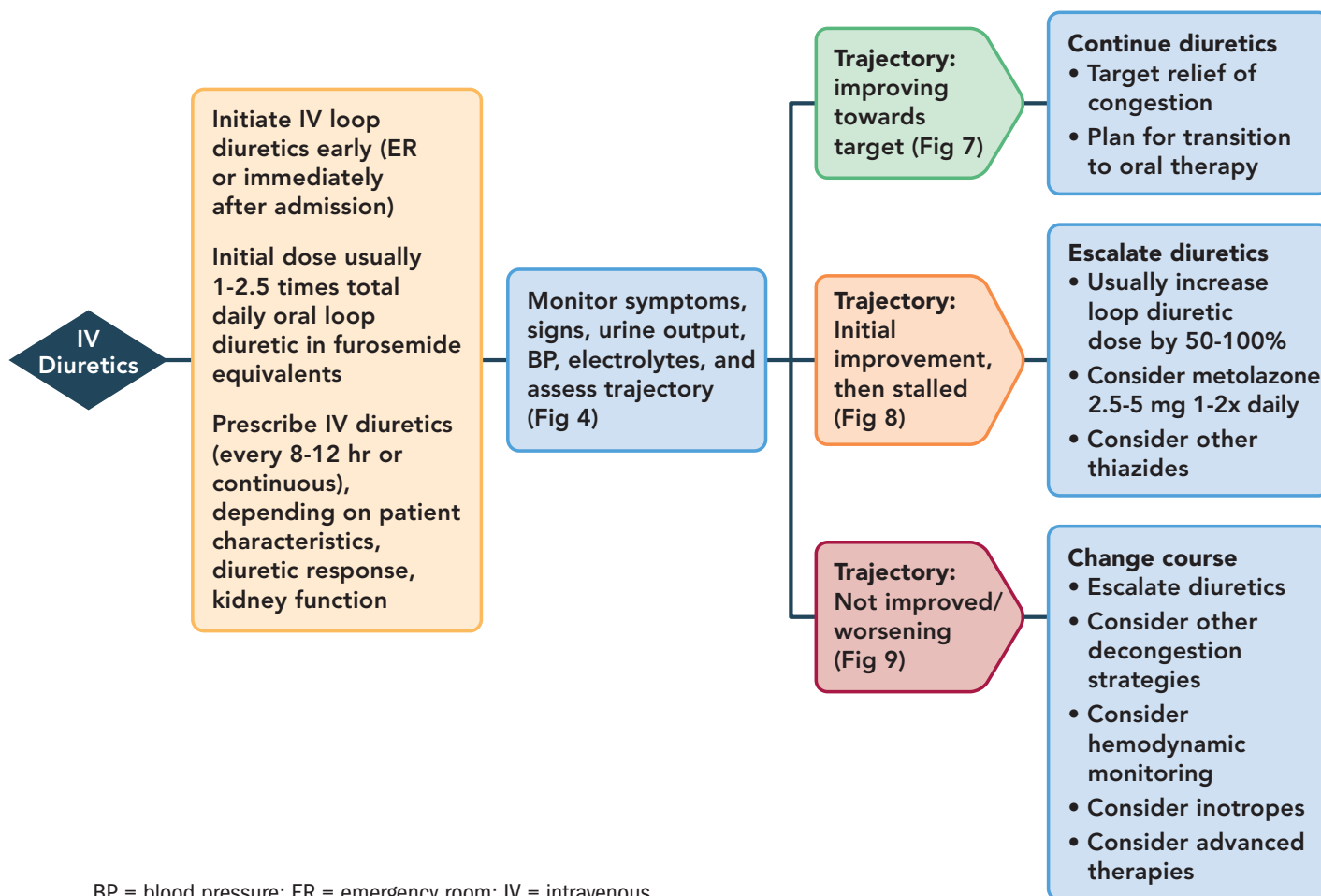
GI = Gastrointestinal; HF = heart failure



Diuretic Therapy in Different Clinical Trajectories

Figure 6
Use this figure to guide therapy at different clinical trajectories.

Guidance on Diuretic Therapy





**DAILY
TRAJECTORY
CHECK**

Diuretic Dosing

Table 7

Use the table to help establish an effective diuretic regimen.

Guidance on Diuretic Dosing


Class	Drug	Usual Outpatient Dosing (Maximum [†])	Usual Inpatient Dosing* (Maximum [†])
Loop diuretics	Bumetanide	0.5–2 mg orally once to twice daily (10 mg/day)	0.5–4 mg IV once to three times daily (5 mg/dose) Or 0.5–2 mg/hour IV infusion (4 mg/hour)
	Furosemide	20–80 mg orally once to twice daily (600 mg/day)	40–160 mg IV once to three times daily (200 mg/dose) Or 5–20 mg/hour IV infusion (40 mg/hour)
	Torsemide	10–40 mg orally once daily (200 mg/day)	N/A [‡]
Thiazide-type diuretics	Chlorothiazide	N/A	0.5–1 g IV once to twice daily (2 g/day)
	Hydrochlorothiazide	25–50 mg orally once daily (100 mg/day)	25–50 mg orally once to twice daily (100 mg/day)
	Chlorthalidone	25–50 mg orally once daily (100 mg/day)	12.5–25 mg orally once to twice daily (100 mg/day)
	Metolazone	2.5–5 mg orally once daily (20 mg/day)	2.5–5 mg orally once to twice daily (20 mg/day)

* For patients receiving loop diuretics prior to admission, the oral dose should be changed to an intravenous dose of 1–2.5 times the home dose. For patients naïve to therapy, the lower end of the dosing interval should be used.

[†] "Usual" dose ranges reflect approved product labeling and safety and efficacy results from large, randomized controlled trials. Higher ranges may be considered on the basis of observational data and clinical experience.

[‡] Torsemide is not available as an intravenous formulation in the United States; oral therapy may be initiated prior to discharge to assess patient response.

IV = intravenous; N/A = not applicable



**TRANSITION
TO ORAL
THERAPIES**

Assessing Risk During Hospitalization


Table 5

Use this table after the patient has undergone clinical stabilization and is being transitioned to oral therapy for discharge. This assessment should help clarify goals and guide plans for longitudinal follow-up after discharge. The integrated risk for discharge includes non-modifiable risk factors from admission, residual congestion or unexpected events during hospitalization, and lack of guideline-directed therapies for chronic heart failure. The transition node offers further opportunity for additional adjustment of these therapies to be continued after discharge. *(Table will continue on the next page.)*

Modification of bolded/italicized items decreases risk. Note that the references for risk factors are provided as examples and are not meant to list all sources of validation.

Chronic History Prior to Admission	
<input type="checkbox"/> Older Age (robust in all models) <input type="checkbox"/> Number of Previous HF hospitalizations <input type="checkbox"/> Comorbidities, especially diabetes, COPD, liver disease, cancer, dementia <input type="checkbox"/> Frailty <input type="checkbox"/> Known low LVEF in HFrEF <input type="checkbox"/> RV dysfunction	
Assessment at Admission	Re-Assessment at Discharge
<i>Class IV symptoms</i>	Effective decongestion improves prognosis.
<i>Non-adherence to medications or salt/fluid restriction</i>	Focused education during hospitalization with increased home and community support may improve adherence.
<i>Progressively higher risk with higher admission natriuretic peptide (NP) levels</i>	Larger % reduction (>30-60%) in NP levels associated with better outcomes. Progressively higher risk with higher discharge NP levels.
Renal dysfunction markers: <ul style="list-style-type: none"> • Elevated serum creatinine or low clearance • Additional risk of high BUN • Low spot urine sodium after first IV diuretic dose • Diuretic resistance with high outpatient doses 	Risk increased, but small increases in creatinine accompanying successful decongestion are associated with better prognosis. High BUN at discharge increases risk. Low total urinary sodium excretion may be a more important marker than total urine output during hospitalization. Diuretic resistance in-hospital associated with longer LOS and worse outcomes. High risk if discharged on high loop diuretic doses.
<i>Degree of congestion at admission not predictive of outcome except longer length of stay with greater excess volume</i>	Residual congestion after treatment confers high risk. <ul style="list-style-type: none"> • High measured filling pressures • Orthopnea • Edema • Composite congestion scores • Lack of hemoconcentration



**TRANSITION
TO ORAL
THERAPIES**


Assessing Risk During Hospitalization

Table 5 (Continued)

Modification of bolded/italicized items decreases risk. Note that the references for risk factors are provided as examples and are not meant to list all sources of validation.

Assessment at Admission	Re-Assessment at Discharge
<i>Hemodynamic profile of “Cold and Wet” at admission</i>	Discharge with either cold or wet profile associated with higher risk.
Low systolic blood pressure	Low systolic blood pressure at discharge also identifies high risk.
Troponin elevation	Risk if elevated at any time during hospitalization.
Hyponatremia	Lower sodium at discharge predicts higher risk.
<i>Increased risk at admission if:</i> <ul style="list-style-type: none"> <i>- No RAS therapy</i> <i>- No beta blocker therapy</i> 	Discontinuation of ACEI/ARB in hospital for hypotension or kidney dysfunction is associated with poor outcomes. Unknown impact of re-initiation after discontinuation for circulatory and/or renal reasons. Discharge without RAS inhibition or discharge without beta-blocker associated with high risk.
Unexpected In-hospital Events Conferring Additional Risks	
<ul style="list-style-type: none"> • Resuscitation or Intubation • Intravenous inotropic therapy even if brief 	
Integrated Risk at Transition to Discharge = { <ul style="list-style-type: none"> • Admission Risk • In-hospital Trajectory • Unexpected Events 	

ACEI = angiotensin-converting enzyme inhibitor; ARB = angiotensin receptor blocker; BUN = blood urea nitrogen; COPD = chronic obstructive pulmonary disease; eGFR = estimated glomerular filtration rate; HF = heart failure; IV = intravenous; LOS = length of stay; LV = left ventricular; NP = natriuretic peptide; RAS = renin-angiotensin system; RV = right ventricular.

**TRANSITION
TO ORAL
THERAPIES**

Eligibility and Initial Dosing for the PIONEER-HF Trial

Table 8

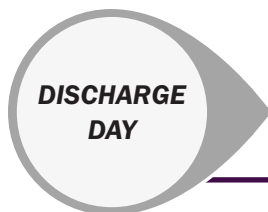
Use this table as guidance for initiating sacubitril/valsartan in the hospital.

→ To optimize GDMT, refer to the *2017 ECDP for Optimization of Heart Failure Treatment*.

Consideration for Angiotensin Receptor–Nepriylsin Inhibitor (ARNI) (Sacubitril/Valsartan) Initiation

Eligible Patients	Trial Exclusions	Dosing
HFrEF (EF ≤40%)	ACS, stroke, or revascularization within 1 month	<i>Initial dose</i>
NT-proBNP ≥1600 pg/mL or BNP ≥400 pg/mL	Planned revascularization within 6 months	SBP 100-120 mm Hg: sacubitril/valsartan 24/26 mg twice daily
>24 hours and <10 days after initial HF hospitalization and still in hospital	Cardiac resynchronization within past 3 months or planned	SBP ≥120 mm Hg: sacubitril/valsartan 49/51 mg twice daily
Hemodynamically stable: SBP ≥100 mm Hg for at least 6 hours	eGFR <30 mL/min/1.73 m ²	<i>Dose adjustment after discharge every 1-2 weeks according to SBP</i>
No increase in diuretic or vasodilator dose for at least 6 hours	Potassium >5.2 mEq/L	
No intravenous inotropes for 24 hours	Hepatic failure with bilirubin >3 mg/dL	

ACS = acute coronary syndrome; eGFR = estimated glomerular filtration rate; HF = heart failure; HFrEF = heart failure with reduced ejection fraction; NT-proBNP = N-terminal pro-B-type natriuretic peptide; SBP = systolic blood pressure



Education for Patients, Families, and Caregivers

Figure 10

Use this checklist to guide education for the patient, family, and caregivers. Education provided should be culturally appropriate, and delivered verbally and in written form.

<input type="checkbox"/> Current meds		
• Dose/frequency		
• Indication		
• Potential side effects		
• Potential adherence issues		
<input type="checkbox"/> Activity level _____		
<input type="checkbox"/> Dietary sodium restriction _____ mg/day		
<input type="checkbox"/> Fluid restriction	<input type="checkbox"/> Yes _____ L/day	or <input type="checkbox"/> No _____
<input type="checkbox"/> Daily weight monitoring		
• Has scale	<input type="checkbox"/> Yes	<input type="checkbox"/> No
• Logbook	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<input type="checkbox"/> Assessment of peripheral edema		
<input type="checkbox"/> Smoking cessation counseling for current or recent smokers		
<input type="checkbox"/> Substance use counseling, if applicable		
<input type="checkbox"/> List of warning signs of decompensation		
<input type="checkbox"/> What to bring to each outpatient appointment		
• List of meds		
• Recordings of daily weights		
<input type="checkbox"/> Who to call for increased weight/worsening symptoms/ICD discharge		

<input type="checkbox"/> Plans for continuation of care		
• Cardiologist follow-up appointment	_____ / _____	_____ / _____
• Primary care follow-up appointment	_____ / _____	_____ / _____
• HF disease management program	_____ / _____	_____ / _____
• Cardiac rehabilitation	_____ / _____	_____ / _____
• Anticoagulation services follow-up, if applicable	_____ / _____	_____ / _____



DISCHARGE DAY

Model Focused Discharge Handoff

Figure 11

Use this form to convey crucial patient information to continuing care providers to support direct communication. This form is specifically designed to travel with the patient. Areas that are shaded can be formatted as selection menus if this form is being used as a template in a clinical decision tool.

Name _____ Age _____ MRN _____ Date of Discharge ____/____/____ Days in hospital _____

HF TYPE: HFReEF HFpEF Mid-range HFReEF with improved EF **HF ETIOLOGY:** Ischemic Non-ischemic Infiltrative Other _____

Last LVEF _____ Hospital Triggers _____

Arrhythmia history AF VT OTHER _____ Device Type _____

CONDITION AT DISCHARGE:

D/C BP: Sitting ____/____ Standing ____/____ **HR__Rhythm** Sinus Afib paced sinus paced AFib freq PVCs freq PACs **Congestion** at D/C? Yes No

Edema (0-4+) ____ **JVP** ____ **Orthopnea** Yes No **Rales** none ¼ ½ wheezes pl eff **Ascites** Yes No **Liver** _____ cm

Weight at D/C ____ lbs Admission weight ____ lbs **Est target weight** ____ lbs **If still wet, limited by**

Dominant right heart failure Renal failure Hypotension Excessive fluid in hospital Frequent readmission pattern Other _____

Biomarkers: Admit BNP ____ or NT proBNP ____ Troponin ____ Discharge BNP (if known) ____ or NT proBNP ____

Kidney Function: Discharge BUN/Cr _____ Worst in hospital _____ Baseline Cr (if known) _____

Comorbidities: _____

Psychosocial Factors: _____

Other hospital events: Code Sepsis Dialysis intubation IV inotropes used? Yes No Type: _____

Code Status: Full code Full code but recent discussions DNR/DNI DNI only **Needs discussion**

DISCHARGE HF MEDICATIONS:

DIURETIC: Loop type _____, Dose _____ mg/day. Metolazone _____ mgs, _____ (frequency or prn).
Triggers for rescue dose: If ____ lbs up, or _____ (sentinel symptoms)
Rescue dose _____ orally, and / or metolazone _____ mg for _____ days before recheck
In hospital effective loop dose _____ mgs IV daily BID TID drip at _____ mg/hr Metolazone used? Yes No

K+ replacement _____ mEq / day _____ Plan for K+ with rescue dose? Yes No

GUIDELINE DIRECTED MEDICAL THERAPY (For history EF < 40 only):

RAS meds: ACEI _____ mg/day ARB _____ mg/day ARNI _____ mg/day _____ Dose decrease in hospital? Yes No
If none or dose decrease, why? Hypotension orthostasis/dizzy worsening renal fx hyperkalemia angioedema cough other _____
→ Is there a PLAN for outpatient increase or initiation? Yes No

Beta blocker: _____ mg/day Dose decrease in hospital? Yes No
If not, or dose decrease, reason? Hypotension bradycardia worsening renal function hyperkalemia fatigue other _____
→ Is there a PLAN for outpatient increase or initiation? Yes No

Spirolactone or eplerenone Yes No if not, why Hypotension worsening renal function hyperkalemia

Other HF meds: Digoxin started continued stopped stopped Ivabradine started continued stopped

Hydral/Iso started continued stopped

Anticoagulation for AF DVT/PE Mech valve hx embolism LV thrombus with Warfarin Apixaban Rivaroxaban Other DOAC

Antiplatelet for ACS PCI CAD stroke/TIA with ASA clopidogrel ticagrelor prasugrel Any hx bleeding? Yes No

Antiarrhythmic medications Amiodarone Dofetilide Sotalol Mexilitene Other _____

See patient discharge document and full discharge summary for complete med list

FOLLOW-UP: Discharge follow-up team _____, Appointment date and time _____

Home Health referrals (visiting nurses, PT, home infusion) _____

Post-discharge labs: Will be drawn at: _____ Results sent to: _____

HF medication refills to _____

For worsening heart failure, contact _____ Phone Number _____

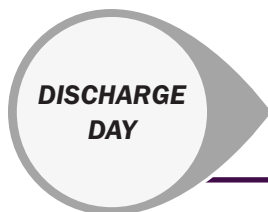
For non-cardiac issues, contact _____ Phone Number _____

Rhythm device follow-up _____

Other care providers _____

Is additional support needed for optimal care? _____

[Click to download this PDF form](#)

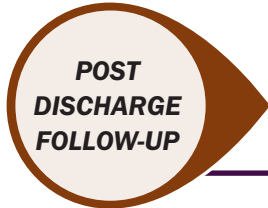


Checklist for Communication to Continuing Care Providers

Figure 12

Use this checklist as a guide for communication with continuing care providers about pertinent patient information and potential issues.

<p>Hospital Course</p> <ul style="list-style-type: none"> <input type="checkbox"/> Reason for admission <input type="checkbox"/> Sentinel symptoms <input type="checkbox"/> Congestion status <ul style="list-style-type: none"> • Admission, discharge, and target weight • Admission and discharge kidney function • Diuretic dosing • Rescue dosing <input type="checkbox"/> Unexpected events
<p>Planned Therapies and Monitoring</p> <ul style="list-style-type: none"> <input type="checkbox"/> Plan for initiation, titration, and optimization of GDMT <ul style="list-style-type: none"> • ACE/ARB • Beta blockers • Aldosterone antagonists • ARNI • Ivabradine • Hydralazine/isosorbide <input type="checkbox"/> Plan to monitor electrolytes and kidney function <input type="checkbox"/> Follow-up for pending or planned diagnostic tests <input type="checkbox"/> Plan for EP consult if sudden death risk or potential candidate for device therapy <input type="checkbox"/> Recommendations for when to assess response to therapy <input type="checkbox"/> Pneumovax and influenza vaccination
<p>Follow-up Related to Comorbidities</p> <ul style="list-style-type: none"> <input type="checkbox"/> Kidney function <input type="checkbox"/> Diabetes <input type="checkbox"/> Sleep-disordered breathing <input type="checkbox"/> Depression <input type="checkbox"/> Anemia <input type="checkbox"/> Other
<p>Psychosocial Issues Relevant to Ongoing Adherence</p>
<p>Contingency Plan</p> <ul style="list-style-type: none"> • Diagnostic uncertainty • What could go wrong and expected action plan
<p>Advance Care Planning or Goals of Care Discussions</p>



Checklist for Follow-Up Phone Call

Figure 13

Use this checklist to help organize and streamline the follow-up phone call to ensure that it is comprehensive yet focused.

Early Post-Discharge: Checklist for 48-72 Hour Follow-Up Phone Call

INTRODUCTION: My name is _____. I am calling from (either provider’s office or hospital, depending on care coordination structure) to see how you are feeling and after your recent discharge from the hospital.

TOPIC	VITAL QUESTION	CAUSE FOR IMMEDIATE CONCERN	TEACHING POINTS TO BE COVERED IN CALL / CLINIC USING TEACH BACK
Symptoms - Sentinel symptom from hospitalization - Shortness of breath - Orthopnea - Edema	How is _____? <input type="checkbox"/> Same <input type="checkbox"/> Better <input type="checkbox"/> worse than at discharge	Alert If WORSE	Do you know what symptoms you should be paying attention to?
Dizziness	Are you having trouble with dizziness? <input type="checkbox"/> Yes <input type="checkbox"/> No Is it just when you first stand up or does it last longer? _____	FREQUENT DIZZINESS	Review dizziness as potential symptom of concern
Daily Weights	Are you weighing yourself daily? <input type="checkbox"/> Yes <input type="checkbox"/> No If not, do you have a scale? <input type="checkbox"/> Yes <input type="checkbox"/> No What was your first weight at home after discharge? _____ What is your weight now? _____	ALERT If no weights or if weight increase > trigger	Importance of weights as short-term indication of fluid balance. Review diuretic plan from discharge Do you have a plan for what to do if your weight increases?
Medications (Refer to discharge list)	Do you have these medications prescribed at discharge? <input type="checkbox"/> Yes <input type="checkbox"/> No Do you know how to take them? <input type="checkbox"/> Yes <input type="checkbox"/> No Do you think you are having side effects from any of them? _____	ALERT If Not obtained, Or not taking correctly	Types and purposes of HF medications
Salt restriction	Are you watching your salt intake? <input type="checkbox"/> Yes <input type="checkbox"/> No What is your daily limit? _____ What are you doing to make sure you don’t eat too much salt? _____		Review contribution of salt to fluid retention Common high-salt items How to read labels
Fluid restriction (for patients who have one)	Are you keeping track of your fluid intake? <input type="checkbox"/> Yes <input type="checkbox"/> No What is your daily limit? _____ What are you doing to stay within your limit? _____ _____		Review contribution of fluid to symptoms, Importance of fluid restriction for fluid balance and how to account for fluids in food as well as beverages. Reassure: this is often not a sign of dehydration in heart failure Present tricks such as frozen fruit, etc
Follow-up	When is your follow-up appointment? _____ Do you have a way to get there? _____	NO F/U APPT or no way to get there	
Physical Activity			



**POST
DISCHARGE
FOLLOW-UP**

First Post-Discharge Visit Checklist

Figure 14

Consider the key components listed in this checklist to guide the first post-discharge visit to reassess clinical status, review medications, provide additional education, and address issues that may lead to worsening HF.

<p><input type="checkbox"/> History</p> <ul style="list-style-type: none"> • Discharge summary reviewed. • Etiology of cardiomyopathy identified. • Precipitant of exacerbation identified. • Heart failure compensated? <ul style="list-style-type: none"> – NYHA class. – Weight log reviewed? – Symptoms reviewed? • Important concomitant disease states <ul style="list-style-type: none"> – CKD – Diabetes – Hypertension – COPD – OSA – Others <p><input type="checkbox"/> Physical Exam</p> <ul style="list-style-type: none"> • Vital signs • BMI • Orthostatic blood pressure • Jugular venous distention • Rales +/- • “cold/warm”, “wet/dry” profile • S3 present/absent <p><input type="checkbox"/> Diagnostic Testing</p> <ul style="list-style-type: none"> • Basic metabolic panel • Complete blood count • BNP or NT pro-BNP • Liver function panel (per discretion of clinician) • High Sensitivity Troponin, sST2, Gal3 (per discretion of clinician) • 12 lead ECG • Chest X-Ray (per discretion of clinician) • Review LVEF (___%). If not available, obtain TTE • Follow-up EF: <ul style="list-style-type: none"> – 40-days post MI – 3-months post NICM • Ischemia Evaluation Needed? 	<p><input type="checkbox"/> Medications</p> <ul style="list-style-type: none"> • Comprehensive medication reconciliation • Beta-blocker? <ul style="list-style-type: none"> – Dose optimized? • ACE-I/ARB/ARNI <ul style="list-style-type: none"> – Dose optimized? – Contra-indication to ARNI? • Aldosterone antagonist <ul style="list-style-type: none"> – Dose optimized? • Diuretics? <ul style="list-style-type: none"> – Dose adjustment? • Ivabradine? (Consider initiation if heart rate remains elevated despite beta blocker optimization) <p><input type="checkbox"/> Interventional Therapies (if applicable)</p> <ul style="list-style-type: none"> • Revascularization • CRT • ICD • Valvular intervention <p><input type="checkbox"/> Patient Education</p> <ul style="list-style-type: none"> • Importance of adherence • Medication education • Dietary education • Activity education • Smoking cessation • Cessation in alcohol consumption • Follow-up appointment scheduled <p><input type="checkbox"/> Consultations</p> <ul style="list-style-type: none"> • Home health services • Cardiac rehab referral • Advanced heart failure clinic referral • Palliative/hospice referral
--	--



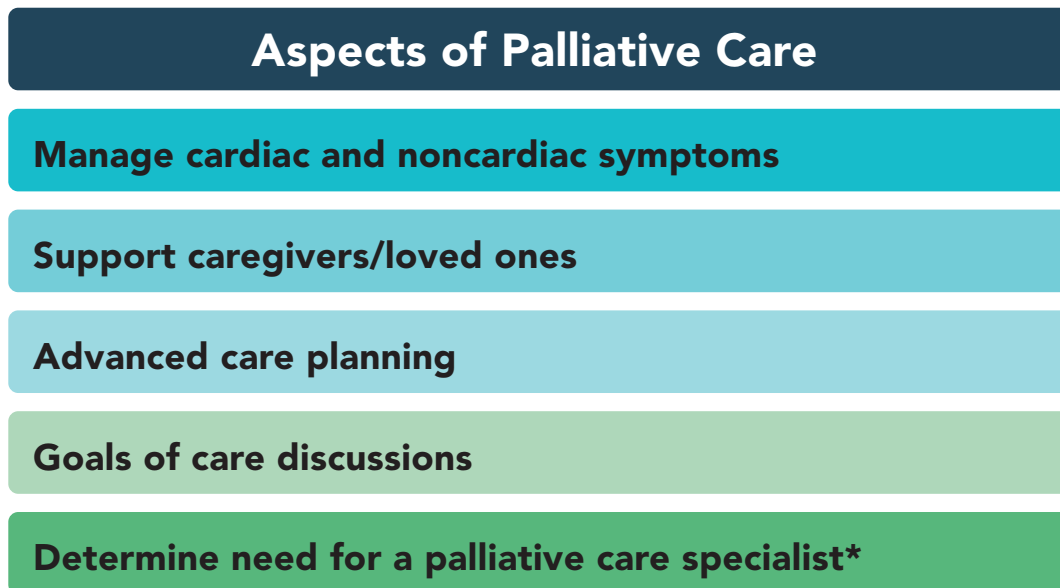


PALLIATIVE CARE

Aspects of Palliative Care

Figure 15

Consider the aspects of palliative care listed in the figure to help set goals around advance care planning.



* For management of complex non-cardiac comorbid conditions (including psychosocial-spiritual distress), end of life symptom control, complicated advance care planning, disagreement between clinicians and patient/family, marked caregiver or family distress, hospice referral.



PALLIATIVE CARE

Goals of Care/Advance Care Planning

Table 9

The table is intended to guide clinician-patient discussions on goals of care and advance care planning.

Advance Care Planning Discussion

Assess Readiness to Discuss Goals of Care
Assess Understanding of Prognosis
Confirm/Discuss Goals of Care <ul style="list-style-type: none"> • Confirm/Elicit patient values and preferences pertaining to quality of life and life prolongation (cultural, religious). • Discuss aspects of what the patient would consider an unacceptable quality of life. • Discuss benefits/burdens of reasonable therapeutic options.
Confirm/Establish Surrogate Decision Maker <ul style="list-style-type: none"> • Person best able and willing to represent patient’s values and preferences and patient’s best interests.
Establish/Reassess Code Status <ul style="list-style-type: none"> • Based on Goals of Care Discussion. • Do Not Attempt Resuscitation (DNAR). • Full Code. • Attempt shock without other measures.
Discuss Management of Defibrillator when appropriate <ul style="list-style-type: none"> • Pacing function is often left intact even if defibrillation is deactivated.
Determine need for specialist palliative care consultation



HEART FAILURE HOSPITALIZATION PATHWAY TOOLKIT

Links to Additional Resources

■ ACC Resources:

TreatHF App:

[Tools.ACC.org/TreatHF/](https://tools.acc.org/TreatHF/)

HF Advance Care Planning Toolkit:

[CvQuality.ACC.org/clinical-toolkits/advance-care-planning-toolkit](https://cvquality.acc.org/clinical-toolkits/advance-care-planning-toolkit)

HF Clinician/Patient Discussion Guide:

[ACC.org/Tools-and-practice-support/quality-programs/succeed-in-managing-heart-failure-initiative/heart-failure-discussion-guide](https://acc.org/Tools-and-practice-support/quality-programs/succeed-in-managing-heart-failure-initiative/heart-failure-discussion-guide)

HF Condition Center:

[CardioSmart.org/Heart-Conditions/Heart-Failure](https://cardiosmart.org/Heart-Conditions/Heart-Failure)

HF Action Plan:

[CardioSmart.org/MyHFAActionPlan](https://cardiosmart.org/MyHFAActionPlan)

HF Infographics:

[CardioSmart.org/~media/Images/Infographics/2016/Heart%20Failure%20resize.ashx](https://cardiosmart.org/~media/Images/Infographics/2016/Heart%20Failure%20resize.ashx)

[CardioSmart.org/~media/Images/Infographics/Heart-Failure-Journey.ashx](https://cardiosmart.org/~media/Images/Infographics/Heart-Failure-Journey.ashx)

2017 Focused Update of the Guideline for Management of Heart Failure:

http://www.onlinejacc.org/content/accj/70/6/776.full.pdf?_ga=2.82138774.1472509375.1582560491-184898922.1568300325

2017 ECDP for Optimization of HF Treatment:

http://www.onlinejacc.org/content/accj/71/2/201.full.pdf?_ga=2.106738307.1472509375.1582560491-184898922.1568300325

■ External Resources:

HFSA Advanced Care Training Module:

[HFSA.org/wp-content/uploads/2018/03/HFSA-Module-9-03.14.2018-LR.pdf](https://hfsa.org/wp-content/uploads/2018/03/HFSA-Module-9-03.14.2018-LR.pdf)

