Heart Failure
Orders apply to adult patients 18 years of age and older. All preprinted doses are based on normal renal and hepatic function and must be assessed for adjustment against the individual patient’s renal and hepatic function and for interactions with other medications.

(Mayo Clinic Number, Name and Room Number Above)
Outage: Date (Month DD, YYYY) ___________ Time (hhmm) ________

Review allergies and update in MICS allergy module as needed.

**ALERT**
Assure patient and nursing staff are aware of patient’s heart failure diagnosis.

**ADMISSION INFORMATION:**

**Diagnosis:**

**Admit to:**

- Select Only One
  - □ Inpatient
  - □ Observation

**Level of Care:**

- Select Only One
  - □ General Care
  - □ Progressive Care Unit (PCU)/Intermediate
  - □ ICU

**Code Status:**

- Note: Document code status in medical record.

**INTRAVENOUS ACCESS:**

- □ Peripheral saline IV lock

**MEDICATIONS:**

**VTE Prophylaxis:**

- □ VTE prophylaxis (mechanical and pharmacological) is not indicated due to:
  - Select Only One
    - □ Low risk
    - □ Less than 24 hour stay planned
    - □ On comfort care measures
  - Pharmacologic VTE prophylaxis contraindicated at this time due to:
    - Select Only One
      - □ Active bleeding/high bleed risk
      - □ On therapeutic anticoagulation
      - □ Heparin-induced thrombocytopenia
      - □ Procedure planned within 24 hours
  - □ Sequential compression device to leg(s)
  - □ Heparin 5000 units subcutaneously every 12 hours
  - □ Enoxaparin (Lovenox®) 40 mg subcutaneously every 24 hours

**Other VTE Prophylaxis:**

- □ Sequential compression device to leg(s)

**Anticoagulants:**

- □ Heparin Weight-Based Nomogram Order Set (MC1156-763) will be used. Prescriber to complete if anticoagulation needed.

**Diuretics:**

Evidence suggests doubling outpatient diuretic dose in patients with heart failure and volume overload. Goal urine output should be 3-5 liters per day. Either twice daily bolus IV dosing or a bolus with continuous infusion can be used.

### Outpatient Furosemide Equivalent Daily Dose

<table>
<thead>
<tr>
<th>Dose Range</th>
<th>Continuous IV Infusion Strategy</th>
<th>Twice Daily IV Bolus Dosing Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>less than 40 mg</td>
<td>40 mg initial bolus, 2.5 mg/hour</td>
<td>40 mg twice daily</td>
</tr>
<tr>
<td>40-80 mg</td>
<td>40 mg initial bolus, 5 mg/hour</td>
<td>60 mg twice daily</td>
</tr>
<tr>
<td>81-120</td>
<td>80 mg initial bolus, 7.5 mg/hour</td>
<td>100 mg twice daily</td>
</tr>
<tr>
<td>121-160</td>
<td>80 mg initial bolus, 10 mg/hour</td>
<td>140 mg twice daily</td>
</tr>
<tr>
<td>161-240</td>
<td>80 mg initial bolus, 20 mg/hour</td>
<td>180 mg twice daily</td>
</tr>
<tr>
<td>greater than 240</td>
<td>80 mg initial bolus, 30 mg/hour</td>
<td>200 mg twice daily</td>
</tr>
</tbody>
</table>

*Consider dual diuretic therapy with a thiazide. Twice daily potassium levels should be performed with dual diuretic therapy.
Heart Failure

Outage: Date (Month DD, YYYY) ___________ Time (hhmm) ________

Inpatient, Adult Order Set

(Mayo Clinic Number, Name and Room Number Above)

Loop Diuretic Equivalents:
Torsemide (Demadex®) 10 mg = Bumetanide (Bumex®) 1 mg = Furosemide (Lasix®) 40 mg

Continuous Infusion Strategy:
☐ Furosemide (Lasix®) IV loading dose ______ mg IV once, then;
☐ Furosemide (Lasix®) IV infusion at ______ mg/hour. When increasing hourly infusion rate, consider administering recommended bolus dose with rate adjustment.

IV Bolus Dosing Strategy:
☐ Furosemide (Lasix®) ______ mg IV twice daily.
☐ Bumetanide (Bumex®) ______ mg IV twice daily.

Oral Strategy for patients without volume overload on chronic stable diuretic dose:
☐ Furosemide (Lasix®) ________mg PO twice daily.
☐ Torsemide (Demadex®) ________mg PO daily.
☐ Bumetanide (Bumex®) ________mg PO daily.

Oral Thiazide Diuretic:
Note: Consider giving in addition to loop diuretic for patients with significant volume overload on high outpatient diuretic doses (administer 30-60 minutes prior to loop diuretic).

☐ Chlorothiazide (Diuril®) ________mg PO daily.
  (500–1000 mg)
☐ Metolazone (Zaroxolyn®) ________mg PO daily.
  (2.5–5 mg)

Angiotensin Converting Enzyme Inhibitor (ACE-I) or Angiotensin Receptor Blockers (ARB):
Best Practice
** Joint Commission (TJC) & Centers for Medicare & Medicaid (CMS) Core Measure: HF-3.
If no ACE-I or ARB ordered and LVEF less than 40%, indicate contraindications for each class at patient’s discharge.
Indicated for HF with reduced LVEF; may be appropriate for HFrEF

ACE-I Inhibitor (Specify):____________________________________________________________
ARB (Specify):____________________________________________________________
ACE Inhibitor/ARB not ordered due to:
☐ EF greater than than 40%.
☐ Blood creatinine is elevated.
☐ Blood potassium is elevated.
☐ Labs are pending.
☐ Dose is being considered.
☐ Previous documented intolerance due to hypotension.
☐ Previous documented intolerance due to renal dysfunction.
☐ Previous documented intolerance due to hyperkalemia.
☐ Others: _________________________________________________________________________

Combined Vasodilator Therapy (Hydralazine + Nitrates):
Consider for use if intolerant of ACE-I/ARB or renal dysfunction (GFR less than 30 mL/minute).
Consider adding to ACE-I/ARB in African-Americans with with heart failure and reduced EF.

Isorsorbide dinitrate (Isordil®) ________mg PO three times a day.
  (10–40 mg)
Isorsorbide mononitrate (Imdur®) ________mg PO daily.
  (30–60 mg)
Hydralazine (Apresoline®) ________mg PO three times daily.
  (10-25 mg)
Heart Failure

Outage: Date (Month DD, YYYY) ___________ Time (hhmm) ________

Beta Blocker: Best Practice
Indicated for HF with reduced LVEF.
Continue if patient already at current dose if hemodynamically stable.
Consider starting if patient has known reduced EF, no proven intolerance and hemodynamically stable.

Select Only One
- Carvediol (Coreg®) _________ mg PO twice daily. (3.125 mg recommended starting dose)
- Metoprolol Succinate (Toprol XL®) ________ mg PO daily. (12.5 mg recommended starting dose)
- Metoprolol Tartrate (Lopressor®) __________ mg PO twice daily. (6.25 mg recommended starting dose)

Aldosterone Antagonist: Best Practice
Indicated for HF with reduced LVEF with NYHA Class II-IV symptoms.
Caution if GFR less than 30 mL/minute or potassium greater than 5 mEq/L.

Select One
- Spironolactone (Aldactone®) _________ mg PO daily.
- Eplerenone (Inspra®) ______ mg PO daily.

Digoxin:
Consider adding Digoxin in patient with HF with reduced EF and NYHA Class II-IV symptoms.
Caution if creatinine greater than 2 or GFR less than 30 mL/minute.
- Digoxin ______ mcg PO daily.

Nitrites:
- Nitroglycerin (Nitrostat®) 0.4 mg sublingual PRN for anginal symptoms, may repeat every 5 minutes up to total of 3 doses.

Do not order for patients with documented aortic stenosis or hypertrophic cardiomyopathy.
- Obtain a 12 lead ECG with first episode of anginal symptoms.
- Notify Service if anginal symptoms persist after 3 Nitroglycerin (Nitrostat®) tablets.

Analgesics:
- Acetaminophen (Tylenol®) 1000 mg PO every 6 hours PRN for pain greater than 4 or for pain that exceeds patient's comfort goal.
Maximum Acetaminophen (Tylenol®) should not exceed 4000 mg per 24 hours from all sources.

Antiemetic:
Do not order for patients with a QTc greater than 500 milliseconds or greater than 550 with existing bundle branch block.
- Ondansetron (Zofran®) 4 mg IV every 24 hours PRN for nausea.
- Prochlorperazine (Compazine®) _________ mg IV every 6 hours PRN for nausea if no affect within 30 minutes after Ondansetron or Granisetron.

Bowel Care:
- Docusate Sodium (Colace®) 100 mg PO twice daily PRN constipation.
- Bisacodyl (Dulcolax®) 10 mg PO or rectally once daily PRN constipation. PO route preferred. If results needed within 2 hours, give rectally.

Antacids:
- Calcium carbonate (Tums®) 1000 mg PO every 2 hours PRN indigestion. Maximum of 6000 mg in 24 hours.

Skin Care:
- Vanicream® apply thin layer topically to affected skin twice daily and PRN for dry skin.

DIET:
- Cardiovascular (90 mEq Sodium, low cholesterol, low fat).
- Congestive heart failure (sodium and fluid restriction required) ______ kcal.
- Diabetic (consistent carbohydrate) ______ kcal (90 mEq Sodium, 2000 mL fluid restriction).
- General (90 mEq Sodium, 2000 mL fluid restriction).

PATIENT EDUCATION:
Note: The Joint Commission (TJC) and Centers for Medicare & Medicaid (CMS) Core Measure: HF-1.
- Complete HF Education. Do Not Reorder education if already ordered. (Refer to page 5 for specific education.)

BLADDER CARE:
- Insert urinary catheter if unable to obtain accurate urine output or patient is intolerant of activity required for voiding. Discontinue catheter in 24 hours.

ACTIVITY:
- Bathroom privileges and after 24 hours advance activity as tolerated.
- Activity as tolerated.
- Ambulated (specify frequency): ____________________
- Other: ____________________________________________________________________________
CARDIAC REHABILITATION:

☐ CVHC RN to arrange for referral to outpatient Phase II cardiac rehabilitation.

ADDITIONAL ORDERS:

• Vital signs three times a day (blood pressure both arms on admission).
• Weigh patient daily. Note: Bed weights discouraged.
• Record intake and output.
• Continuous ECG monitoring. (Testing in non monitoring areas requires NP, PA, RN or physician accompany patient for test.)
• Intermittent ECG monitoring. (Monitoring may be interrupted for patient to leave unit for test or procedure.)
• Oxygen 2 Lpm via nasal cannula PRN dyspnea, tachypnea, anginal symptoms or oxygen saturation less than 92%.
  May discontinue when symptoms resolved and oxygen saturation equal to or greater than 92%.
• Check oxygen saturation - if less than 90%, check ABGs.
• Elastic Wraps to legs for edema management for patients with Stage D Heart Failure:
  □ Regular Stretch Elastic Wraps.
    □ Thigh High.
    □ Knee High.
  □ Low Stretch Elastic Wraps [(Comprilin® or Rosadal®). Use for patients with ASO.]
    □ Thigh High.
    □ Knee High.
• Elastic Wraps to legs while in bed or sitting.
• For any patient arriving to the patient care unit complaining of dyspnea:
  □ Check oxygen saturation (on room air or current oxygen liter flow).
  □ If saturation is less than 90%, notify service and order ABG.
• If symptoms of urinary tract infection (burning, frequency) order urinalysis and Gram stain. If positive order urine culture for general bacteria and anti-microbial susceptibilities.
  □ Notify service.
• If oral temperature is greater than 38.5 degrees Celsius:
  □ Obtain two sets of blood cultures for general bacteria and anti-microbial susceptibilities.
  □ Order chest X-ray (PA and lateral) if one has not been done within the past 48 hours.
  □ If productive cough is present, order sputum culture for Gram stain, aerobic bacteria and anti-microbial susceptibilities.
  □ Notify service.
• Bladder scan prior to straight urinary catheterization for inability to void for more than 8 hours.
  □ If volume scanned less than or equal to 250 mL, do not catheterize.
  □ If greater than 250 mL on bladder scan, may catheterize in and out once for inability to void for more than 8 hours.
  □ Notify service if patient remains unable to void.
• In and out catheterization to obtain urine specimen if patient is unable to void for a midstream specimen.

For patients with diabetes:

• Obtain glucose point of care on admission (unless obtained in Emergency Department).

CONSULTS:

□ SMH General PMR. (Consider if concerns about safety or ability to live independently after discharge.)
□ RMH PT/OT General PMR.
□ Social Worker: Consult LVAD/Transplant Workup.
□ Discharge Planning Nurse Specialist: Consult for patients with actual or potential IV inotropic therapy.
□ Palliative Care. (Severe chronic HF, multiple admissions, multiple comorbidities, frailty or potential LVAD patient.)
□ Dietitian: Consult for complex educational needs.
□ HF Clinical Nurse Specialist. (Consider for patients with multiple HF admissions.)
□ LVAD. (Consider if age 65–75, severe chronic HF with reduced EF, reasonable comorbidity burden, adequate support system.)
□ Transplant consult. (Consider if age less than 65, Severe chronic HF, reasonable comorbidity burden, adequate support system.)
Heart Failure

Outage: Date (Month DD, YYYY) ______ Time (hhmm) ______

TESTS:
(Prescribers to complete appropriate forms.) (Review MICS results before ordering to avoid unnecessary duplication.)
Chest x-ray (PA and Lateral)
Electrocardiogram
Electrolyte panel
CBC with differential
CBC without differential
Echocardiogram. **Note:** HF quality core measure.
   - All patients with new onset HF without EF documentation since onset of symptoms.
   - Deferral in patients with known chronic systolic or diastolic HF unless strong suspicion of actionable new finding. Document ejection fraction in clinical note.
Uric acid
AST
Alkaline Phosphatase
Serum Albumin
NT pro B-natriuretic peptide (NT-proBNP)
sTSH (if not documented in the past year)
Digoxin trough level (If patient on Digoxin)
Lipid screen (if not done in past 6 months)
ABG for oxygen saturations less than 90%

This is a multi-page order set. Be sure all pages are complete before signing and patient information is included on each page.

©2013 Mayo Foundation for Medical Education and Research. All rights reserved.

Heart Failure Education Measures include:
- Signs and Symptoms of disease and when to report changes to health care provider
- Daily Weight Monitoring and when to contact health care provider with weight changes
- Activity following hospitalization
- Diet
- Medications
- Follow up Appointments

Heart Failure Education Plan must include, but not limited to:
- Heart Failure Self-Care Plan (MC3089-04)

**Alternative education material:**
- Steps to Heart Health (MC0277)
- Heart Failure Prevention and Treatment for People With Chronic Kidney Disease (MC389-06)
- Steps to Heart Health: Cardiomyopathy and Heart Failure (MC0277-09)
- LivWell Heart Failure PtsFam (MC186680)
- Verify Receipt of Dismissal Summary
- DischrgMed Listed Hosp Sum/Micromedex Ed