AUTOMATIC STOP ORDERS

ORAL ANTI.COAGULANTS— AFTER 24 HOURS
ALBUMIN— AFTER 24 HOURS
LARGE VOLUME INTRAVENOUS— AFTER 24 HOURS
INJECTABLE ANTI.COAGULANTS (SC)— AFTER 5 DAYS
CONTROLLED SUBSTANCES— AFTER 5 DAYS
CORTISONE PRODUCTS— AFTER 5 DAYS

NURSE: PLEASE X IN COLUMN ON LINE, FOR MEDICATIONS REQUIRED FROM PHARMACY PHYSICIAN MUST ENTER DATE, HOUR, AND SIGN EACH SET OF ORDERS.

ALLERGIES:

INITIAL ORDERS FOR HEART FAILURE
(Check appropriate boxes and fill in the blanks)

1. Admit to Dr. ____________________________'s Service
   - Regular Floor
   - Telemetry
   - CCU
   - Other: ____________________________

2. Diagnosis: Heart Failure

   Code Status: - Full Code
   - DNR or Partial DNR — see DNR Order Sheet

3. Laboratory Tests:
   - All preliminary lab tests and studies done in ETD (if not order on separate page)
   - If initial troponin done, recycle Q8hr X 2. Call PMD if results are positive.

4. Echocardiogram
   - Reason: Heart Failure
   - Other: ____________________________
   - Or Pt has recent Echo, please call 2310 and place on chart
   - Or Patient's most recent Ejection Fraction _________%

6. Activity:
   - Per CareMap®
   - Other: ____________________________

7. Diet:
   - 2Gm Na+, low cholesterol
   - _____________ Calorie ADA diet
   - Other: ____________________________
   - Refer to Registered Dietician when pt on unit
   - Restrict fluids to _____ mL in 24hrs

8. Insert IV:
   - Solution: ____________________________ Rate: _________ mL/hr
   - Saline Lock

9. Vital signs:
   - Per CareMap®
   - Other: ____________________________
   - Monitor pulse oximetry every shift and PRN
   - Daily weights
   - Strict intake/output
   - Insert Foley Catheter

10. Medications (include name, dose, frequency and route of administration):
    - O₂ (check one):
    - Nasal cannula @ _________ L/min
    - _____________ POC by mask
    - Nitroglycerin ointment to chest wall _____________ inch(es)
    - Nitroglycerin gtt. 50mg / 250cc/D₃W @ __________ mcg/min
    - Hold for B/P < 90/syst
    - Nesiritide (Natrecor) 1.5 mg in 250 mL D₃W
    - Hold for B/P < 90/syst
    - Bolus 2mcg / kg = _____________ mL (use dosing table), withdraw bolus from the infusion bag and administer IV push over 60 seconds
    - Infusion rate @ _____________ mL / hr (use dosing table)

ETD Attending Signature: ____________________________

Attending Physician Signature: ____________________________

These orders are good for 8 hours only unless countersigned by the primary care physician.
**AUTOMATIC STOP ORDERS**

- ORAL ANTICOAGULANTS— AFTER 24 HOURS
- ALBUMIN— AFTER 24 HOURS
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### Nurse's Column

NURSE: PLEASE X IN COLUMN ON LINE FOR MEDICATIONS REQUIRED FROM PHARMACY
PHYSICIAN MUST ENTER DATE, HOUR, AND SIGN EACH SET OF ORDERS.

### Allergies:

**INITIAL ORDERS FOR HEART FAILURE**

*(Check appropriate boxes and fill in the blanks)*

11. Medications continued (include name, dose, frequency and route of administration):
   - ACE Inhibitor
   - Angiotensin Receptor Blocker
   - Aspirin
   - Beta blocker
   - Digoxin
   - Diuretic
   - Spironolactone 12.5 mg PO qd or
   - Warfarin

12. If Patient Develops Chest Pain:
   - Call Admitting Physician STAT
   - STAT ECG, give Nitroglycerin 1/150 SL q 5 min x 3 if systolic BP >100mmHg

13. ☒ Notify Heart Failure team of patient's admission X5770

14. Additional orders:

   - 
   - 
   - 
   - 
   - 
   - 
   - 
   - 

ETD Attending Signature:

Attending Physician Signature:

These orders are good for 8 hours only unless countersigned by the primary care physician
EVIDENCE BASED MANAGEMENT OF ACUTE HEART FAILURE
Robert Berkowitz M.D., Ph.D.,FACC; Sidney Glasofer B.S.E, MS (IV)

DIAGNOSIS OF ACUTE HEART FAILURE
➤ Early identification of heart failure and risk stratification in the emergency room using clinical assessment\(^a\) and BNP assay\(^b\)

- BNP=100
- BNP=480
- 100<BNP=480

➤ Heart failure unlikely, look for another cause for dyspnea
➤ Heart failure likely
➤ Clinical assessment should guide decision between admission vs. short term IV diuresis in ER
➤ Outpatient work-up if previously undiagnosed heart failure

- with symptoms of dyspnea and volume overload

STABILIZATION OF PATIENT
➤ Treatment should begin within one hour of ER arrival with IV vasoactive therapy and aggressive IV diuretics\(^c\)
➤ If Cardiogenic shock is present, consider invasive monitoring and inotropic therapy\(^d\)

INPATIENT THERAPY AND FURTHER DIAGNOSTIC WORK-UP
➤ Continued IV therapy with a diuretic and a vasoactive medication
  - Monitor daily weights, electrolytes, BUN, Cr
  - ACE inhibitor titration; consider low dose aldaetone (class IIIB-IV); consider digoxin\(^d\)
  - DVT prophylaxis\(^d\), e.g. enoxaparin 40 mg SQ QD\(^d\)
  - Address co-morbidities; e.g. anemia, diabetes, HTN, hyperlipidemia
  - Poor response to IV therapy within first 48 hours indicates need for hemodynamic monitoring; patients refractory to treatment may need long term inotropic therapy, LVAD, or cardiac transplantation
  - Determination of etiology of heart failure: Echocardiogram, ischemic work-up, metabolic evaluation\(^e\)

EUVOLEMIA (Goal – Day 3)
➤ Once euvoolemia is achieved, consider obtaining a baseline BNP
➤ Begin Beta-blocker therapy\(^d\)
➤ Consider Bi-ventricular pacing and/or Implantable Cardiac Defibrillator in the appropriate patient\(^f\)
➤ Transition remaining IV medications to PO
➤ Patient education: low Na\(^+\) diet, smoking cessation, exercise, daily weight monitoring\(^g\)

DISCHARGE PLANNING AND FOLLOW UP
➤ Referral for heart failure home care or tele-monitoring\(^g\)
➤ Follow up with doctor in 2-4 weeks
➤ Monitoring of patient with homecare heart failure nurse or tele-monitoring\(^g\)
➤ Monitor BNP levels in future, rise of BNP to greater than 50% above baseline constitutes decompensated heart failure
➤ For patients with frequent readmissions associated with chronically decompensated heart failure, outpatient intermittent nesiritide therapy is recommended\(^d\)

*For discussion of the strategies presented in this flow chart refer to addendum a-g.
DIURETIC ALGORITHM

Volume overload is the most common presentation of CHF. Loop diuretics in significant amounts antagonize the RAAS, increase the SVR, decrease the GFR and decrease CO. A furosemide drip preceded by a moderate bolus is more effective than IV push lasix and facilitates a continuous diuresis. There is no rebound effect as occurs with IV push lasix alone.

In contrast, loop diuretics with vasodilator treatment increase urine output, GFR, CO and when the vasodilator is nesiritide, neurohormonal blockade is obtained. Nesiritide is synergistic with loop diuretics requiring less lasix over time and facilitating renal protection leading to improved creatinine.

Nesiritide with furosemide is recommended for CHF treatment. "Patients who received a vasoactive agent earlier in their treatment had a significantly shorter LOS." It is not necessary to down-titrate beta-blockers when beginning vasoactive therapy.

Recommendations for Acute Decompensated Heart Failure in the ETD

On Admission:

- Treat within 1-2 hours with:
  - Nesiritide 2mcg/kg bolus followed by infusion at 0.01 mcg/kg/min to be titrated as needed (by addition of 0.005mcg/kg/min q 3 hours PRN).

  *The higher doses may be required in cases where hypertension exists. The usual duration of treatment with Nesiritide is for 24-72 hours depending on the severity of volume overload.

Concomitant treatment with furosemide:

- Give 40-80 mg IVF furosemide followed by infusion of furosemide 250mg/250mL at 10mg/hour for moderate fluid overload or 15mg/hour for severe/extreme volume overload.

- Goal is to achieve urine output of ≥ 1ml/kg/h (about 600ml per shift). If goal is not achieved in 4 hours, increase furosemide drip by 5mg/h to a maximum of 20mg/hr until adequate diuresis is seen. Monitor urine output every hour and every shift. Maintain diuresis until fluid retention is resolved.

Day 2

- Consider decreasing furosemide drip as patient approaches euveloma. *This may occur quicker in patients with diastolic verses systolic dysfunction.

Day 3

- Transition to PO furosemide when euveloma:
  - 40 mg QD to BID or 80 mg AM, 40 mg PM QD depending on degree of initial volume overload.
  - Avoid Zaroxyln as possible.
  - *Note: ACEI titration can begin immediately.
  - Beta-blockers initiated when patient euveloma.

Legend

- RAAS- Renin Angiotensin Aldosterone System
- SVR- Systemic Vascular Resistance
- GFR- Glomerular Filtration Rate
- CO- Cardiac Output

References