

Heart Failure Emergency Department Observation and IV Diuretic Protocol

Goal: Identify low risk HF patient and utilize a ≤ 24 hr observation stay in the Emergency Department. This is in efforts to avoid admissions of low risk HF patients in need of brief optimization via IV diuretics with the goal of reducing HF admissions, reduce hospitalization LOS, and reduce 30-day readmissions.

Exclusion (HF patients being admitted):

- Hypoxia ($SpO_2 < 88\%$), shock/hypoperfusion, anuria, acute or worsening medical condition otherwise requiring admission (sepsis, stroke, arrhythmia, etc.)
- New onset HF, low BP without shock, tachycardia, worsening renal function, hemodialysis or peritoneal dialysis, hyponatremia, elevated troponin without ACS, liver dysfunction, uncontrolled hypertension, frailty, not tolerating home HF medications

Inclusion:

- Low risk HF patients (HF_rEF, HF_mrEF, or HF_pEF) presenting with signs and symptoms of mild volume overload
 - o Normal BP ($>90/50$ and $<180/110$ mmHg) and HR (>50 and <100 bpm)
 - o ≤ 10 lbs above their dry weight
 - o Brisk initial response to IV diuretic with improved symptoms
 - o Normal or stable kidney function/liver function
 - o Troponin (hs-trop <53 or troponin T <0.063) (if hs-trop ≥ 53 or troponin T >0.063 consult cardiology for observation protocol appropriateness)
 - o NT-proBNP >300 pg/ml

Treatment:

- Continuous telemetry monitoring
- Weight prior to diuretics and prior to discharge
- Chem7/BNP/CBC/LFTs upon presentation and repeat chem7 within 24 hrs.
- Monitor I/Os accurately
- Continue home medications (hold the oral diuretic while using IV diuretics)
- Call cardiology consult service if questions on management or medication adjustment

Diuretic and dosing (see diuretic table below)

- Initial IV loop diuretic at double the daily oral dose (see chart below)
- If adequate response, then consider repeat IV diuretic at the same IV dose at 6-12hrs from previous dosing, if there is continued evidence of signs or symptoms of volume overload
- Replace electrolytes as needed prior to discharge
- Goal is to improve symptoms prompting ED visit and safely transition to HF clinic with close follow up, if this is unable to be achieved or inadequate IV diuretic response then consider hospital admission or cardiology consultation

Discharge:

- Presenting symptoms resolved and deemed safe for discharge
- Stable electrolytes and renal function
- HR <100 , O₂ saturation $>90\%$, no new arrhythmia
- Continue home medications including oral diuretic (adjust home diuretic if needed)
 - o If nonadherent to home diuretic, continue prior home dose

- If nonresponsive to home diuretic, consider increasing frequency of diuretic OR increasing dose of diuretic OR changing type of diuretic
- At the time of discharge, send a PowerChart message to IM.CARD-HF.ED-MSG pool. The HF clinic will send a message to the appropriate provider and schedule an in clinic follow up visit vs phone visit within 48-72hrs. If a new chronic HF patient requests to establish at the UNM HF clinic then a new patient appointment will be made for them within 7 days (also an ad hoc referral to cardiology will need to be placed). This process is for HF observation patients only. Do not send general requests for cardiology or HF follow up.
- Contact EDRN case manager to setup community paramedic homecare.

Oral and IV Diuretic Dosing and Re-dosing Options:

Home PO diuretic regimen	Initial IV diuretics: Furosemide or Bumetanide
Furosemide 20mg daily	Furosemide 20mg IV
Furosemide 40mg daily	Furosemide 40mg IV or Bumetanide 1mg IV
Furosemide 80mg daily	Furosemide 80mg IV or Bumetanide 2mg IV
Furosemide 40mg BID	Furosemide 40mg IV or Bumetanide 1mg IV
Furosemide 80mg BID	Furosemide 80mg IV or Bumetanide 2mg IV
Bumetanide 1mg daily	Bumetanide 2mg IV
Bumetanide 2mg daily	Bumetanide 2mg IV
Torsemide 10mg daily	Furosemide 20mg IV
Torsemide 20mg daily	Furosemide 40mg IV or Bumetanide 1mg IV
Torsemide 40mg daily	Furosemide 80mg IV or Bumetanide 2mg IV
Torsemide 50mg daily	Bumetanide 2mg IV
Torsemide 100mg daily	Bumetanide 4mg IV

- Furosemide 40mg PO = Furosemide 20mg IV
- Bumetanide 1mg PO = Bumetanide 1mg IV
- Torsemide 20mg PO = Torsemide 20 IV
- Furosemide 40mg PO = Bumetanide 1mg PO = Torsemide 20mg PO

- Bumetanide 1mg IV = Torsemide 20mg IV
- Max daily dosing Furosemide IV 600mg, Bumetanide IV 10mg, Torsemide IV 200mg