Emergency Department Acute Heart Failure Management Algorithm

Source: American College of Cardiology | ACC Accreditation Services

ED presentation with shortness of breath

Initial ED treatment (15 mins):
1. IV-O^2-Monitor vitals
2. Labs: CBC, BMP, trop, BNP
3. EKG, CXR
4. MD eval: consider hypertensive, ischemic, non-ischemic causes

HF Color Code

Hemodynamic profile of patients with heart failure due to diastolic dysfunction

Flash Pulmonary Edema

Hemodynamic profiles of patients with heart failure due to systolic dysfunction

Warm and Wet

Cold and Wet

Cold and Dry

Flash Pulmonary Edema

Pulmonary edema with respiratory distress AND SBP > 120 mmHg and any of these: tachypnea, tachycardia, diaphoresis, anxiety and abnormal lung sounds — **NO** →

YES ↓

1. Give NTG 0.4mg SL q5min x 3
2. Monitor BP q5-10 min
3. Consider NIPPV if diaphoresis, ↓ LOC, O$_2$ < 90% on NRB

IV diuretic (goal < 90 mins):
On home diuretic: double home furosemide dose and give IV; max 360mg/day
Diuretic naïve:
-If Scr < 2, give furosemide 40mg IV
-If Scr ≥ 2, give furosemide 80mg IV

SBP and RR improving? — **NO** → -Start NTG drip / -Call for ICU admit

YES ↓

Other Admit DX?
New CHF DX, electrolyte disturbance, positive cardiac enzymes, on NIPPV, new arrhythmia

YES ↙
- Determine level of care based on symptoms
- Call admitting physician

NO ↓

- Consider observation/CCDU status
-Call admitting physician

Warm and Wet

Pulmonary edema with volume overload AND normal cardiac output, with orthopnea/PND, DOE/SOB, pitting edema, recent weight gain, ↑JVD, S3 or S4 rales or HJR — **NO** →

YES ↓

IV diuretic (goal < 90 mins):
Given by EMS: document dose
On home diuretic: double home furosemide dose and give IV; max 360mg/day
Diuretic naïve:
-If Scr < 2, give furosemide 40mg IV
-If Scr ≥ 2, give furosemide 80mg IV

- New CHF DX: BNP >150 and acute edema and dyspnea
-Scr >0.4 over baseline
-> 5 lbs (2.3kg) over dry weight
-New arrhythmia, electrolyte disturbance, positive cardiac markers

NO ↓

1. Give NTG 0.4mg SL q5min x 3
2. Monitor BP q5-10 min
3. Consider NIPPV if diaphoresis, ↓ LOC, O$_2$ < 90% on NRB

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Evaluate Response (30-90 min):
-SBP >90mmHg
-UOP >500mL in 2 h (Scr <2)
-UOP >250mL in 2h (Scr >2)

YES → - Consider observation/CCDU status / -Call admitting physician

NO → - Determine level of care based on symptoms / - Call admitting physician

(**YES** from New CHF DX box →) - Determine level of care based on symptoms / - Call admitting physician

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Cold and Wet

Pulmonary edema AND low cardiac output, with narrow pulse pressure, fatigue, confusion, cool extremities, low/no urine output, pre-renal azotemia — **NO** →

YES ↓

1. Consider dobutamine IV
2. **Rule out Acute Mitral Valve Regurgitation***
3. If SBP < 85, Consider dopamine IV

YES ↓

VOLUME OVERLOAD?
IV diuretic (goal < 90 mins):
Given by EMS: document dose
On home diuretic: double home furosemide dose and give IV; max 360mg/day
Diuretic naïve:
-If Scr < 2, give furosemide 40mg IV
-If Scr ≥ 2, give furosemide 80mg IV

→ Call cardiology, admit to ICU

Cold and Dry

NO pulmonary edema and low cardiac output, with narrow pulse pressure, fatigue, confusion, cool extremities, low/no urine output, pre-renal azotemia

YES ↓

1. Consider dobutamine IV
2. If SBP < 85, Consider dopamine IV

↓

Call cardiology, admit to ICU

***Acute Mitral Regurgitation Heart Sounds** = presence of pronounced S1 murmur. Order STAT Echo. If MR present, STAT Cardiology Consult