ACUTE HEART FAILURE

Decompensated heart failure · the wet-and-cold matrix

DRY THEM
warm them

PHENOTYPE FIRST: assess CONGESTION (wet vs dry) and PERFUSION (warm vs cold). Most are WARM & WET (congested, well-perfused). Treatment follows the quadrant.

THE 2 × 2 MATRIX

congestion vs perfusion

WARM & WET

Congested, well-perfused (commonest)

IV loop diuretic; add vasodilator (GTN) if hypertensive

COLD & WET

Congested AND hypoperfused (cardiogenic)

Inotrope (dobutamine / milrinone) ± vasopressor; cautious diuresis; mechanical support

WARM & DRY

Compensated / euvolaemic

Optimise oral GDMT; find why they decompensated

COLD & DRY

Hypoperfused, not congested

Cautious fluid challenge, then inotrope if still low output

DECONGEST

- **IV loop diuretic -** furosemide 1-2.5 × the usual oral dose IV; bolus or infusion (DOSE)
- **Target -** monitor urine output, daily weight, symptoms; aim net negative balance
- **Resistant -** add a thiazide (metolazone), increase dose; consider ultrafiltration
- **Oxygen / NIV -** CPAP / BiPAP for pulmonary oedema and respiratory distress

SCAPE / FLASH OEDEMA

hypertensive crash

- Sympathetic Crashing Acute Pulmonary Oedema: severe hypertension + distress
- HIGH-DOSE GTN is the key drug (e.g. 100-400 mcg/min), not big diuresis
- Early NIV (CPAP); it is fluid redistribution, not overload
- Avoid intubation if NIV works; do not over-diurese

FIND THE PRECIPITANT (CHAMP): aCute coronary syndrome · Hypertensive emergency · Arrhythmia (AF) · acute Mechanical cause (valve / VSD) · Pulmonary embolism. Also: infection, non-adherence, anaemia, thyroid.

KEY DRUGS

titrate to response

LOOP DIURETIC

Furosemide IV 1-2.5 × oral dose; bolus or infusion

VASODILATOR

GTN for hypertensive / flash oedema; drops preload + afterload

INOTROPE

Dobutamine / milrinone for cold, low-output states

VASOPRESSOR

Norepinephrine to restore MAP before / with an inotrope

ONCE STABILISED (GDMT): for HFrEF start / continue the four pillars - ARNI or ACEi/ARB · beta-blocker (when euvolaemic) · MRA · SGLT2 inhibitor. Do not stop chronic heart-failure drugs without a clear reason.

WHEN TO ESCALATE: diuretic-resistant overload → ultrafiltration / RRT · persistent low output or rising lactate → mechanical support (IABP modest · Impella · VA-ECMO) with the shock team · consider advanced-HF / transplant referral.

PEARLS & PITFALLS

- Phenotype before you prescribe: warm-and-wet needs diuresis, cold-and-wet needs an inotrope.
- Do not diurese the cold, hypoperfused patient hard; restore output first, then decongest.
- Flash pulmonary oedema (SCAPE) is a vasodilator problem - high-dose GTN + NIV beat heavy diuresis.
- Always hunt the precipitant (CHAMP) - ACS, arrhythmia and PE change the whole plan.

References: ESC Acute & Chronic HF 2021 · ACC/AHA HF 2022 · DOSE 2011 · Stevenson profiles.

Educational aid; verify doses against local protocol and patient factors.