# HFrEF Treatment

- HFrEF:
  - Initiate Guideline Directed Medical Therapy (GDMT) – 4 mainstays
    - Begin with volume management using aldosterone antagonists w or w/o loop diuretics as needed
    - Beta blockers (metoprolol succinate, carvedilol, bisoprolol), and ARNI/ACEI/ARB for all unless contraindicated
      - Titrate to target dose, even if symptoms are stable/improving
      - Get BP as low as tolerated. HR target 70bpm or less
    - Add SGLT2 inhibitor: Dapagliflozin (Farxiga®), Sotagliflozin (Inpefa®) and Empagliflozin (Jardiance®) are approved for HFrEF . Hold 3d prior to surgery. Only Sotagliflozin (Inpefa®) needs titration and renal concerns. (See HFpEF section).

# HFrEF Treatment

**For ALL patients:**

ACE Inhibitor *or* ARB *or* ARNI

*AND* Evidence based Beta Blocker

*AND* Aldosterone Antagonist (CrCl >30 ml/min, $K^+$ <5)

*AND* SGLT2 inhibitor

Initiate loop diuretic

(dose prn or daily as clinically indicated)

**Titrate ACE/ARB/ARNI, BB, Aldosterone Antagonist to target doses as clinically tolerated**

Continue diuretic prn or daily

Follow up symptoms q1-6 months and prn

| | Starting Dose | Target Dose |
|---|---|---|
| ARNI: **starting dose and timing dependent on current ACE/ARB dose* | | |
| Sacubitril/Valsartan (Entresto®) | 24/26mg twice daily | 97/103mg twice daily |
| **ACE Inhibitors** | | |
| Enalapril | 2.5mg twice daily | 10mg twice daily |
| Lisinopril | 2.5mg once daily | 20-40mg once daily |
| Captopril | 6.25mg three times daily | 50mg three times daily |
| **ARBs** | | |
| Valsartan (Diovan®) | 20-40mg twice daily | 160mg twice daily |
| Candesartan (Atacand®) | 4-8mg once daily | 32mg once daily |
| Losartan (Cozaar®) | 25mg once daily | 50-100mg once daily |
| **Evidence Based Beta Blockers** | | |
| Bisoprolol | 2.5mg once daily | 10mg once daily |
| Carvedilol (Coreg®) | 3.125mg twice daily | 25mg twice daily |
| Metoprolol Succinate (Toprol XL®) | 12.5-25mg once daily | 200mg once daily |
| **Aldosterone Antagonist** | | |
| Spironolactone | 12.5-25mg once daily | 25-50mg once daily |
| Eplerenone (Inspra®) | 12.5-25mg once daily | 25-50mg once daily |

# HFrEF Subsequent Treatment

**If persistent symptoms, continue to add as appropriate (Begin → End)**

**Add Hydralazine/ISDN** (decrease mortality): self-identified African American or contraindication to ACE/ARB/ARNI

**Add Ivabradine (Corlanor®)** (decrease time to hospitalization): HR >70 on max tolerated BB and in normal sinus rhythm

**Consider addition of Digoxin** if patient w/ symptoms despite above therapies or if comorbid atrial fibrillation. Use low dose, ensure $K^+$ and $Mg^+$ are WNL

**Consider Vericiguat** (Verquvo®)(decrease CV death & HF hospitalization): eGFR >15 ml/min, EF <45%, contraindicated in pregnancy

# HFpEF Treatment

- HFpEF:
  - Start with loop diuretics for volume management. If significant edema despite loop, add aldosterone if eGFR/K+ normal
  - Get BP and HR as low as tolerated – use beta blockers, diltiazem, verapamil (rate – 70bpm is target) as well as ACEI/ARB and consider nitrates, hydralazine
  - Add SGLT2 Inhibitor (note to hold med at least 3d prior to surgery – DKA risk)
    - Empagliflozin (Jardiance®) – FDA approved for all types HF – no titration

      Start 10mg qam as long as eGFR >/= 20.
    - Dapagliflozin (Farxiga®) – FDA approved for all types HF – no titration

      Start 10mg qam. Avoid initiation of treatment if eGFR <25. May stay on if eGFR drops <25
    - Sotagliflozin (Inpefa®) – FDA approved (05/2023) – HF titration

      Start 200mg qd, increase after 2wk. eGFR must be > 25 to start, do not use if < 15

# Global HF Treatment Overview

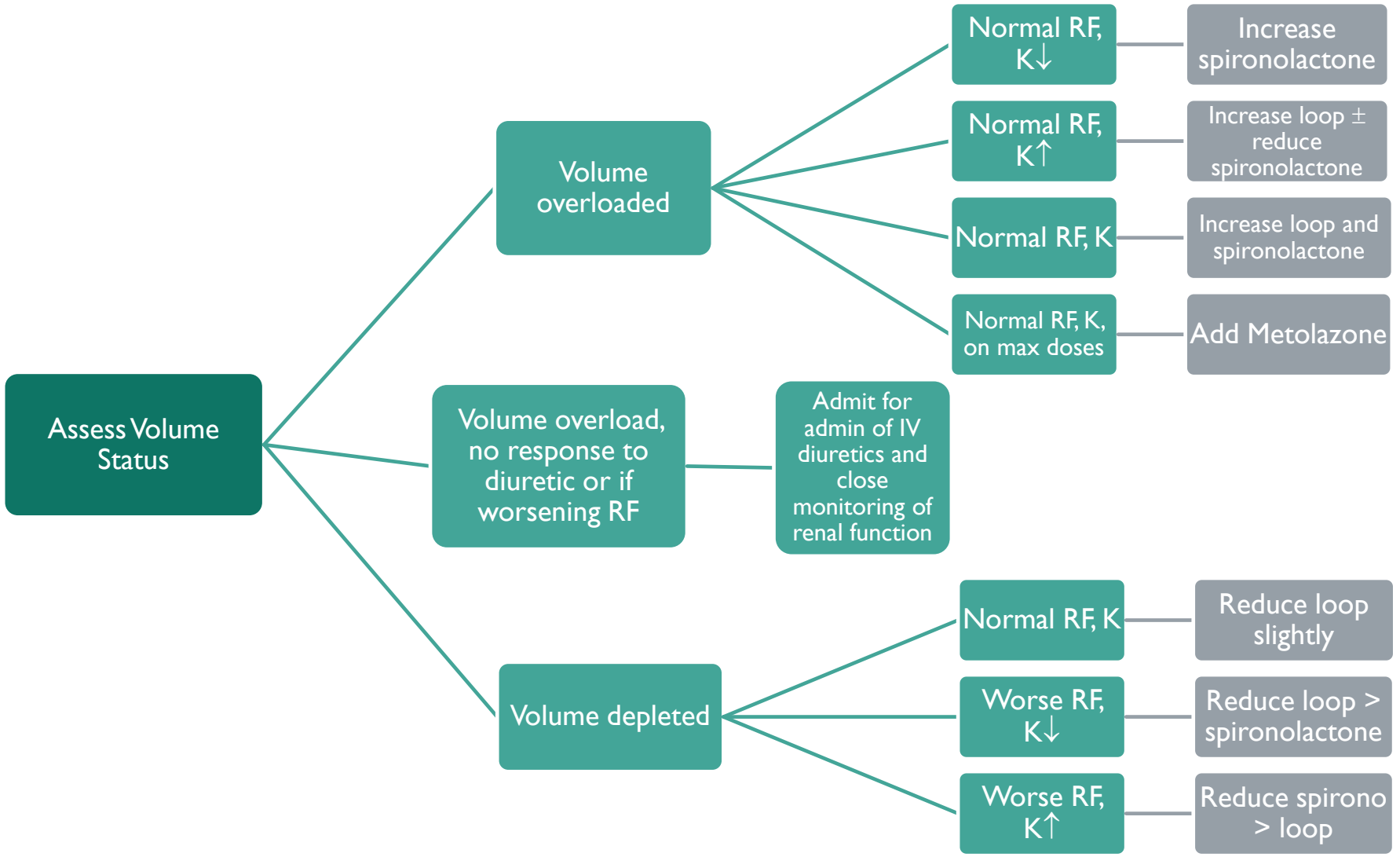
- HFrEF:
  - Begin with volume management using aldosterone antagonists w or w/o loop diuretics as needed
  - Initiate Guideline Directed Medical Therapy (GDMT) – 4 mainstays
    - Beta blockers (metoprolol succinate, carvedilol, bisoprolol), and ARNI/ACEI/ARB for all unless contraindicated
      - Titrate to target dose, even if symptoms are stable/improving
      - Get BP as low as tolerated without orthostasis. HR target 70bpm or less
    - Add SGLT2 inhibitor: Dapagliflozin (Farxiga®) & Empagliflozin (Jardiance®), and Sotagliflozin (Inpefa®) are approved for HF. SGLT2i meds hold 3-4d prior to surgery.
- HFpEF:
    - Start with loop diuretics for volume management. If significant edema despite loop, add aldosterone if eGFR/K+ normal
    - Get BP and HR as low as tolerated – use beta blockers, diltiazem, verapamil (rate -70 is target) as well as ACEI/ARB and consider nitrates, hydralazine (BP)
    - Add SGLT2 Inhibitor (Empagliflozin®), Dapagliflozin (Farxiga®), and Sotagliflozin (Inpefa®) are FDA approved. Hold 3-4d prior to surgery.
- Treat all comorbidities to goal (HTN, arrhythmias, diabetes, pulmonary conditions, sleep apnea, etc.)
- Counseling, education: salt restriction, fluid restriction (if hyponatremic) and other strategies based on conditions (smoking cessation, weight optimization, glucose control, etc.).

# Coding for Heart Failure[6]

- Be specific: *correct capture adds 0.360 RAF to the patient with HF*
  - (Acute/chronic) (systolic/diastolic) heart failure – I50.9
- Add pertinent conditions:
  - ASCVD – CABG/CAD *correct capture adds 0.240 RAF to the patient*
  - Heart Arrhythmias – afib, aflutter, SSS *adds 0.299 RAF to the patient*
- Capture everything: Disease interactions exist here

| Disease Interaction | Pt. in Community Setting, Non-Dual, Aged into Medicare | Pt. in Community Setting, Non-Dual, Disabled (reason for MCR) |
|---|---|---|
| HF + Diabetes (DM w, w/o, unspecified) | 0.112 | 0.023 |
| HF + Chr Lung D/O (COPD, trsplts, CF, PFibrosis, etc.) | 0.078 | 0.062 |
| HF + Kidney (CKD Stage III, IV, V) | 0.176 | 0.314 |
| HF + Specified Heart Arrhythmias (SSS, Afib/Flut, Ht blck) | 0.077 | 0.257 |
| Chr Lung D/O+ Cardiorespir. Failure (home $O_2$, trach) | 0.254 | 0.242 |

# Acute Treatment to Avoid Hospitalization: Volume Status Management




**RF = renal function**
**Loop = loop diuretic**