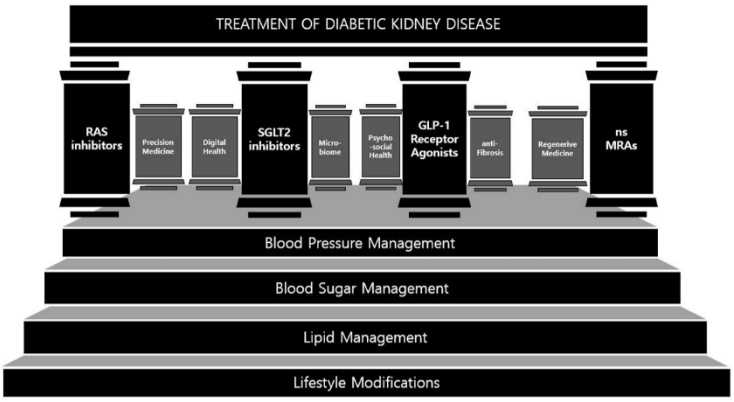
Cardio-Renal-Metabolic Disease and Care Models for Hospital Medicine

Rapid Clinical Updates

Context: Cardiorenal-metabolic (CRM) disease describes the interconnectedness of cardiovascular disease, chronic kidney disease (CKD), and type 2 diabetes. There are 4 stages of disease:[1,2]

Stage	CKM Syndrome Features
0	**No risk factors Focus on prevention**
1	**Excess/dysfunctional adipose tissue** Overweight/obesity, abdominal obesity, impaired glucose tolerance
2	**Metabolic risk factors + CKD, HTN** metabolic syndrome, CKDa, T2D, hypertriglyceridemia
3	**Subclinical CVD in CKM syndrome** Subclinical ASCVD, subclinical HF
4	**Clinical CVD in CKM syndrome** HF, CHD, PAD, stroke, atrial fibrillation



Atherosclerotic cardiovascular disease (ASCVD), chronic kidney disease (CKD), and type 2 diabetes (DM), are leading and interrelated causes of death and disability worldwide; 25% of those have more than one of these conditions

Current: 4 pillars of treatment for CRM disease because of overlapping therapeutic targets[3]
Multiple ground-breaking trials combining therapies have improved cardiorenal outcomes (SGLT2 inhibitors, GLP-1 receptor agonists, and mineralocorticoid receptor antagonists)

Cutting Edge: Latest: Simultaneous initiation of SGLT2i + nsMRA safely and rapidly delivers in patients with CKD & T2D (CONFIDENCE trial)[4]
Initial therapy with finerenone plus empagliflozin led to a greater reduction in the urinary albumin-to-creatinine ratio than either treatment alone
The nonsteroidal MRA finerenone reduced the risk of new-onset AF/AFL across the CKM spectrum[5]

Present

HFrEF	HFpEF	HF prevention
• Eplerenone (preferred) 25-50 mg/day * • Spironolactone 25 mg/day if eplerenone not available	• Finerenone (preferred) used 10-40 mg/day * • Spironolactone 12.5 to 25 mg/day if finerenone not available • Eplerenone less well studied in this population	• Finerenone 10 to 20 mg/day in patients with diabetes *mellitus* and albuminuric chronic kidney disease • Eplerenone (preferred) or spironolactone for patients with uncontrolled hypertension

Future

- Novel nsMRAs and ASIs testing in broader HF populations
- nsMRA/ASI head-to-head comparison with steroidal MRAs
- nsMRA/ASI + SGLT2i combination pills
- nsMRA/ASI + SGLT2i + oral GLP1ra combination pills

Patient Monitoring and Hyperkalemia

Context: What about hyperkalemia? [6,7]
Current: Do not initiate treatment if K+ >5.0
Continue if K is 4.8-5.5, hold once > 5.5
Review non-RAS inhibitor medications (e.g., NSAIDs, trimethoprim)
Use diuretics, consider dose reduction, diet changes, bicarb, K exchange agents, and SGLT2i
Cutting Edge: Hyperkalemia is a common reason for discontinuation; however, premature interruption of therapy is associated with an increased risk of cardiovascular events. Review and restart if patient condition allows

Conclusion: SGLT2 inhibitors, GLP-1 receptor agonists, mineralocorticoid receptor antagonists, and renin-angiotensin system inhibitors (ACEi or ARB) have made significant advances in the treatment of CRM, with multiple randomized controlled trials reporting reductions in adverse cardiac and renal outcomes.

References:
1. Braunwald E. Eur Heart J. 2025;46:682-684; 2. Ndumele CE et al. Circulation. 2023;148:1636-1664. 3.Han S, Kim S. Electrolyte Blood Press. 2024;22:21-28. 4.Agarwal R et al N Engl J Med 2025 Jun 5. doi: 10.1056. 5. Pabon M et al., J Am Coll Cardiol. 2025 May 6;85(17):1649-1660. 6. Agarwal R et al. Eur Heart J. 2022;43:474-484. 7. Ferreira JP, er al. Circ Heart Fail. 2024 Dec;17(12):e011629. 4.