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## Sodium Restriction in Heart Failure: Beneficial or pouring salt in the wound?

### CLINICAL QUESTION

**Does sodium restriction improve outcomes in patients with chronic heart failure?**

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### BOTTOM LINE

**In patients with chronic heart failure, restricting dietary sodium to <2 grams/day does not reduce death or hospitalization compared with 2-3 grams/day.**

### EVIDENCE

- Four systematic reviews assessed dietary sodium restriction in patients with heart failure (5-17 randomized controlled trials [RCTs], 479-1683 participants).<sup>1-4</sup>
  - Focusing on the most comprehensive systematic review:<sup>1</sup>
    - Sodium restriction <2 grams/day in 11 RCTs and 2-3 grams/day in 6 RCTs; usual care ranged from 2-5 grams/day (when reported) with duration 1 week to 1 year; 13 RCTs in outpatients, 4 in inpatients.
    - No significant differences in death (all-cause or cardiovascular) or hospitalizations (all-cause or cardiovascular).
  - Sodium restriction increased mortality and/or hospitalization in three reviews:<sup>2-4</sup>
    - Driven by 2-4 RCTs with several issues from same authors: Including duplicate reporting, inadequate background medications, very high furosemide doses (250-1000 mg/day) and tight fluid restriction (<1 L/day) not representative of current practice.<sup>5,6</sup>
- Focusing on the largest (806 patients) unblinded RCT, SODIUM-HF:<sup>7</sup> Patients with chronic heart failure with any ejection fraction (>99% New York Heart Association class 2-3) and baseline dietary

sodium intake ~2.2 grams/day randomized to dietician support targeting sodium <1.5 grams/day (achieved ~1.7 grams/day) versus usual care (achieved ~2.1 grams/day). At 1 year:

- Death or cardiovascular emergency department visit or hospitalization: 15% versus 17% (usual care), not statistically different.
- Sodium restriction does not consistently improve heart failure symptoms or quality of life.<sup>1,4,7</sup>

## CONTEXT

- Sodium restriction theory: Renin-angiotensin-aldosterone system activation in heart failure results in sodium and water retention. Yet, excess sodium restriction could also exacerbate activation.<sup>5</sup>
- A previous Tools for Practice initially suggested sodium restriction worsened outcomes, but cautioned about flawed RCTs and was later updated after the original supporting systematic review was retracted.<sup>5</sup>
- The average Canadian consumes ~2.8 grams/day of sodium.<sup>8</sup>
- Canadian guidelines recommend restricting sodium intake to 2-3 grams/day, whereas American and European guidelines recommend avoiding “excess” sodium intake without defining specific amounts.<sup>9</sup>
- In patients hospitalized for acute heart failure, restricting sodium (<800 mg/day) and fluids (<800 mL/day) increased thirst without reducing signs or symptoms of congestion.<sup>10</sup>

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