

TABLE 12 Commonly Used Oral Diuretics in Treatment of Congestion for Chronic HF

Drug	Initial Daily Dose	Maximum Total Daily Dose	Duration of Action
Loop diuretics			
Bumetanide	0.5–1.0 mg once or twice	10 mg	4–6 h
Furosemide	20–40 mg once or twice	600 mg	6–8 h
Torsemide	10–20 mg once	200 mg	12–16 h
Thiazide diuretics			
Chlorthiazide	250–500 mg once or twice	1000 mg	6–12 h
Chlorthalidone	12.5–25 mg once	100 mg	24–72 h
Hydrochlorothiazide	25 mg once or twice	200 mg	6–12 h
Indapamide	2.5 mg once	5 mg	36 h
Metolazone	2.5 mg once	20 mg	12–24 h

HF indicates heart failure.

diuretic use compared with no diuretic use after hospital discharge for HF (9). The most commonly used loop diuretic for the treatment of HF is furosemide, but some patients respond more favorably to other agents in this category (e.g., bumetanide, torsemide), potentially because of their increased oral bioavailability (10–12). In outpatients with HF, diuretic therapy is commonly initiated with low doses, and the dose is increased until urine output increases and weight decreases, generally by 0.5 to 1.0 kg daily. Patients may become unresponsive to high doses of diuretic drugs if they consume large amounts of dietary sodium, are taking agents that can block the effects of diuretics (e.g., NSAIDs), or have significant impairment of renal function or perfusion.

- Diuretic resistance can be overcome in several ways, including escalation of loop diuretic dose, intravenous administration of diuretics (bolus or continuous infusion) (6), or combination of different diuretic classes

(13–16). The use of a thiazide or thiazide-like diuretic (e.g., metolazone) in combination with a loop diuretic inhibits compensatory distal tubular sodium reabsorption, leading to enhanced natriuresis. However, in a propensity-score matched analysis in patients with hospitalized HF, the addition of metolazone to loop diuretics was found to increase the risk for hypokalemia, hyponatremia, worsening renal function, and mortality, whereas use of higher doses of loop diuretics was not found to adversely affect survival (17). Although randomized data comparing the 2 diuretic strategies are limited, the DOSE (Diuretic Optimization Strategies Evaluation) trial lends support for the use of high-dose intravenous loop diuretics (18).

7.3. Pharmacological Treatment* for HFrEF

7.3.1. Renin-Angiotensin System Inhibition With ACEi or ARB or ARNi

Recommendations for Renin-Angiotensin System Inhibition With ACEi or ARB or ARNi

Referenced studies that support the recommendations are summarized in the [Online Data Supplements](#).

COR	LOE	RECOMMENDATIONS
1	A	1. In patients with HFrEF and NYHA class II to III symptoms, the use of ARNi is recommended to reduce morbidity and mortality (1–5).
1	A	2. In patients with previous or current symptoms of chronic HFrEF, the use of ACEi is beneficial to reduce morbidity and mortality when the use of ARNi is not feasible (6–13).
1	A	3. In patients with previous or current symptoms of chronic HFrEF who are intolerant to ACEi because of cough or angioedema and when the use of ARNi is not feasible, the use of ARB is recommended to reduce morbidity and mortality (14–18).
Value Statement: High Value (A)		4. In patients with previous or current symptoms of chronic HFrEF, in whom ARNi is not feasible, treatment with an ACEi or ARB provides high economic value (19–25).