

# Heart Failure



## Pharmacokinetics of the Loop Diuretics\*

Property	Furosemide	Bumetanide	Torsemide
Bioavailability (%)	10 - 100 (average = 50)	80 - 100	80 - 100
Affected by food	yes	yes	no
Metabolism	50% renal conjugation	50% hepatic	80% hepatic
Half-life (h)			
normal	1.5 - 2	1	3 - 4
renal dysfunction	2.8	1.6	4 - 5
hepatic dysfunction	2.5	2.3	8
heart failure	2.7	1.3	6
Onset (min)			
oral	30 - 60	30 - 60	30 - 60
intravenous	5	2-3	unavailable

## Emerging Drug Therapies/Devices

<b><u>ivabradine (Corlanor®)</u></b>	The U.S. Food and Drug Administration (FDA) approved ivabradine (Corlanor®), in April 2015, to reduce hospitalization from worsening heart failure. The role is still being determined. However, in the <u>SHIFT study</u> , ivabradine is indicated in chronic heart failure with systolic dysfunction in patients with NYHA II to IV class sinus rhythm heart rate ≥70 bpm in combination with standard therapy including β-blocker therapy or when β-blocker therapy is contraindicated or not tolerated, for heart rate reduction.
<b><u>sacubitril/valsartan (Entresto™)</u></b>	The FDA approved sacubitril/valsartan (Entresto™), previously known as LCZ696, in July 2015. An angiotensin receptor-neprilysin inhibitor consisting of valsartan and sacubitril. Taken twice-a-day for the treatment of heart failure with reduced ejection fraction.
<b><u>CardioMEMS Champion™ Heart Failure Monitoring System</u></b>	An FDA approved implantable pulmonary artery (PA) sensor device indicated for wirelessly measuring & monitoring PA pressure and heart rate in NYHA class III patients who have been hospitalized for heart failure in the previous year; hemodynamic data is used for heart failure management. Clinically proven to reduce heart failure hospitalizations by 37% in the <u>Champion clinical trial</u> .

\*Reprinted with permission: Wargo KA, Banta, WM. A Comprehensive Review of the Loop Diuretics: Should Furosemide be First Line? Ann Pharmacother 2009; 43:1836-47. Available from: [http://www.researchgate.net/publication/38024813\\_A\\_comprehensive\\_review\\_of\\_the\\_loop\\_diuretics\\_should\\_furosemide\\_be\\_first\\_line](http://www.researchgate.net/publication/38024813_A_comprehensive_review_of_the_loop_diuretics_should_furosemide_be_first_line)

Guidelines are intended to be flexible. They serve as reference points or recommendations, not rigid criteria. Guidelines should be followed in most cases, but there is an understanding that, depending on the patient, the setting, the circumstances, or other factors, care can and should be tailored to fit individual needs.