Furoscix (Furosemide 80 mg/ 10 mL) Subcutaneous Injection Safety Infographic

Common safety concerns with loop diuretics:

Hypokalemia: Bind to the Na-K-2Cl (NKCC2) cotransporter inhibiting the reabsorption of sodium, chloride, and potassium which can result in hypokalemia.[1]

Worsening renal function: Diuretics reduce intravascular volume and can contribute to renal hypoperfusion. Increases in serum creatinine (SCr) (< 0.5 mg/dL) do not always require stopping or decreasing the dose of a loop diuretic, especially if congestion is still present.[2]

Blood pressure: The hemodynamic action of intravenous furosemide in Heart Failure is immediate and results from the fall in left ventricular filling pressure caused by marked changes in venous capacitance and not by renal diuresis.[3]

Post-hoc Analysis of FREEDOM-HF and AT HOME-HF Pilot[4]

- Assessed temporal changes in SCr, potassium (K), and body weight in patients receiving FUROSCIX
- 58 patients (n=24 FREEDOM-HF, n=34 AT HOME-HF Pilot)
- Day 3 chosen, as common assessment timepoint between studies and 60.7% of doses administered

Furoscix Dosing (Findings from Day 0-3)

SCr Change from Baseline Stratified by Furoscix Doses and Baseline Diuretic Dose

*Data and values reported as mean (SD) and in SCr (mg/dL)

1 Dose (N= 9)

1.83 (0.64) △0.14 (0.33)

< 120 mg Furosemide (N= 25)

1.55 (0.71) △0.09 (0.21)

≥ 2 Doses (N= 47)

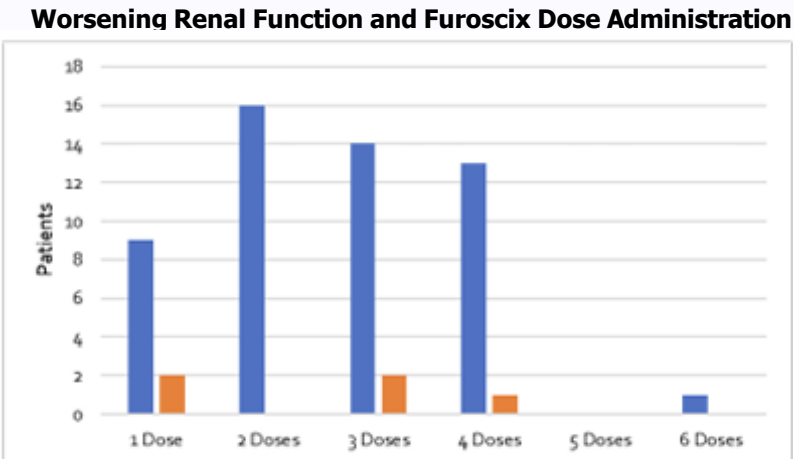
1.4 (0.49) △0.10 (0.18)

≥ 120 mg Furosemide (N= 29)

1.56 (0.1) △0.11 (0.21)

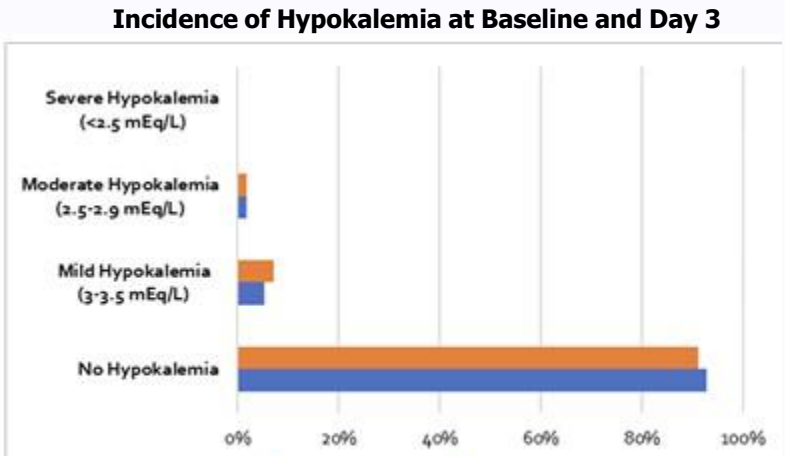
Overall Mean Δ in SCr (mg/dL): 0.11 mg/dL

Worsening Renal Function and Furoscix Dose Administration



*Worsening renal function (WRF) defined as > 25% increase in SCr

Incidence of Hypokalemia at Baseline and Day 3

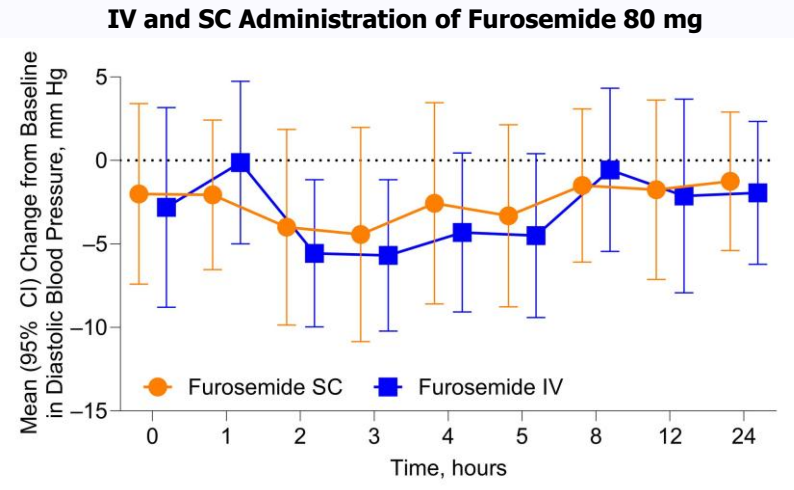


* Baseline potassium level
>3.5 mEq/L (n=52, 93%), 3-3.5 mEq/L (n=3, 5%), 2.5-2.9 mEq/L (n=1, 2%)

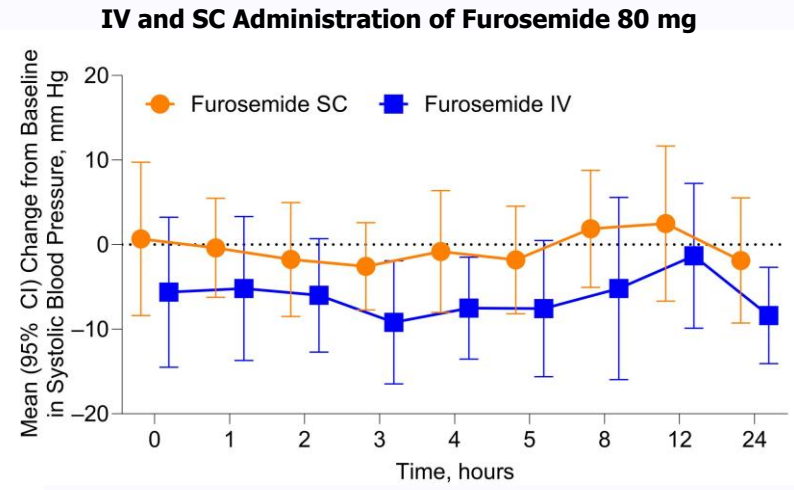
Effect of a Single Subcutaneous Infusion of Furosemide Compared with IV Bolus on Vital Signs in Patients with Heart Failures[5]

- A randomized, open label, 2-way crossover study was conducted to compare the pharmacokinetics and pharmacodynamics of a SC infusion of furosemide compared to IV bolus injections
- 16 patients
- BP, HR and RR were screened at baseline and obtained at 0,1,2,3,4,5,8,12 and 24 hours

Change in Mean Diastolic Blood Pressure Following IV and SC Administration of Furosemide 80 mg



Change in Mean Systolic Blood Pressure Following IV and SC Administration of Furosemide 80 mg



At hour 3 and 4, subjects who received SC furosemide had a mean (SD) reduction in systolic BP of 2.56 (9.70) and 0.81 (13.51) mm-Hg compared to 9.56 (13.37) and 7.5 (11.31) with IV furosemide , respectively (p=0.073 (3 hour) and 0.070 (4 hour)).

Conclusion

- Short-term changesin SCr and K+ negligible; no relationship between change from baseline with chronic furosemide dose or number of Furoscix doses received[4]
- Continuation of baseline K+ supplementation with Furoscix resultedin slight increasein K+; opposite occurred in patients not on K+ therapy[4]
- Hypokalemia and worsening renalfunction incidence <10%; no cases of hyperkalemia[4]
- Less reduction in systolic BP with Furoscix compared to IV furosemide across the 24-hour period[5]
- No significant differences in diastolic BP, HR or RR (datanot shown) duringthe 5-hour dosing period or subsequent follow up between SC and IV arms[5]

References

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3. Dikshit, K., Vyden, J. K., Forrester, J. S., Chatterjee, K., Prakash, R., & Swan, H. J. C. (1973). Renal and Extrarenal Hemodynamic Effects of Furosemide in Congestive Heart Failure after Acute Myocardial Infarction. New England Journal of Medicine, 288(21), 1087–1090. https://doi.org/10.1056/nejm197305242882102
4. Bensimhon D, et al. (2023). Analysis of subcutaneous (SC) furosemide dosing patterns and impact on Scr and K+ in the FREEDOM-HF and AT HOME studies. Presented at Heart Failure Society of America Conference 2023.
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