Discordant Weight Change and Net Volume Loss in Hospitalized Heart Failure Patients

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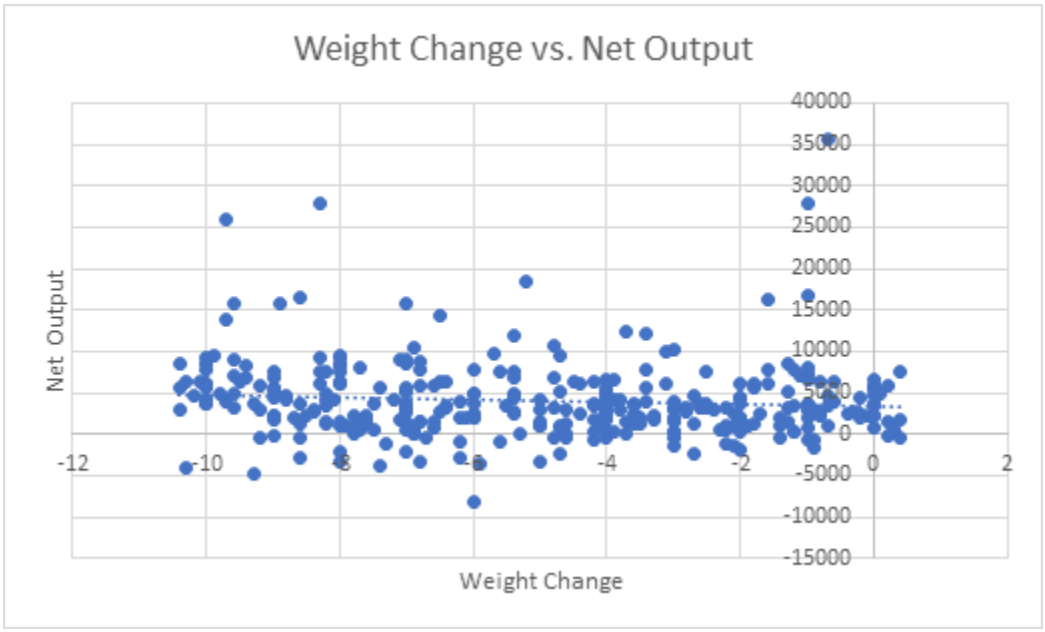
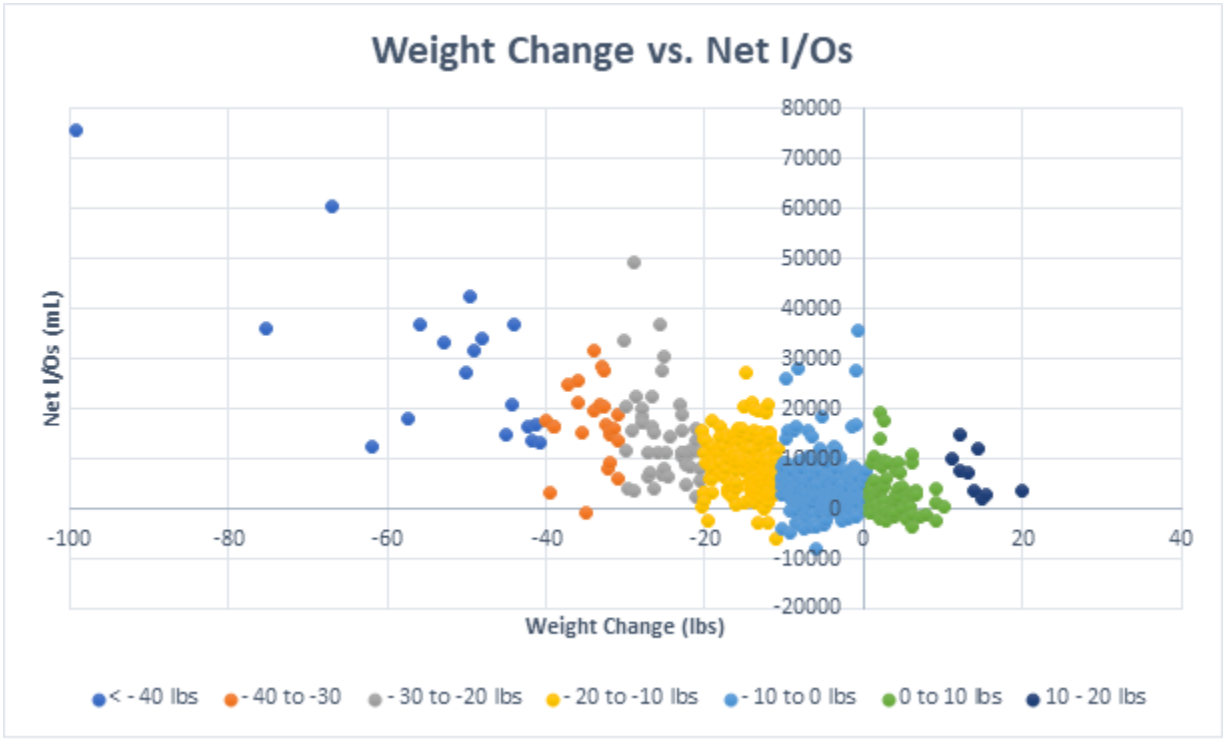
Background: Volume loss and weight loss are two components used to determine efficacy of diuresis in the treatment of acute exacerbations of heart failure. Inconsistencies in recording on hospital floors can result in discrepancies between volume loss and weight loss. We hypothesized that patients admitted to the Christ Hospital will demonstrate a positive relationship between volume loss and weight loss.

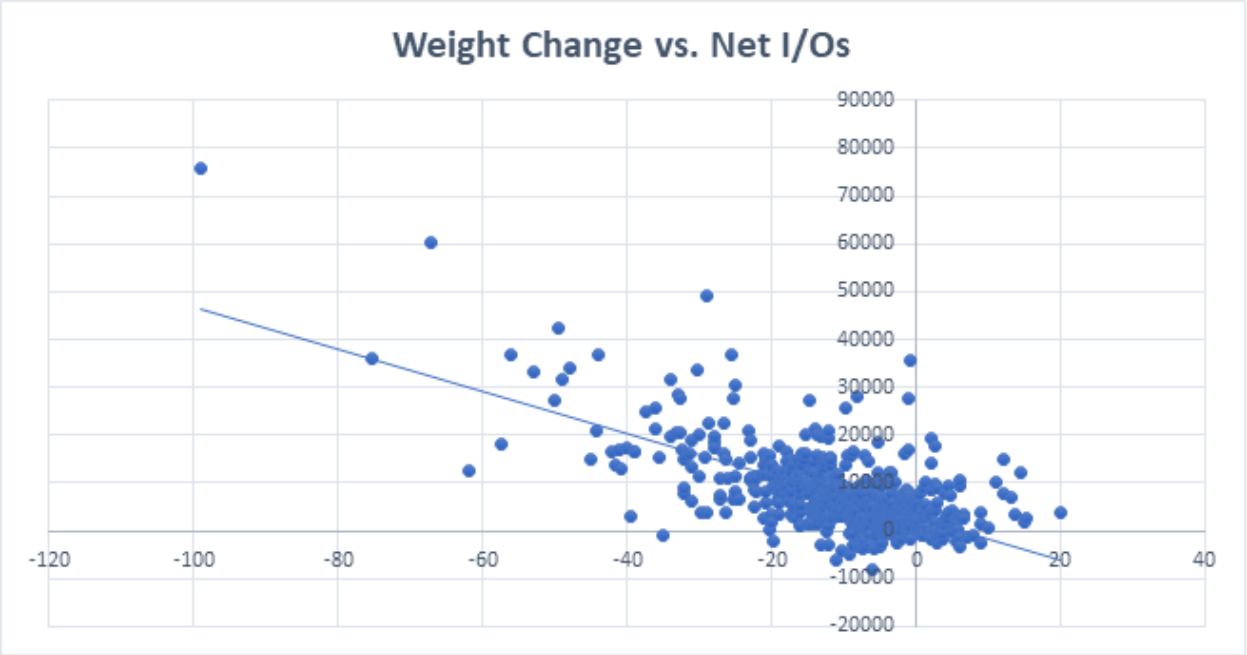
Method: We performed a retrospective review of 685 patients who were admitted for or with heart failure with diuresis as a cornerstone of treatment strategy at a single site from December 2017 to May 2018 and March 2020 to August 2020. The inclusion criteria consisted of patients who had admission and discharge labs and weights, were not on dialysis at the time of their stay, did not undergo surgery during their stay, and did not leave AMA. We collected admission and discharge labs, weight change, and all-cause readmission status within 30 days of discharge. We investigated the relationship between weight change and net output in heart failure patients.

Results: A positive relationship is seen between weight change and net output above 10 lb. weight loss. At 10 lb. weight loss and below, there is a wide variation in net output with no apparent correlation to weight loss. There are multiple patients who had an overall negative net output yet still lost up to 10 lbs. There was no correlation with net output in patients who gained weight.

Conclusion: Net volume output does not accurately reflect weight loss in patients hospitalized with heart failure, particularly in those who lose less than 10 lbs. This may suggest discrepancies in the recording of intake and output by hospital staff or true lack of relationship between net output and weight loss. This should be considered when determining the most important factor in the judgement of efficacy of heart failure treatment.


Weight Change vs. Net Output
Net Output
Weight Change
40000
35000
30000
25000
20000
15000
10000
5000
0
-5000
-10000
-15000
-12
-10
-8
-6
-4
-2
0
2


Weight Change vs. Net I/Os
Net I/Os (mL)
Weight Change (lbs)
80000
70000
60000
50000
40000
30000
20000
10000
0
-10000
-20000
-100
-80
-60
-40
-20
0
20
40
< - 40 lbs
- 40 to -30
- 30 to -20 lbs
- 20 to -10 lbs
- 10 to 0 lbs
0 to 10 lbs
10 - 20 lbs


Weight Change vs. Net I/Os
90000
80000
70000
60000
50000
40000
30000
20000
10000
0
-10000
-20000
-120
-100
-80
-60
-40
-20
0
20
40