



# Optimizing the Management of Heart Failure: Diuretic Therapy at Discharge



## BACKGROUND

- Heart failure is one of the five leading causes of hospitalization and 30- day readmissions, and the most common cause of hospitalization for people over age 65.<sup>1</sup>
- A number of regional variations in heart failure care and outcomes have been identified across Ontario, illustrating that there is an opportunity to improve care for our HF patients.<sup>1</sup>
- Quality indicators published by Health quality Ontario and the Canadian Cardiovascular Society emphasize the importance of patient education on self-management strategies such as reducing sodium intake, recording daily weights, recognizing symptoms of worsening heart failure, and adjusting their diuretic doses based on provided algorithms.<sup>2,3</sup>
- Most HF patients are discharged on diuretics. However, there is currently no standardized approach at Sunnybrook Health Sciences Centre (SHSC) for the provision and documentation of diuretic instructions (e.g. weight monitoring and dose adjustments) at discharge.

## OBJECTIVES

- To characterize the management of patients admitted with heart failure to SHSC, specifically focusing on what instructions are provided to them regarding diuretics at discharge.
- To better understand cardiologists' and internal medicine physicians' rationale behind the current diuretic approaches at discharge.

## METHODS

### Study Design

- Mixed methods study: retrospective chart review and electronic survey.

### Retrospective Chart Review

- Inclusion Criteria (must meet all):**
  - ≥18 years of age
  - Diagnosis of heart failure (most responsible diagnosis or transfer diagnosis)
  - Admitted to General Internal Medicine (GIM) or the Cardiology wards
  - Discharged from June 1 to December 31, 2018

- Exclusion Criteria:**
  - Death during the index event
  - Admitted for <24 hours
  - Transferred to another inpatient facility
  - Transferred to a ward outside of Cardiology or GIM

- Data collected by reviewing the documentation on SunnyCare and the paper charts.
- Data points included:** patients' baseline characteristics, discharge instructions provided to patients regarding daily weights, diuretic dose titration and diet, instructions on follow up with family physicians and specialists, etc.

### Electronic survey

- Distributed to staff physicians on the GIM and Cardiology wards at SHSC using Limesurvey.
- 10 questions to understand their perspective on current diuretic approaches at discharge.

### Statistics/Analysis

- Analyses were exploratory and descriptive.
- Discrete variables presented as frequencies or percentages and continuous variables presented as means ± standard deviations.

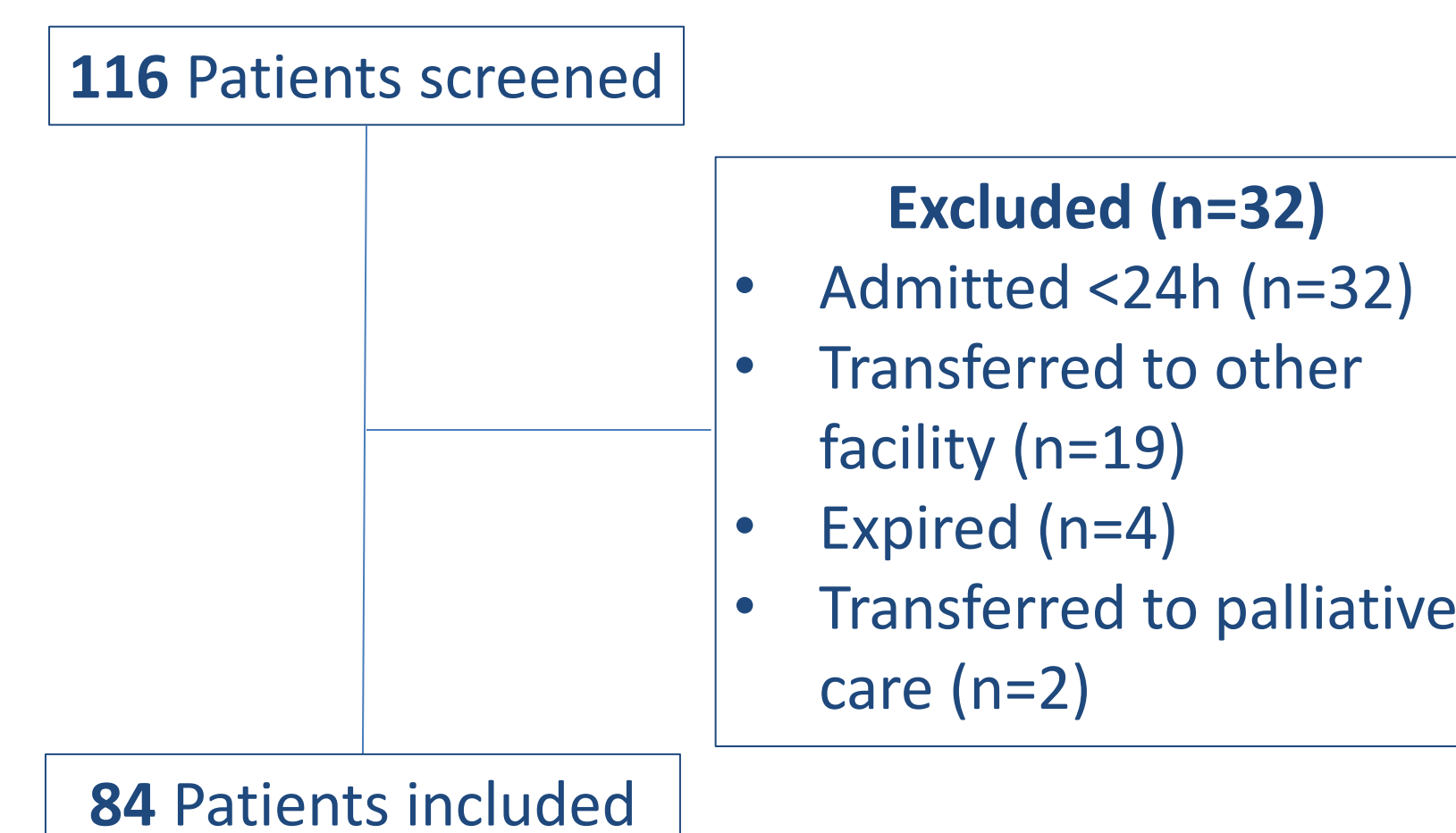
## RESULTS

**Table 1: Baseline Characteristics (n=84)**

Age (mean) – yr	79.5
Female sex – n (%)	44 (52.4)
Admitting service: cardiology	42 (50.0)
Length of stay (median) – days	5
Type of HF – n (%)	
HFrEF	28 (33.7)
HFmEF <sup>1</sup>	8 (9.6)
HFpEF	47 (56.7)
Not documented	1 (1.2)
Heart failure medications – n (%)	
Diuretics <sup>2</sup>	59 (70.2)
ACEI/ARB	40 (47.6)
Beta-blocker	65 (77.4)
MRA	4 (4.8)
Sacubitril/valsartan	3 (3.6)
Digoxin	7 (8.3)
Hydralazine and/or nitrates	18 (21.4)

- HFmEF (heart failure with mid range ejection fraction) = LVEF 41-49%
- Furosemide, metolazone or bumetanide. All 59 patients were on furosemide, with 2 patients on additional metolazone.

**Figure 1: Inclusion and Exclusion Flow Diagram**



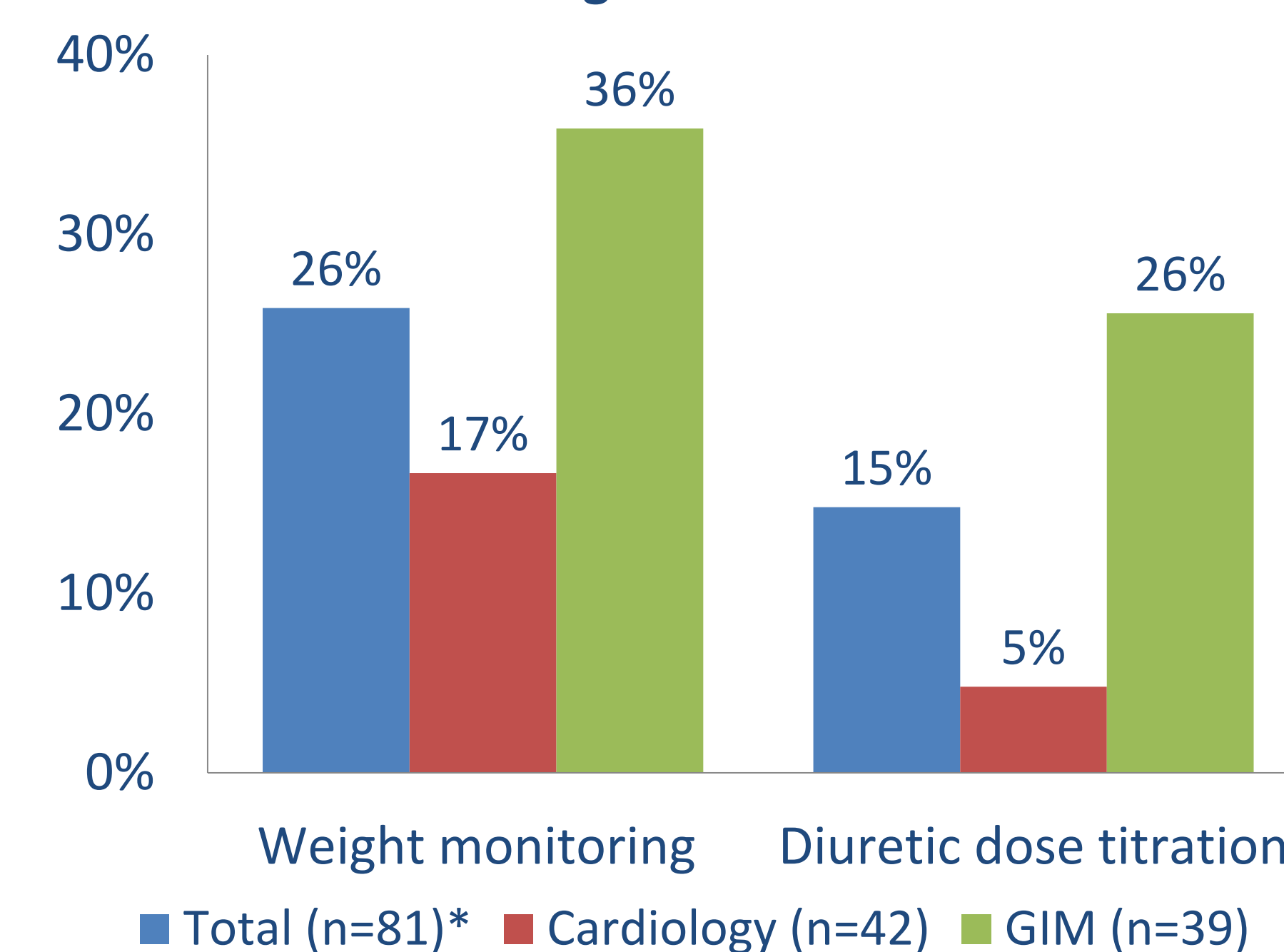
**Table 2: Documented Follow-up Instructions**

Type of follow-up	Percentage of patients given instructions
<b>Follow-up with family physician (%)</b>	<b>79.8</b>
within 1 week	43.3 <sup>1</sup>
within 2 weeks	38.8
No recommended timeline	17.9
<b>Follow-up with cardiologist (%)</b>	<b>54.8</b>
within 1 week	15.2
within 2 weeks	6.5
within 4-6 weeks	41.3
No recommended timeline	37.0
<b>Follow-up with a heart failure clinic (%)</b>	<b>29.8</b>
within 1 week	12
within 2 weeks	16
No recommended timeline	72
<b>Follow-up with GIM post-discharge clinic (%)</b>	<b>38.1<sup>2</sup></b>
within 1 week	87.5
within 2-3 weeks	12.5

- Percentage was calculated out of the total number of patients who were given instructions on following up with their family physician. Similar calculation was used for cardiology and heart failure clinic follow-ups.
- Only patients admitted to GIM are referred to the GIM post-discharge clinic; therefore, the percentage was calculated out of the GIM population (n=42).

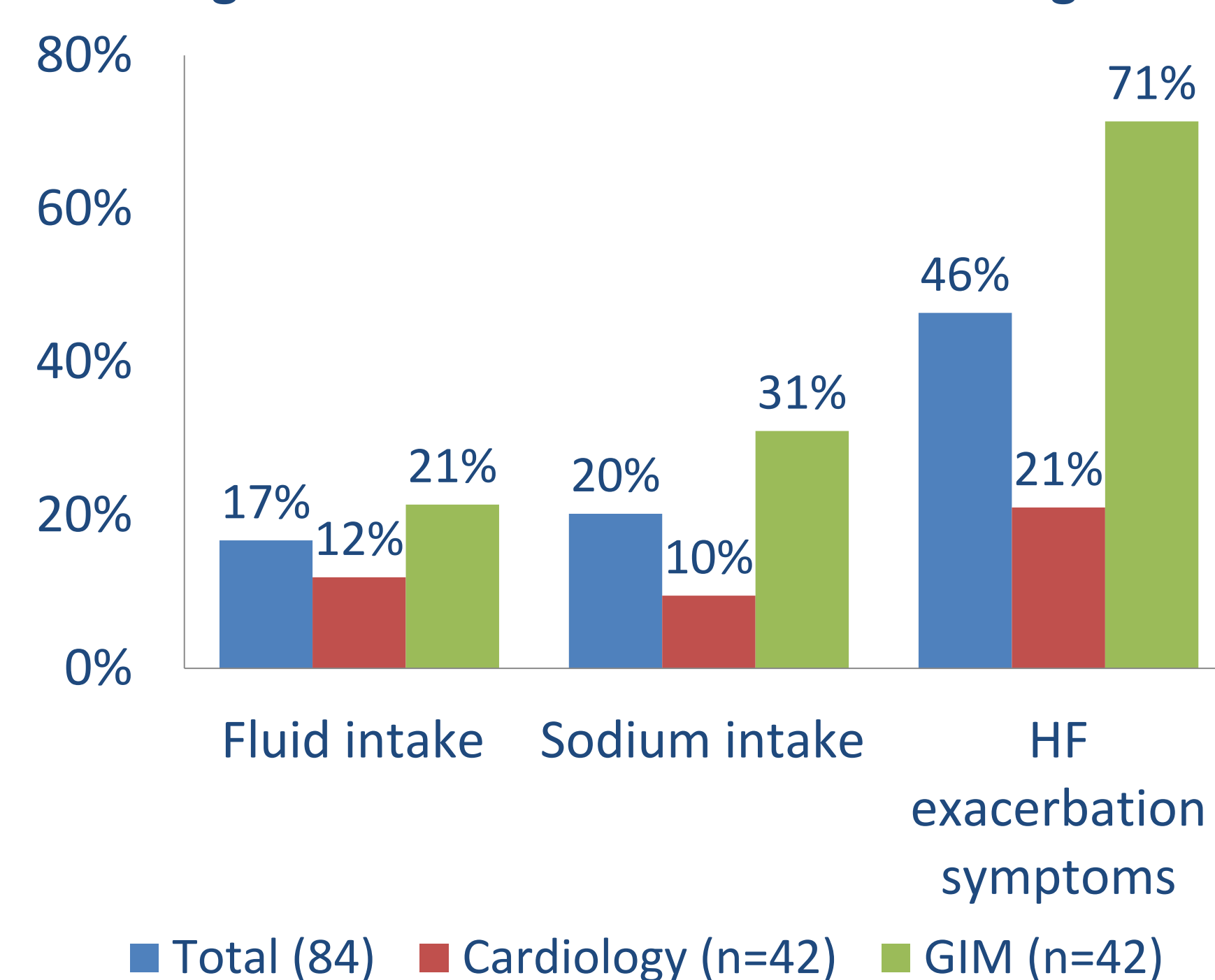
**Note:** Overall, follow-up instructions were given more frequently in the cardiology group than in GIM.

**Figure 2: Instructions Provided to Patients Discharged on Diuretics**



\*Note: 81 patients were discharged on diuretics (furosemide ± metolazone or bumetanide).

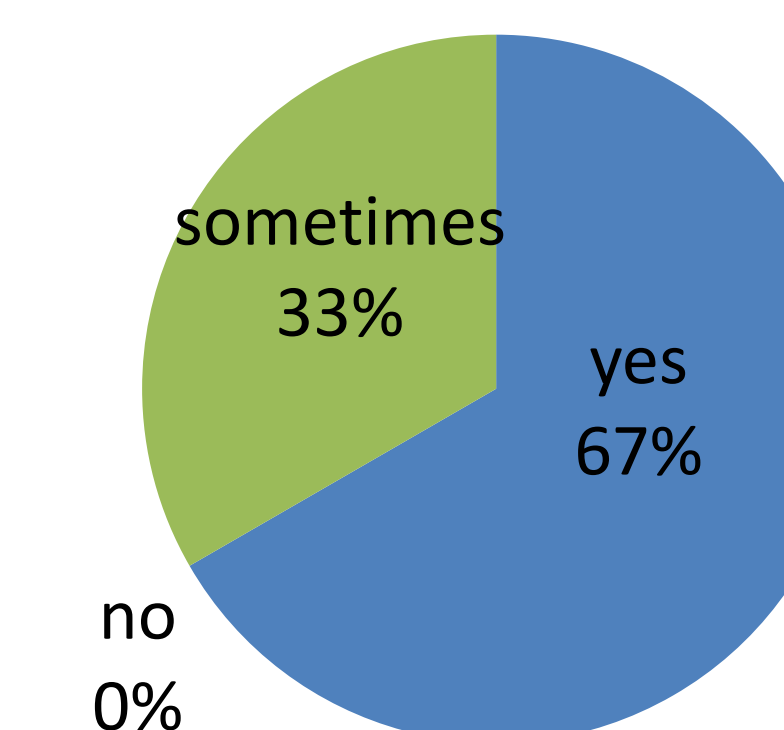
**Figure 3: Other Instructions at Discharge**



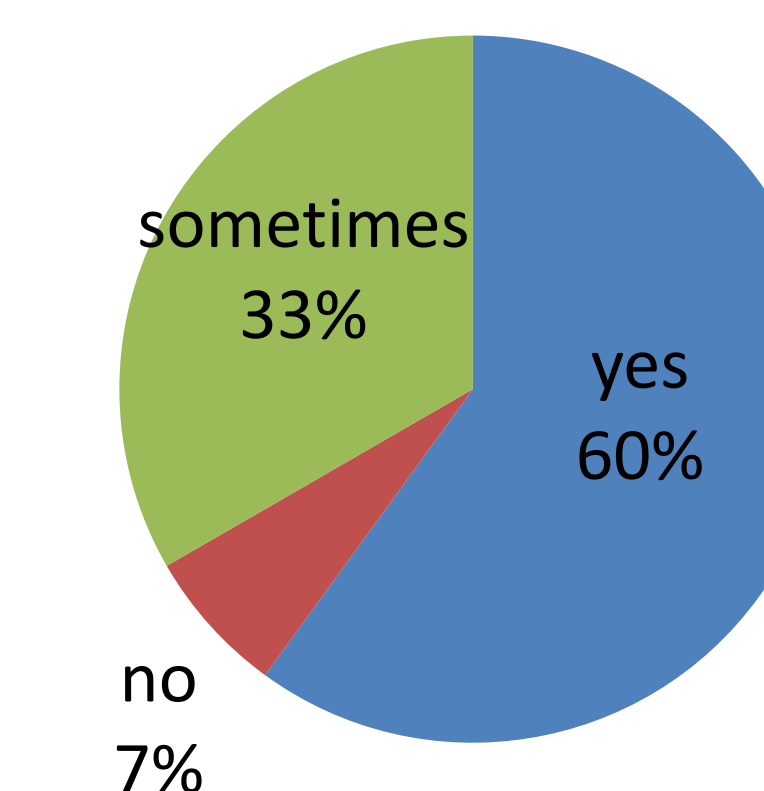
## RESULTS (cont'd)

**Survey Results (n=15 (7 Cardiology, 8 GIM), Response Rate = 35%)**

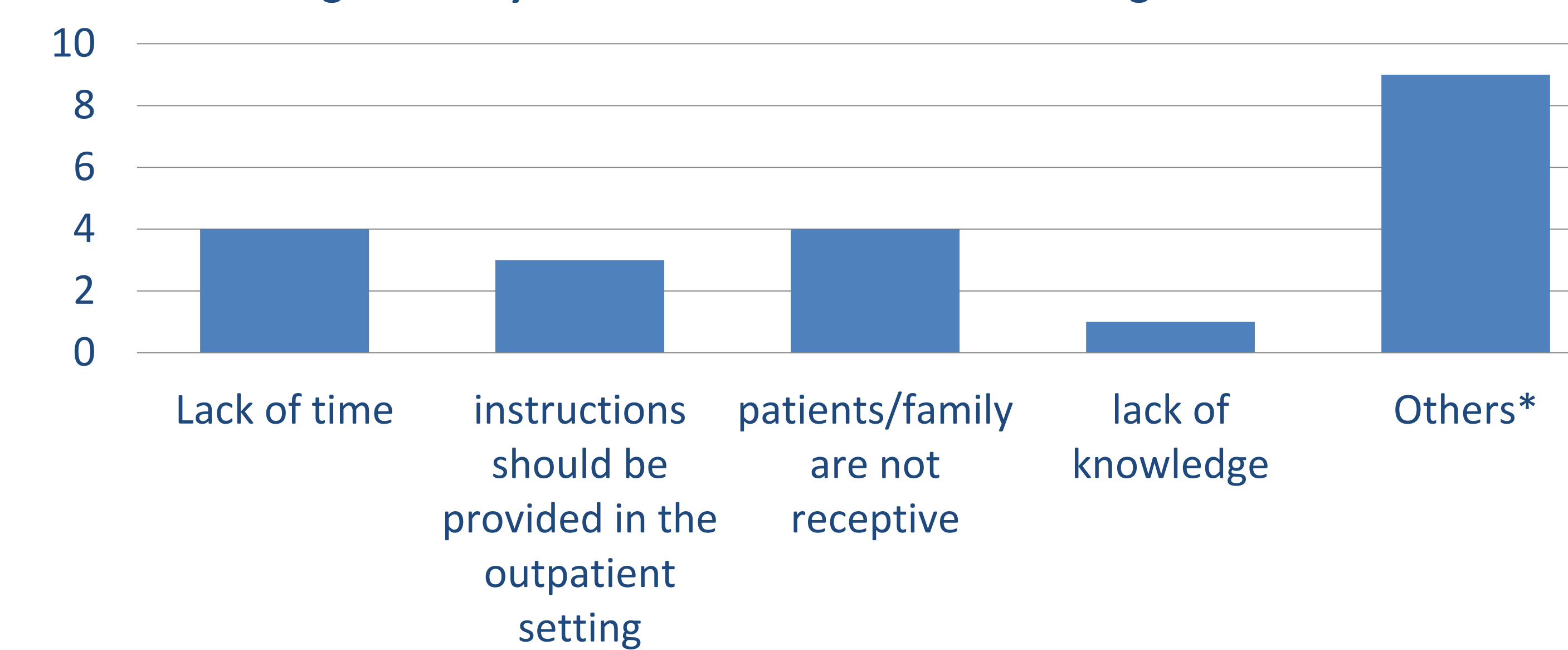
**Figure 4: Do you provide instructions on weight monitoring and diuretic titration at discharge?**



**Figure 5: Do you document diuretic instructions in the patient's chart and/or in SunnyCare?**



**Figure 6: Physicians' Reasons for Not Providing Instructions**



\*Other reasons included: "residents do it", "depends on the patient", "patients are more receptive in the clinic since the admission is overwhelming", "CCS guidelines are not clear"

## CONCLUSIONS

- According to the chart review, the majority of patients admitted to SHSC (GIM and Cardiology) with acute heart failure are not provided with discharge instructions on weight monitoring, diuretic titration, or dietary restrictions..
- Many patients are advised to obtain further directions from outpatient physicians; however, there are gaps in provision of follow-up instructions (lack of referrals to cardiologists and heart failure clinics, no recommended timeline for follow-up, etc.).
- A survey of 15 physicians showed that most provide diuretic instructions at discharge; however, this may reflect the practice of only 35% of the physicians in GIM or Cardiology. Some reasons for not providing instructions include lack of time, reliance on outpatient physicians to provide instructions, and low receptiveness from patients and families.

### Limitations:

- Single-centre, small sample size
- Retrospective design, results dependent on the quality of documentation.
  - Patients may have been given instructions that were not documented.

### Future directions:

- Development of a tool to improve and standardize provision and documentation of diuretic instructions at discharge.
- Staff education on importance of diuretic instructions and timely follow-ups.

1. Health Quality Ontario, Ministry of Health and Long-Term Care. Quality-based procedures: Clinical handbook for heart failure (acute and postacute). [http://www.health.gov.on.ca/en/pro/programs/ecta/docs/obp\\_heart.pdf](http://www.health.gov.on.ca/en/pro/programs/ecta/docs/obp_heart.pdf). Published February, 2015. Accessed June 12, 2019.

2. Heart failure care in the community for adults. Health Quality Ontario Website. <https://www.hqo.on.ca/Patients/Documents/evidence/quality-standards/quality-standards/heart-failure-quality-standards-en.pdf>. Published 2019. Accessed June 12, 2019.

3. The Canadian Cardiovascular Society Quality Indicators e-catalogue Canadian Cardiovascular Society Web site. [https://ccs.ca/images/Health\\_Policy/Quality-Project/Indicator\\_HF\\_V2.pdf](https://ccs.ca/images/Health_Policy/Quality-Project/Indicator_HF_V2.pdf). Published 2015. Accessed June 12, 2019.