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Authors

Marino, Nikolas Evan

El-Kareh, Robert

Tran, Hao

et al.

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Using a Best Practice Advisory and an Epic Order Set to Improve Mineralocorticoid Receptor Antagonist Prescription after Admission for HFrEF

Nikolas Marino¹, Jason Duran¹, Emily Trefethen¹, Ori Ben-Yehuda¹, Robert El-Kareh¹, Brian Clay¹, Barry Greenberg¹

¹UC San Diego Health Center, San Diego, California

Background

- Mineralocorticoid receptor antagonist (MRA) use is associated with improved survival and reduced hospitalization in patients with HFrEF.^{1,2}
- Prescription frequency of an MRA after hospitalization for HFrEF for eligible patients is sub-optimal, usually between 30%-40%.² This includes UCSD, where a study published in 2020 suggested a 38% prescription rate on the heart failure service.²
- During this quality improvement project, we:
 - Evaluated how MRA prescription rates changed since 2020 UCSD publication after significant heart failure departmental encouragement for appropriate MRA prescription
 - Created hospital-wide interventions including Best Practice Advisories (BPA) and Order Sets to encourage MRA prescription for eligible patients

Methods

- All patients admitted for at least 2 days to the heart failure and general cardiology services in the UC San Diego Health System between 1/1/2022-12/31/2022 were retrospectively evaluated for MRA eligibility, for whether an MRA was prescribed, and for time to cardiology follow-up and outpatient labs.
- Eligibility criteria: 1) no MRA on their medication list, 2) most recent ejection fraction $\leq 40\%$, 3) most recent Cr < 2.5 for males or < 2.0 for females AND GFR > 30 , 4) most recent potassium < 5.0 , 5) admitted for HFrEF.
- Given continued low prescription rates, a joint council of heart failure, cardiology, and hospital medicine faculty met to create BPA's aimed at improving MRA prescription rates, time to cardiology follow-up, and time to outpatient labs after MRA prescription
- The BPA's were implemented on the heart failure and general cardiology services from 6/1/2023-12/31/2023. MRA prescription rates, time to cardiology follow-up, and time to outpatient labs were measured for patients who triggered the BPA and via retrospective chart review of all patients admitted for HFrEF during the intervention time period
- MRA prescription rates, time to cardiology follow-up/labs were compared pre and post intervention

Results: 2022 Pre-Intervention Prescription Rates

Heart Failure Service:

- 64% (37/58) were prescribed an MRA

General Cardiology Service:

- 31% (62/198) were prescribed an MRA

Table 1. MRA prescription rates for eligible patients from 2020 to 2022 by service

MRA Prescription Rate on Heart Failure Service 2020 (Duran et al)	MRA Prescription Rate on Heart Failure Service 2022	MRA Prescription Rate on General Cardiology Service 2022
38%	64%	31%

Results: BPA Creation and Algorithm

Met with a multidisciplinary team of cardiologists, informaticists, hospitalists and pharmacists who helped create 4 Epic interventions to improve MRA prescription: 2 BPA's and 2 Order Set (**Figure 2**).

The BPA's generate when the provider opens the "orders" panel in Epic and when all of the following criteria are met:

- Day ≥ 2 of hospitalization on the heart failure service
- MRA (spironolactone or eplerenone) is not in the current inpatient or outpatient medication list
- Most recent (within the last 1 year) Ejection fraction $\leq 40\%$
- Most recent (or during hospitalization) Cr < 2.5 for males or < 2.0 for females AND GFR > 30
- Most recent (during hospitalization) potassium < 5.0

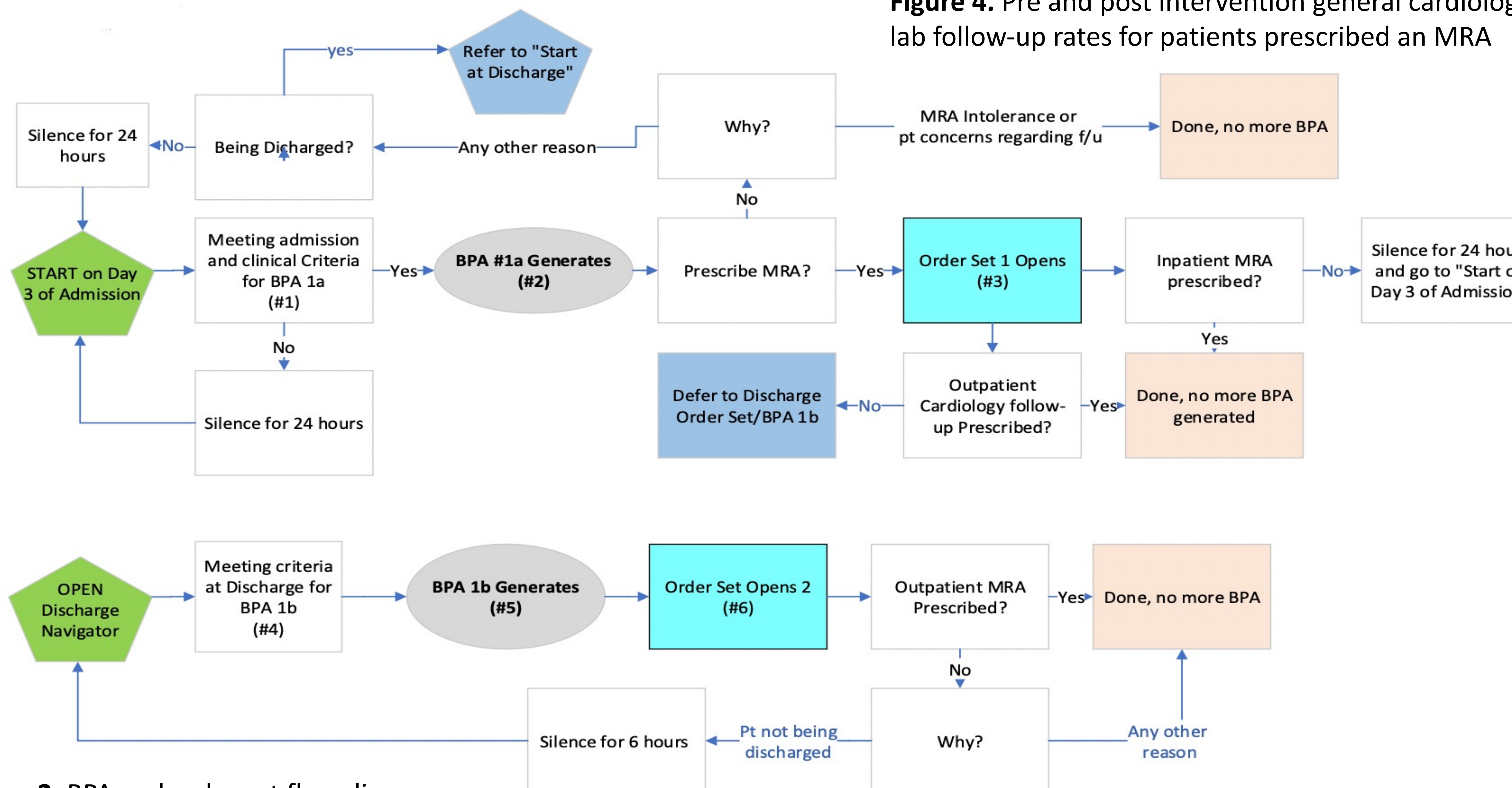


Figure 2. BPA and order set flow diagram

Results: Post-Intervention MRA Prescription Rates

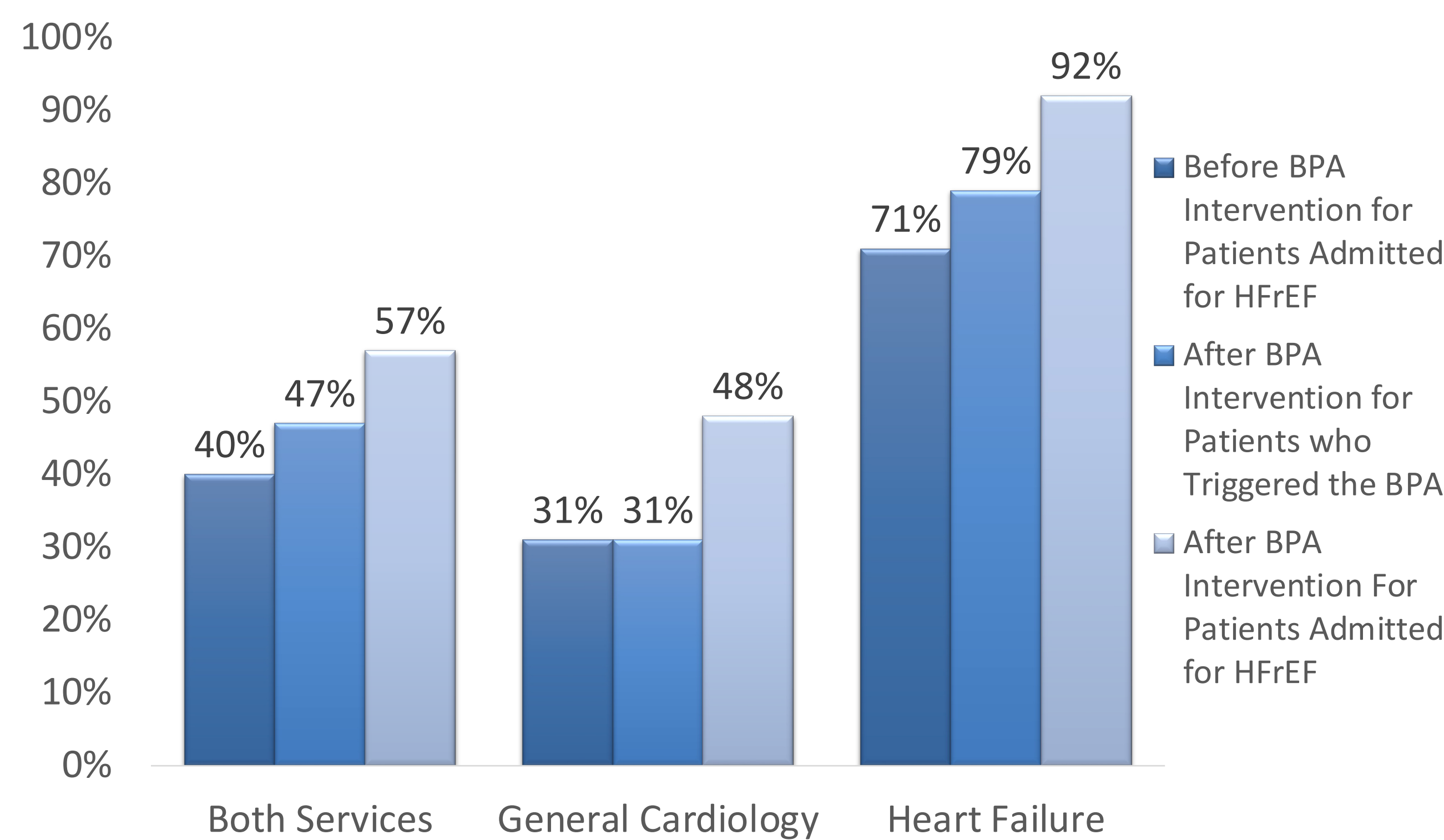


Figure 3. MRA prescription rates pre and post intervention

Results: Post-Intervention Follow-Up Rates

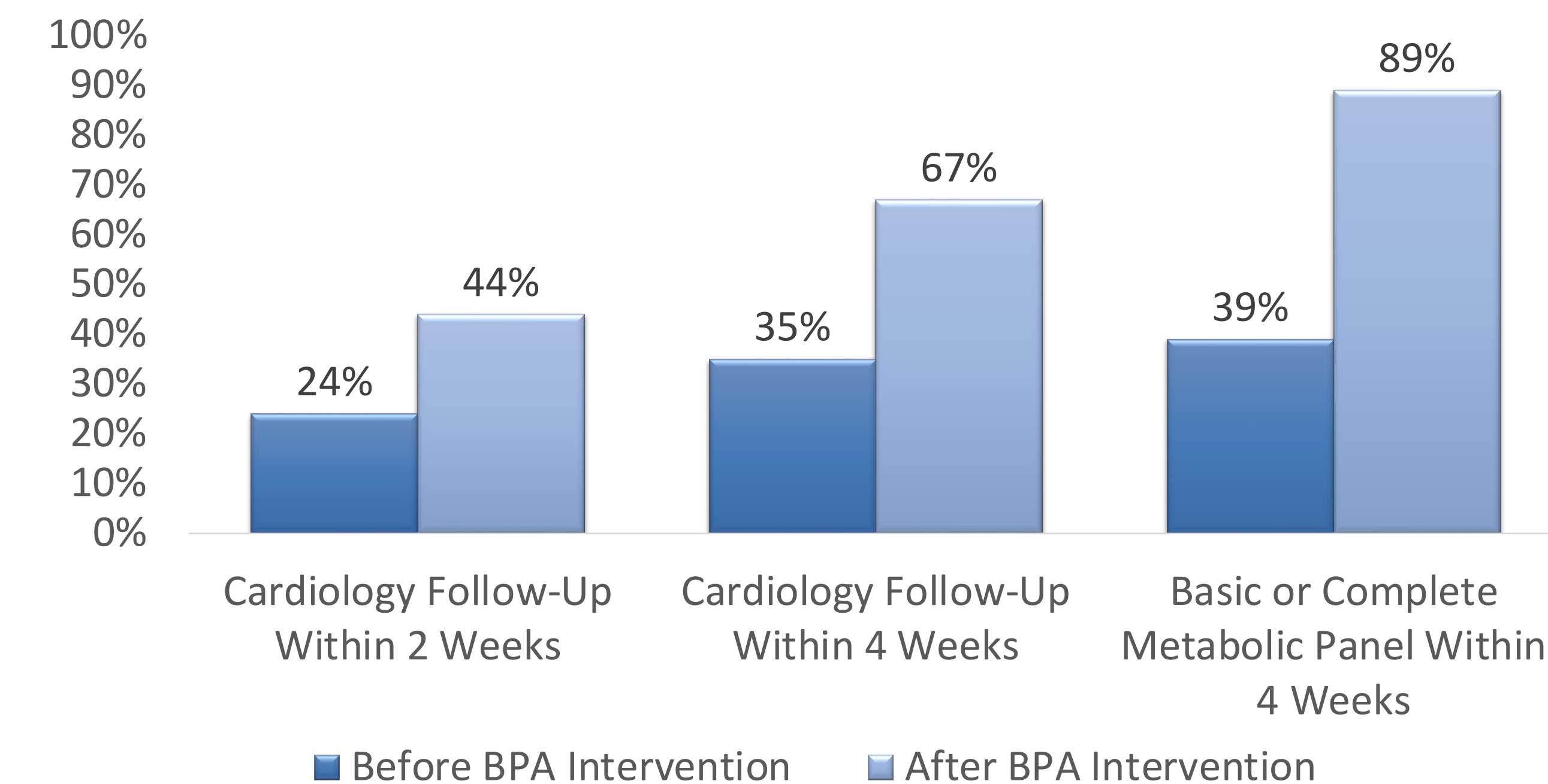


Figure 4. Pre and post intervention general cardiology follow-up and outpatient lab follow-up rates for patients prescribed an MRA

Conclusions

- MRA prescription rates did not significantly change for patients who triggered the BPA, but prescription rates for all patients admitted for HFrEF increased by 17% on the general cardiology service and by 21% on the heart failure service post-intervention.
- Post-intervention, time to cardiology follow-up and laboratory follow-up substantially improved for patients prescribed an MRA.
- The presence of the BPA may have encouraged MRA prescription even for patients who did not trigger it, but the BPA failed to capture many eligible patients, making it difficult to associate the increased rates with the BPA
- Better BPA capture and more time is needed to assess whether our BPA intervention is successful at improving MRA prescription rates.

References

- Serenely M, Jackson A, Dewan P, Hund PS, Petrie MC, Rossignol P, Campo G, Pitt B, Zandt F, Ferreira JP, McMurray JJV. Mineralocorticoid Receptor Antagonists, Blood Pressure, and Outcomes in Heart Failure With Reduced Ejection Fraction. *JACC Heart Fail.* 2020 Mar;8(3):188-198.
- Duran JM, Gad S, Brann A, Greenberg B. Mineralocorticoid receptor antagonist use following heart failure hospitalization. *ESC Heart Fail.* 2020 Apr;7(2):482-492.