# Integration of clinical pharmacist into heart failure management improves patient outcomes

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# Background – Heart Failure (HF) in Hong Kong

- High prevalence, affecting 1-2% of the population
- High mortality and readmission rate

  -> a significant burden to healthcare system &

  -> -ve impact on patient's quality of life (QoL)
- Current service gap:
  - ➢ Lengthy follow-up interval ∵ large patient load

    -> outpatient follow up interval up to 4-6 months

    -> patients have decompensation again before follow-up
  - ➢ Under-utilization of guideline-directed medical therapy (GDMT) in clinical practice
  - ➢ Lack of patient education

# Purpose

- A multidisciplinary HF program with pharmacist contribution was set up in Tuen Mun Hospital in 2020, aiming to bridge the service gaps

➢To improve patient care in heart failure (HF) management

➢To facilitate early-optimize (GDMT)

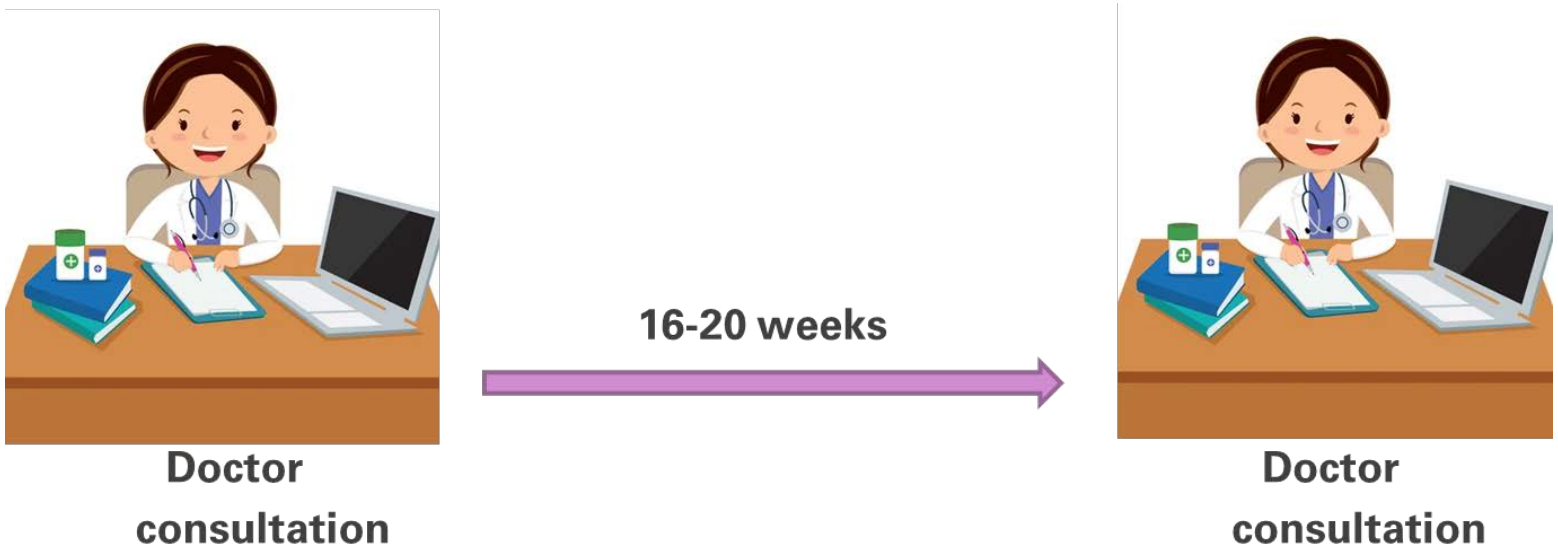
➢To provide counselling to enhance patient's adherence, empowerment and satisfaction

# Method

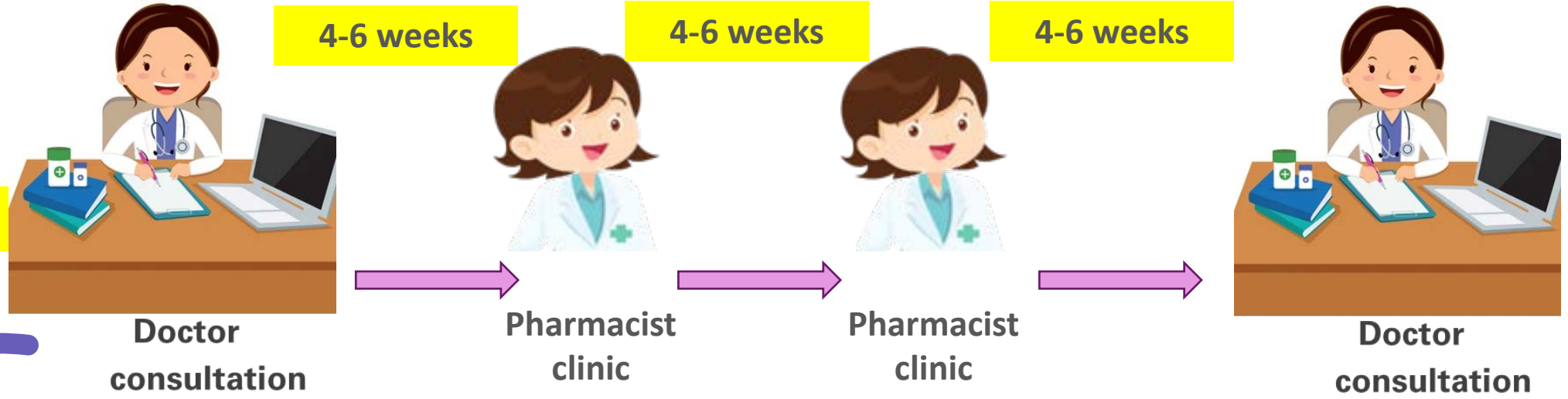
- Patient Enrollment
  - Patients hospitalized for HF with left ventricular ejection fraction (LVEF) <40% but no other major organ comorbidities
  - Historical usual care group screened using the same criteria, & identified using the Clinical Data Analysis & Reporting System
    - No direct patient care, neither medication reconciliation nor counseling, were provided by pharmacist

# Method

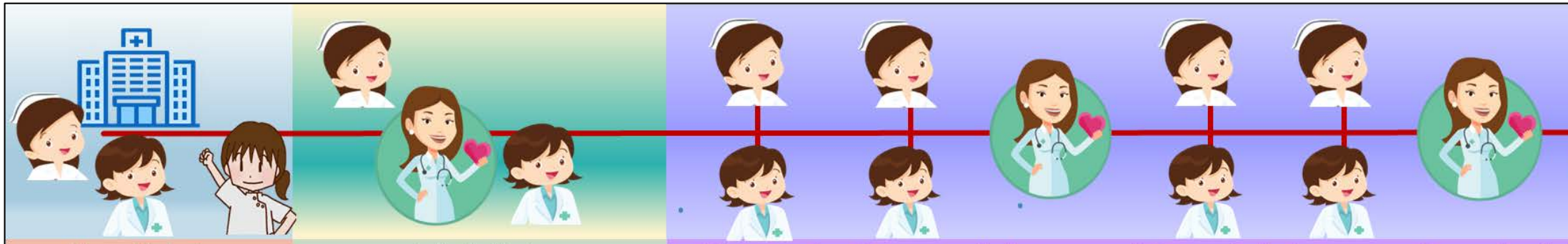
## Traditional model




## Pilot model



# Method



Hospital stay | Joint clinic | Pharmacist & nurse clinics every 4-6 weeks in between doctor's clinic

EXIT from program when GDMT optimized & referred back to general clinic

**Pharmacist:**

- Medication reconciliation
- Rectification of drug related problems
- Drug counseling

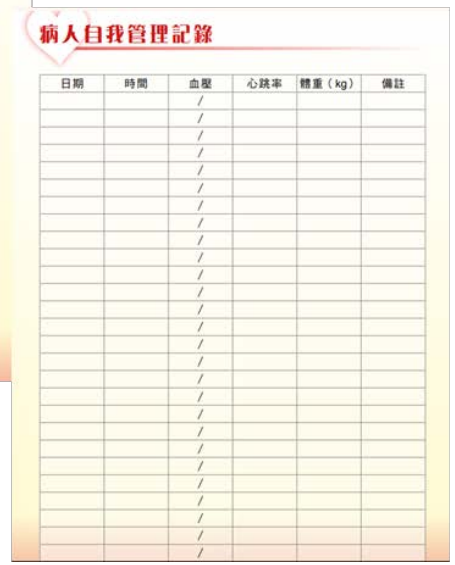
**Pharmacist:**

- Medication review
- Assessment on drug compliance
- Assessment on adverse drug reactions

**Pharmacist:**

- Evaluation of patient's HF control and treatment response, including adverse drug reactions & laboratory test results
- Titration of GDMT according to pre-defined protocol to achieve target dose/ maximally tolerated dose
- Assessment on drug compliance
- Medication review with drug counselling if necessary
- Early referral to cardiologist in predefined situations

# Method

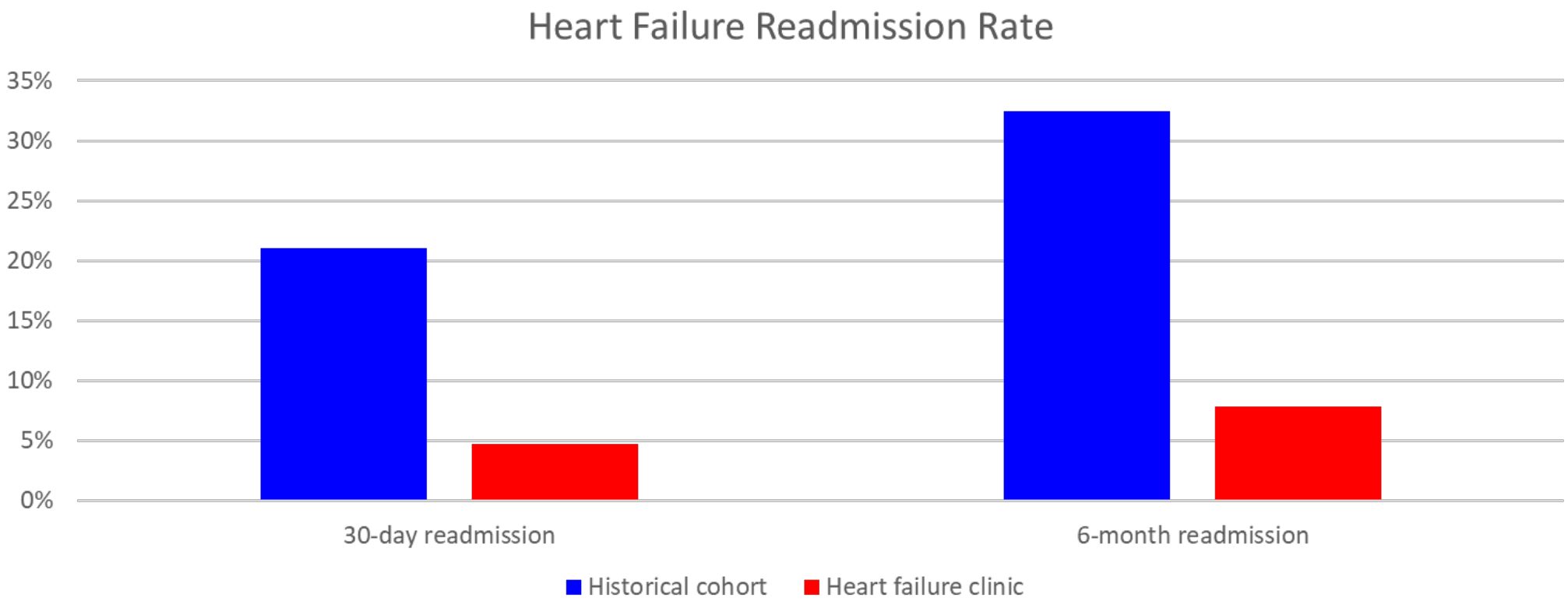


| Enalapril | Losartan |
| --- | --- |
|  |  |

# Primary Outcome – Readmission Rate

- From 10/2020 to 8/2022, 128 patients recruited and discharged from program after medication maximally titrated
- 30-day HF-related readmission: 4.7% vs 21%, p<0.001 @
- 6-month HF-related readmission: 7.8% vs 32.5%, p<0.001 @

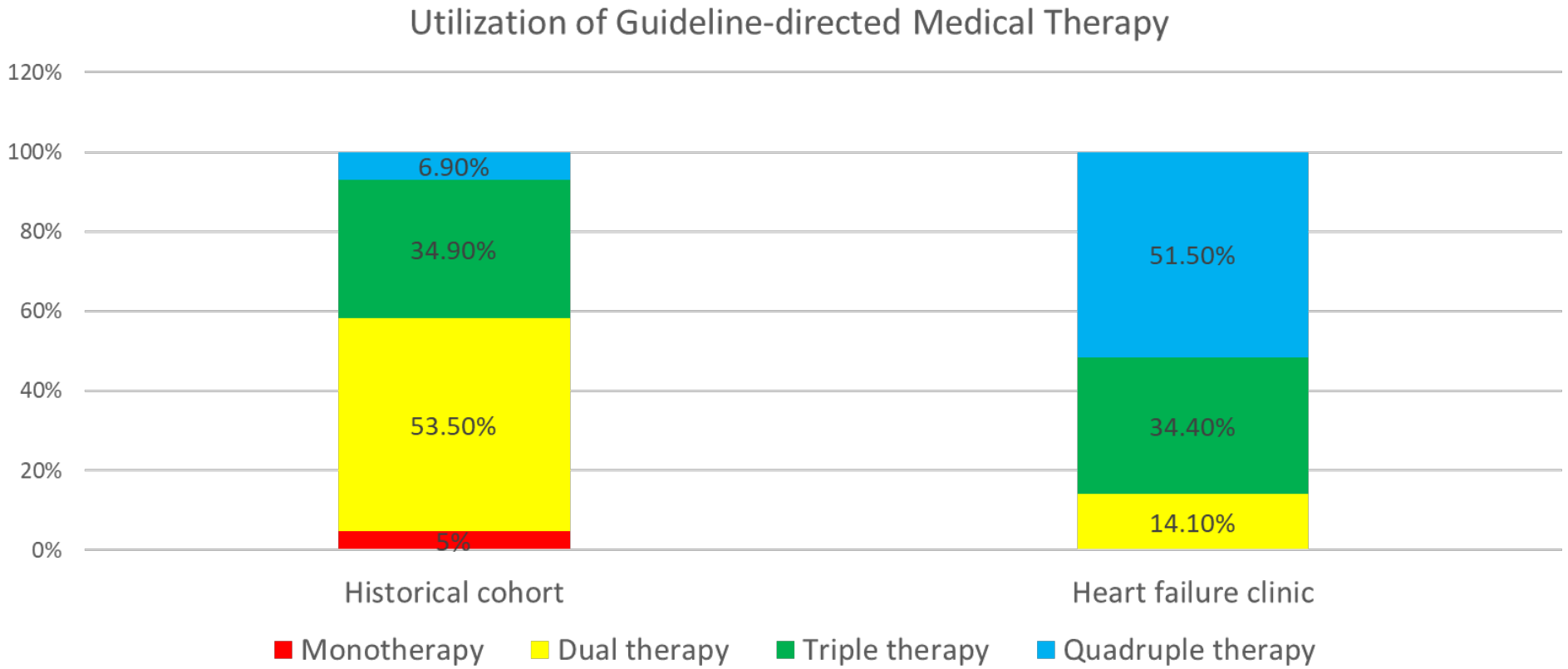
@ *p*-value calculated by Fisher Exact Test



# Secondary Outcomes – Utilization of GDMT

- All patients in intervention group achieved maximum tolerated dose of GDMT at program discharge V.S. 21% of patients in usual care group achieved optimal GDMT after 12 months follow-up
- Intervention group: 18.8% patients required regular Frusemide (44.2+/-28.1mg/day), Usual care group: 23.3% patients (115+/-73.1mg/day), p=0.027 ^

^ *p*-value calculated by t-test

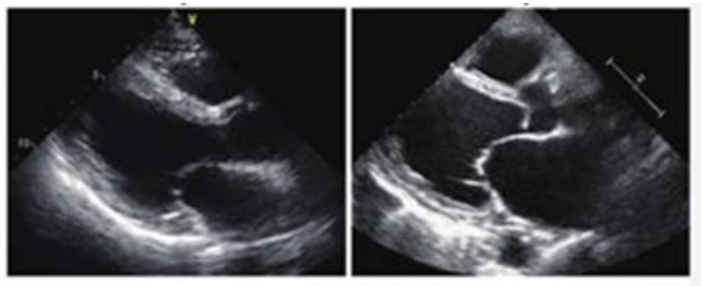


# Secondary Outcomes

- Left Ventricular Ejection Fraction (LVEF) among HF clinic patients

^ *p*-value calculated by t-test

| | Before recruitment | At program discharge | % change | p-value |
|---|---|---|---|---|
| LVEF, mean ± SD | 26.5% ± 8.5% | 45.7% ± 12.2% | +72.5% | **< 0.001 ^** |



- Six Minute Walking Test (6MWT) among HF clinic patients

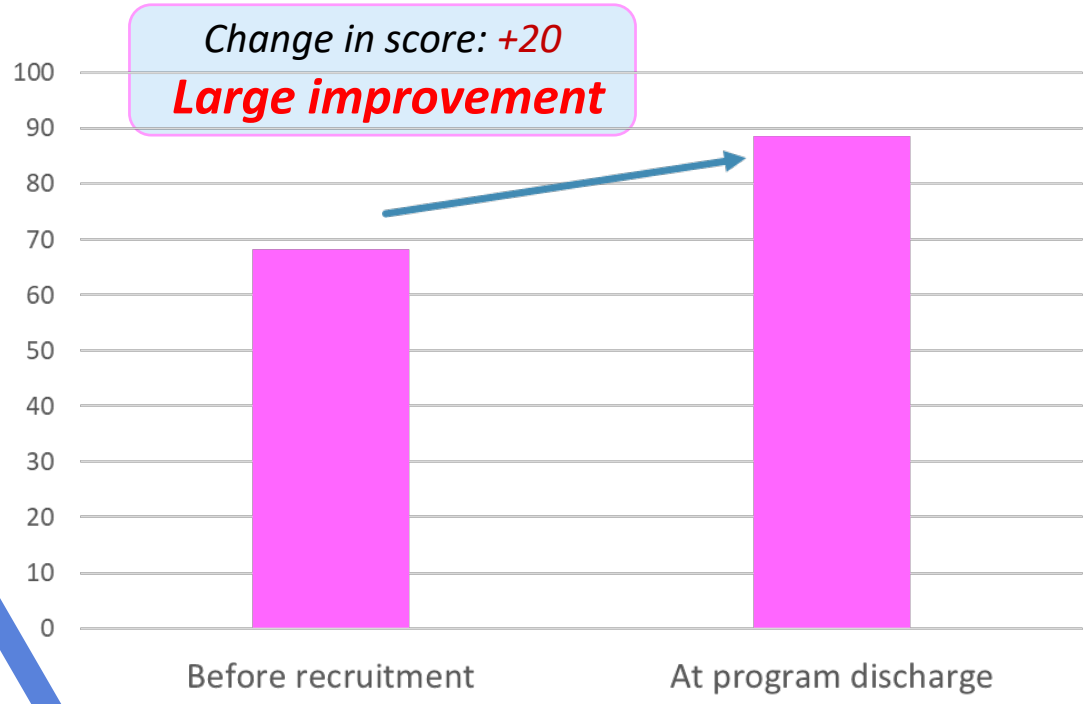
^ *p*-value calculated by t-test

| | Before recruitment | At program discharge | % change | p-value |
|---|---|---|---|---|
| Mean ± SD | 355m ± 114m | 440m ± 87m | +27.0% | **< 0.05 ^** |

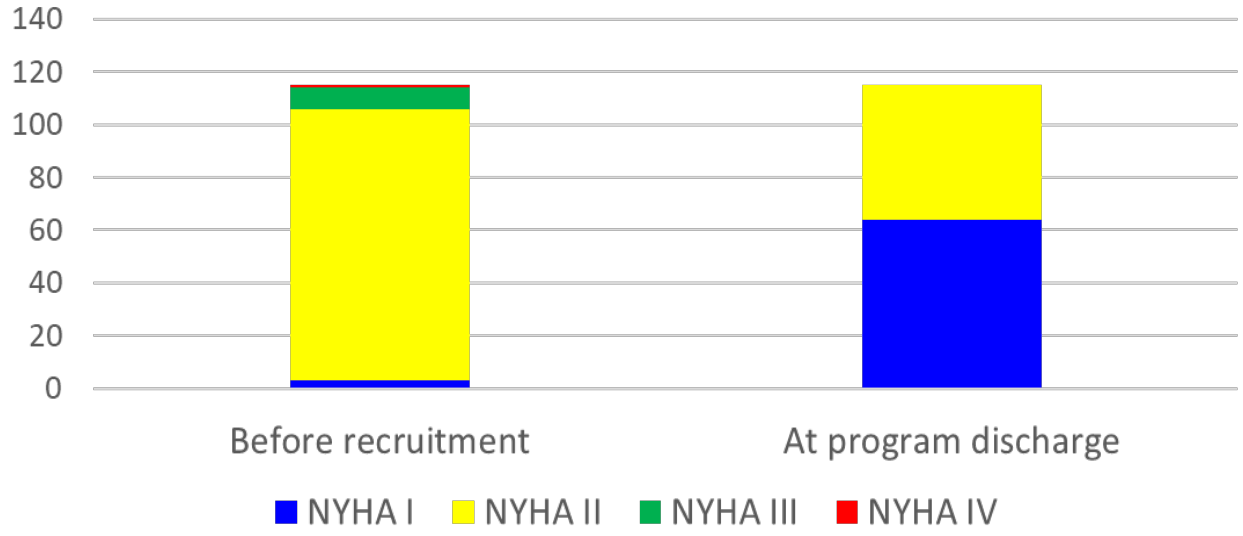
# Secondary Outcomes

- Kansas City Cardiomyopathy Questionnaire score improved from 68 to 88, p<0.05

^ *p*-value calculated by t-test




- New York Heart Association (NYHA) Functional Classification



# Conclusion

- Integration of clinical pharmacist into heart failure management has significantly reduced HF-related readmissions, improved clinical outcomes and patient's quality of life, with the effort of
  - ➢ frequent follow-up for GDMT titration and monitoring
  - ➢ patient education