Precision Medicine: Improving Identification and Treatment of Heart Failure Patients

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Introduction

Despite advances in clinical and diagnostic medicine, heart failure (HF) is commonly misdiagnosed. This can lead to sub-optimal care and a decline in quality of life and in patient outcomes.

Studies show that even patients diagnosed with HF don't always receive optimal care. Guideline directed medical therapy (GDMT) is a well-established pharmaceutical framework to treat HFrEF that has shown clear mortality benefits. GDMT consists of initiating therapy with the following therapeutics before titrating to optimal dose:

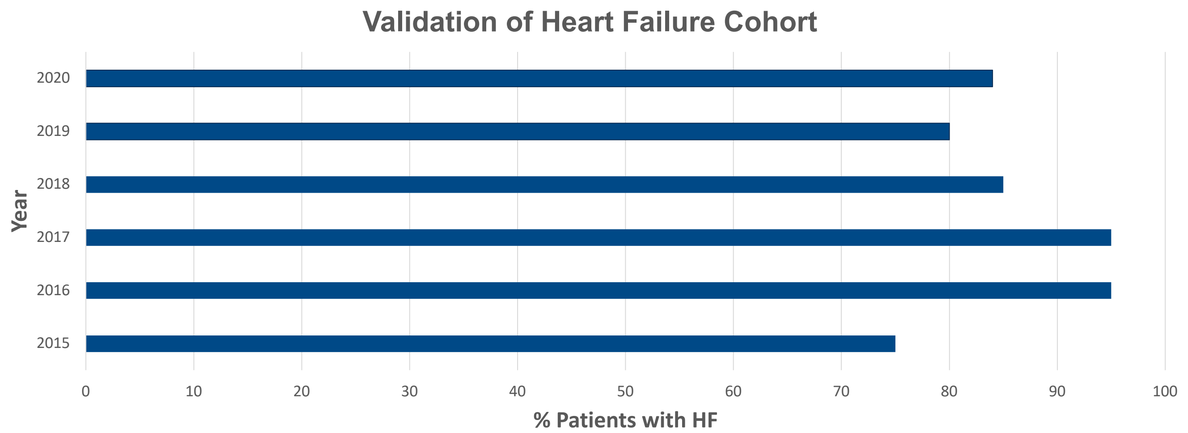
- β-Blockers (BB)
- ACEi, ARB or ARNI
- Mineralocorticoid receptor antagonist (MRA).

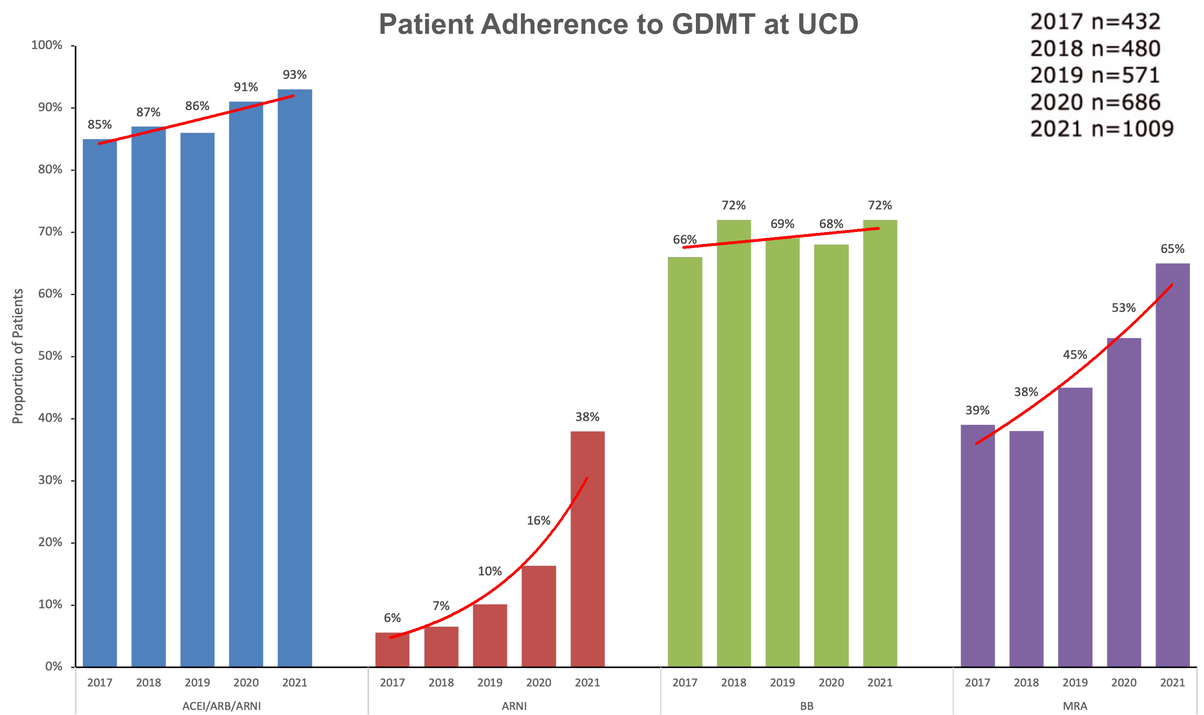
However, studies show that significant gaps in both usage and dosages of GDMT still exist.

As such, we propose creating a cohort of UCD HF patients using discrete variables (i.e. BNP, LVEF) to improve HF detection and treatment.

Methods

- Defining the HF population
  - Creation of HF cohort using a set of rules (BNP>100, Echo present, HF ICD coded diagnosis, etc.)
  - Stratification of Cohort into HFrEF, HFmEF, HFpEF populations based on LVEF
  - Validation of a random sampling of the Cohort per year to determine sensitivity
  - Retailoring of algorithm as necessary
- Characterization of stratified cohorts (race, gender, ethnicity, etc)
- Review of GDMT in HFrEF sub-population





Results

From 2015 to 2020, validation of the HF Cohort showed 75%, 95%, 95%, 80%, and 84%, respectively. From years 2014 and prior, there was a marked decrease in sensitivity.

Review of GDMT usage in the HFrEF subgroup, looking solely at the percentage of patients prescribed the medication rather than the dosages, showed an upwards trend in all GDMT therapeutics over the past five years.

- ACEi/ARB/ARNI showed a mild increase from 85% to 93%
- BB similarly showed a mild increase from 66% to 72%
- ARNI's alone showed a greater increase from 6% to 39%
- MRAs showed a larger increase as well from 39% to 69%

Conclusions/Further Study

- Cohort validation showed a relatively high sensitivity (≥ 75%) from 2015-2020
  - We identified a small subset of patients who have HF but were never formally diagnosed
  - Pulmonary HTN was a common confounder of HF as it can present with elevated BNP and other clinical similarities
- Creation of a HF cohort with high sensitivity allows for improved identification of HF patients and gaps in HF care to improve patient outcomes.
  - Algorithm may be refined as we progress to increase sensitivity
- Despite the increase in GDMT medication adherence, especially in ARNIs and MRAs, there is still significant room for improvement.