Cardiology

MagellanRx

Predictability Between a Diagnosis of Systolic Heart Failure and Guideline Recommended Therapies in a Medicare Population Using Pharmacy Claims Data and ICD-10 Codes

Background

- An estimated 6.5 million Americans have heart failure (HF) and is expected to increase to greater than 8 million by the year 2030.¹ The 5-year mortality in HF is approximately 50% and in the US, 1 in 8 death certificates mention HF.^{1,2} The economic burden of HF is staggering and is expected to increase drastically over the next 10 years. Many advances have been made in HF pharmacotherapy that have shown to decrease morbidity and mortality in this population.²
- Systolic heart failure (SHF) is characterized by a reduced ejection fraction (< 40%) and accounts for half of the HF burden. This condition is associated with a high-mortality and is managed by several medications.^{2,3} In order for patients to receive the greatest mortality, morbidity, and quality of life benefits, clinical practice guidelines recommend a specific combination of pharmacotherapy. This specified mixture of medications may be used to predict a diagnosis of SHF in a population based on pharmacy claims data alone.
- Pharmacy claims data is widely available to managed care groups and may be better utilized to identify morbidity in patients when clinical data is missing. This type of data has been used to identify chronic conditions in a population before but was not able to distinguish between different cardiovascular diseases.⁴
- ICD-10 codes have limitations in being the sole identifier for chronic conditions. These limitations include an inaccurate diagnosis coded or codes not entered when not necessary for billing purposes. Despite these limitations, ICD-10 codes are a widely used identifier deployed by managed care groups to identify patients of all chronic conditions.
- More specific and sensitive identification methods are required to capture the members likely to receive the greatest mortality, morbidity, and quality of life benefits from outreach, regarding guideline recommended pharmacotherapy. We set out to develop methods to determine if pharmacy claims data can accurately identify SHF members using a retrospective study design.

Objective

• To determine the predictability between a diagnosis of SHF and the use of guideline recommended therapies in a Medicare population using pharmacy claims data and ICD-10 codes.

Methods

- We retrospectively reviewed pharmacy claims data and ICD-10 codes from a single Medicare population that consisted of about 13,000 members. Pharmacy claims data were collected from June 2016 to May 2017. Members were flagged for having at least one fill of any ACE/ARB, beta-blocker, loop diuretic, mineralocorticoid receptor antagonist (MRA), or ARNI drug class. Members were predicted to have a SHF diagnosis based on pre-specified combinations of these flagged medications. The best predictability was thought to be the combination of ACE/ARB, betablocker, loop diuretic, and MRA based around the ACCF/AHA clinical guideline recommendations.
- Members with at least 1 HF ICD-10 code were collected from July 2016 to May 2017. Each member was then flagged for being associated with a ICD-10 code specific to SHF. Members from the pharmacy claims data set and members from the ICD-10 data set were bi-directionally compared to assess congruency. This was done by using member specific identification numbers associated with each ICD-10 code and pharmacy claim.
- The predictability of SHF with pharmacy claims data was measured by quantifying the amount of members utilizing drug classes, or combinations, of guideline recommended SHF drugs while also quantifying the studied population filling the same drug class or combination. Diagnosis codes were also used to identify how many members with an ICD-10 code for SHF were filling guideline recommended pharmacotherapies. Guidelines recommend the use of 3 to 4 different drug classes at one time in SHF. Members were evaluated for the number of guideline recommended drug classes they were utilizing to assess overall adherence to SHF common treatment practices.

Disclosures

 This research was conducted by Magellan Health without external funding.

Results

• Of the approximate 13,000-member population, 626 (~ 5%) had an ICD-10 code for SHF. Claims data predicted the following percentage of SHF patients on a specific medication class or combination when compared to the entire plan (SHF patients/all patients): ACE/ARB (7.7%), beta-blocker (9.6%), ACE/ARB + betablocker (12.8%), ACE/ARB + beta-blocker + loop diuretic (31%), ACE/ARB + beta-blocker + loop diuretic + MRA (39.6%), valsartan/sacubitril (88.9%). Of these patients, 2.7% were utilizing valsartan/sacubitril, 55.3% ACE/ARB, 37.2% beta-blocker, 60.2% loop diuretic, 16.9% MRA, 22.5% ACE/ARB + beta-blocker, 14.9% ACE/ARB + betablocker + loop diuretic, 3.8% ACE/ARB + beta-blocker + MRA, 3.4% ACE/ARB + beta-blocker +loop diuretic + MRA. Of the 626 SHF patients identified by ICD-10 codes, 14% were filling 0 guideline recommended classes of drugs, 28% were filling 1, 35% were filling 2, and 23% were filling 3 or more.

Discussion

- This study was designed to identify SHF members within a Medicare population using pharmacy claims data. These current methods were not able to accurately identify this chronic condition in our given population. The best predictability of SHF was the utilization of valsartan/sacubitril. This was likely due to a prior authorization being required to confirm a diagnosis of SHF prior to dispensing this medication. The combination of guideline recommended drugs for SHF that was expected to give the highest predictability was ACE/ARB, beta-blocker, loop diuretic, and MRA. Of all the members filling this combination of drugs, 39.6% had an ICD-10 code for SHF. This was a surprising discovery since no other conditions require this specific combinations of medications.
- After evaluating members with an ICD-10 code associated with SHF, it was evident there is a lack of adherence to clinical practice guideline recommended pharmacotherapies. Only 22.5% of SHF patients were utilizing the combination of ACE/ARB and beta-blockers. Both of these classes of drugs have been shown to reduce the mortality and morbidity in SHF. Our analysis also showed that 42% of SHF patients were utilizing \leq 1 medication to treat their SHF. These findings are alarming that warrant further research and intervention.
- The incompleteness and inaccurate use of ICD-10 codes is a partial reasonable explanation for the poor predictability of SHF. The validity of ICD-10 codes depends on many factors such as coding experience, coding practices, and the type of administrative file used.⁵ Nevertheless, assuming ICD-10 codes are frequently valid, this study revealed that many SHF members are not receiving the mortality and morbidity benefits available to them through pharmacotherapies. Concordance between pharmacy claims and ICD-10 codes may also be limited due to patients who pay cash for their prescriptions and therefore are not included on pharmacy claim data.
- More data and additional parameters are needed to increase the sensitivity and specificity of this approach. Future analysis may look at the appropriateness of beta-blocker type, appropriateness of dosing, other comorbid conditions, and inclusion of patient surveys. It may also be beneficial to use pharmacy claim data to identify drugs that may worsen SHF to optimize outcomes in this population.

Conclusion

• Although SHF members are on a unique combination of drugs, we were unable to accurately identify these patients with claims data alone. This study unveiled that many SHF members are likely not receiving optimal pharmacotherapy. However, pharmacy claim data may be a valuable tool to measure and identify a population's burden of disease, especially if ICD-10 codes are not available. This data may also allude to a potential program to optimize pharmacotherapy in SHF members and minimize downstream costs.



Abbreviations: BB = beta-blocker; Loop = loop diuretics; MRA = mineralocorticoid receptor antagonist; ARNI = angiotensin receptor-neprilysin inhibitor



Limitations

- they would not have a chance to be associated to a SHF ICD-10 code.
- not utilized in the analysis.

References

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• The duration of claims data collected was limited to a year or less. If a patient did not have a doctor visit during the time of data collection

Members were only required to have one fill of the specified SHF medication classes to be included in the analysis. Therefore, adherence is

• This study used a single Medicare population from one payer group that may have differing benefits from other Medicare populations. Thus, this data may not be generalizable to other Medicare or younger populations.

• Pharmacy claims data did not include members who did not utilize their pharmacy benefits when filling a medication. Likewise, our claims data would not include patients who are non-adherent or do not manage their condition with pharmacotherapy.

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