



# CHARACTERIZING THE PATIENT POPULATION WITH 30- DAY READMISSIONS FROM COPD AND HEART FAILURE.

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## Background

The Hospital Readmission Reduction Program (HRRP) requires Centers for Medicare and Medicaid Services (CMS) to reduce payments to hospitals with readmission rates above the national average (1,2). Parkview Noble Hospital (PNH) has experienced higher than expected readmission rates for chronic obstructive pulmonary disease (COPD), congestive heart failure (CHF), and acute myocardial infarction (AMI). Parkview Noble's readmission rate for these diseases is 18.19% compared to the national average of 15.86% (3).

## Objectives

### Current

- Determine the clinical and socioeconomic factors that best characterize the patients with 30-day readmission at PNH

- Develop a preliminary algorithm that can be used to target future readmission patients with healthcare driven interventions to improve the 30-day readmission rate at PNH

### Future

Currently we are at a benchmark in our study with 260 patient cases examined. The number of patients in this study is going to be expanded to a final number by adding up to 1,028 new patient cases and including phone interview data to further revise our algorithm.

## Materials & Methods

- ❖ 260 Patient's were called and had their charts reviewed to collect data.
  - ❖ 88 of the patients had CHF, 172 had COPD
  - ❖ 50% of the patients were controls who were not readmitted
- ❖ IBM SPSS statistic software and Excel were used for data analysis.
  - ❖ Paired t-tests and chi-squared tests were used to measure the statistic impact that various variables had on a patient's likelihood of 30-day readmission.
  - ❖ Multivariable regression analysis was performed to determine a baseline equation for measuring a patient's likelihood of 30-day readmission. A readmission index of 1 was used if readmitted and 0 if not readmitted.

## Results

Variable	P Value
ED visits within 6 months	1.37E-6
ED admission within last year	0.026
Heart Failure with CAD	0.055
COPD stage	0.064
Changes in Medication	0.296
Number of Comorbidities	0.307
BMI	0.388
Discharge Location	0.746

### Readmission Index COPD

$$= 0.206 + 0.111A - 0.053B + 0.64D$$

### Readmission Index CHF

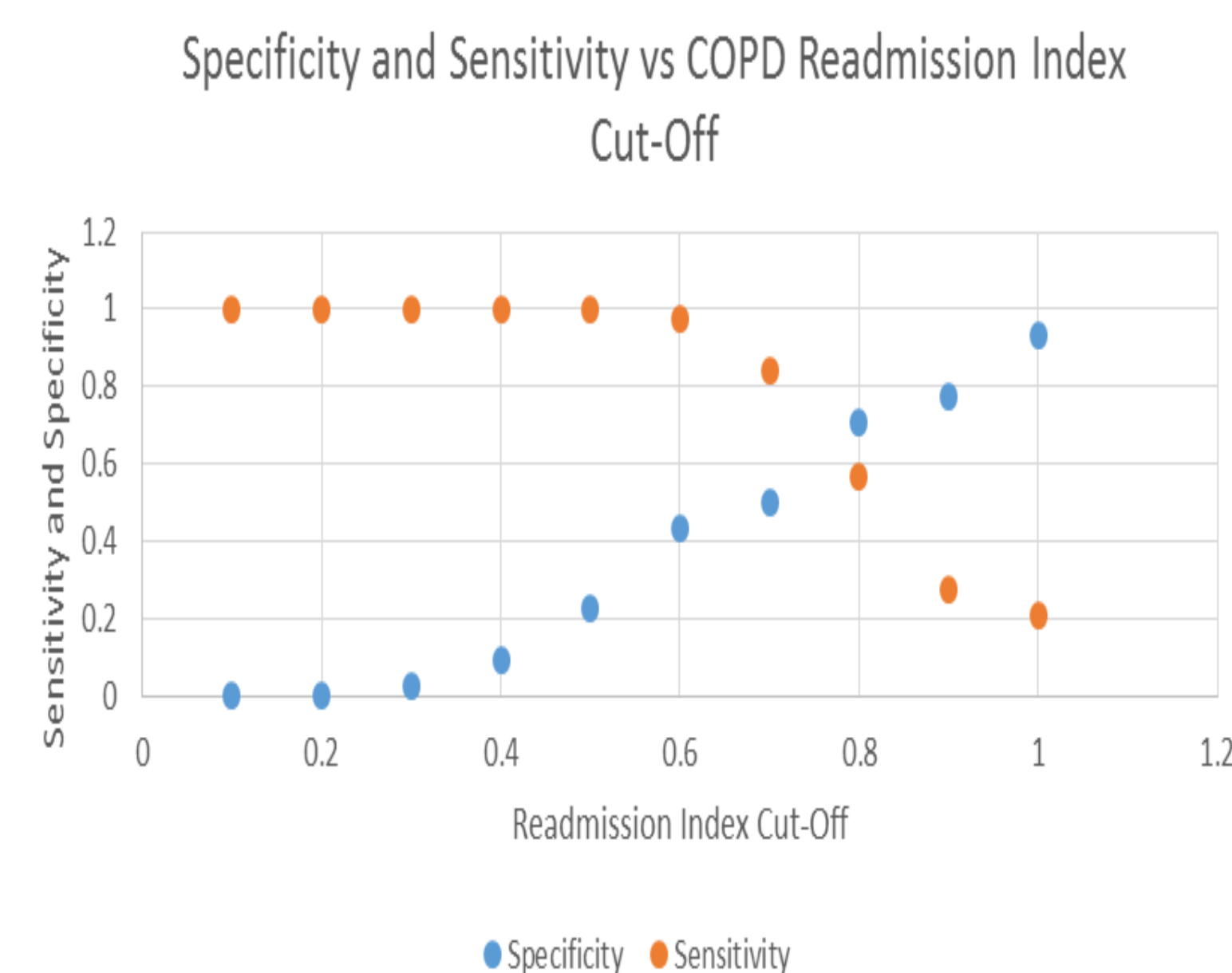
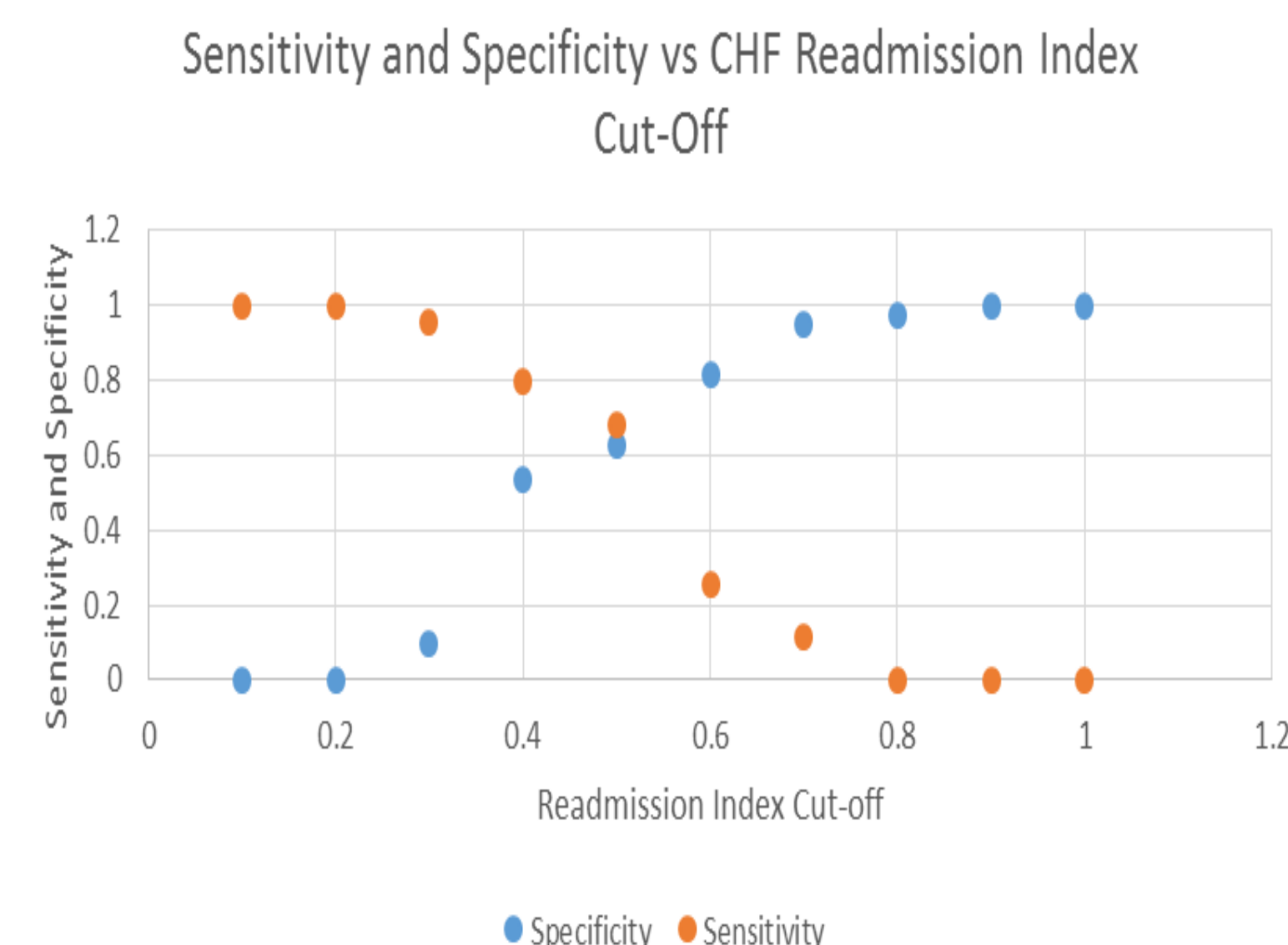
$$= 0.378 + 0.082A - 0.086B + 0.144C$$

**A**= ED visits within 6 months (up to 5)

**B**= ED admission within last year (up to 2 and not during first month)

**C** = Heart Failure with CAD (1= yes, 0= no)

**D** = COPD stage



## Conclusions

From the preliminary data we can pinpoint many statistically promising variables including ED visits, ED admissions, heart failure with CAD, and COPD stages. Statistically only two of these are considered significant ( $p < 0.05$ ) however the others are close enough to being significant that by the completion of this study they will likely show a significant impact on 30-day readmissions.

Our preliminary readmission index equations are able to target 30-day readmission with 20%+ sensitivity and 85%+ specificity. Assuming that the readmission rate of targeted patients can be reduced by at least 64% this equation would be effective at reducing PNH readmission rate below the national average. The specificity and sensitivity of this algorithm should only improve as more patient cases are examined and once phone interview data is included.

## References

1. Patient Protection and Affordable Care Act, 42 U.S.C. § 18001 (2010).
2. Horwitz, et al. Hospital-Wide (All-Condition) 30-Day Risk-Standardized Readmission Measure: Measure Methodology Report. 2011. Available from : <https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/MMS/downloads/MMSHospital-WideAll-ConditionReadmissionRate.pdf>
3. Mirro, et al. Patient Characteristics and Differences in 30-Day Rural Hospital Readmission Rates at Parkview Noble Hospital

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