**Statistical methods**

Retrospective chart review conducted from patients enrolled from 2018-01-01 to 2018-12-31 in hospitals of Northwell Healthcare system. Group differences was analyzed using chi square to test the differences. Multivariate logistic regression was conducted to compare comorbidities on diagnostics disparity and mortality.

**Results**

**Baseline characteristics**

Among 1398 patients, 50.6% of them are male. 26 of them expired. 1802 (61.7%) of them are white, 17.7% of them are African American. 22.3% of them were readmitted from emergency within 30 days of discharge. Patients have a mean age of 76.34(IQR: 69.45:79.83).

Three groups of patient demographic information are presented in Table1. From total 2801 patients, 545 patients are diagnosed both positive from ED and inpatient, 693 patients are inpatient negative and ED positive: and 160 patients diagnosed ED positive, Inpatient negative.

We collected diagnosis from both inpatients and emergency department to test the phenotypes disparities between departments, judgement of congestive heart failure was based on ICD10 (I50.9).

**Association between comorbidities and diagnostics groups**

Patients in three diagnostics groups were not different on readmission rate in 30 days in three diagnostics groups and mortality rate.

Patients with hypertension was more likely to decrease (unadjusted OR: 1.46 95% CI [1.26:0.84]) and patients were on ventilator was more likely to decrease (unadjusted OR: 12.23, 95% CI [6.7774: 22.422]), patients on bipap were more likely to decrease. (unadjusted OR:4.54, 95% CI [2.64: 7.81]).(Table 2)

**Table1. Descriptive Statistics of Three diagnosis group**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Group** | | |  |  |
|  | **EDpositive &IPpositive** | **IPPositive\_EDNegative** | **IPnegative\_EDPositive** | **Total** | **p-value** |
|  | N= 545 | N= 160 | N= 693 | N=1398 |  |
| Race |  |  |  |  | P < 0.001 |
| African Amer/Black | 98 | 14 | 136 | 136 |  |
| 18% | 8.8% | 19.6% | 17.7% |  |
| Asian | 32 | 4 | 41 | 77 |  |
| 5.9% | 2.5% | 5.9% | 5.5% |  |
| Caucasian/White | 352 | 130 | 424 | 906 |  |
| 64.6  % | 81.3% | 61.2% | 64.8% |  |
| Declined/unknown | 2 | 1 | 14 | 17 |  |
| 0.4% | 0.6% | 11.3% | 10.2% |  |
| Native Amer/Alaskan | 1 | 0 | 0 | 1 |  |
| 0.4% | 0% | 0 | 0.1% |  |
| Other/Multiracial | 60 | 11 | 78 | 296 |  |
| 11.0% | 6.9% | 11.3% | 10.7% |  |
| **Gender** |  |  |  |  |  |
| Female | 274 | 66 | 345 | 1384 | p = .112 |
| 50.3% | 41.3% | 49.8% | 40% |  |
| Male | 271 | 94 | 348 | 1417 |  |
| 49.7% | 58.8% | 50.2% | 51% |  |
| Age |  |  |  |  |  |
| 76.584(12.299) | 76.329(12.517) | 76.173(12.631) | 76.34(12.34) | p=0.547 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Visit Type** |  |  |  |  |  |
| Emergency Type | 358 | 71 | 483 | 912 | p <0.001 |
| 65.7% | 44.4% | 65.2% | 65.2% |  |
| Inpatient | 181 | 89 | 210 | 486 |  |
| 34.3% | 55.6% | 30.2% | 34.8% |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Table 2 | | | | | | |
| Logistic Regression result - Risk of Mortality and its association with comorbidities and diagnostics groups | | | | | | |
|  | | | | | **95% Confidence Interval** | |
| **Predictor** | **Estimate** | **SE** | **p** | **Odds ratio** | **Lower** | **Upper** |
| IPpos&EDneg – Bothpos | -0.274 | 0.485 | 0.573 | **0.7606** | 0.2939 | 1.968 |
| IPneg& EDpos– Both | -0.238 | 0.304 | 0.434 | **0.7879** | 0.4339 | 1.431 |
| Chronic obstructive lung disease: |  |  |  |  |  |  |
| Y – Na | 0.157 | 0.3 | 0.601 | **1.1698** | 0.6501 | 2.105 |
| End-stage renal disease: |  |  |  |  |  |  |
| Y – Na | -1.639 | 1.029 | 0.111 | **0.1942** | 0.0258 | 1.46 |
| Hypertensive disorder: |  |  |  |  |  |  |
| Y – Na | 0.722 | 0.318 | 0.012 | **1.4858** | 1.2602 | 0.907 |
| Diabetes mellitus: |  |  |  |  |  |  |
| Y – Na | -0.504 | 0.292 | 0.084 | **0.6044** | 0.3411 | 1.071 |
|  |  |  |  |  |  |  |
| Has Bipap | 1.51 | 0.277 | <.001 | **4.5455** | 2.6436 | 7.8156 |
| HasVentilator\_y: |  |  |  |  |  |  |
| 1 – 0 | 2.512 | 0.305 | < .001 | **12.3272** | 6.7774 | 22.422 |
|  | | | | | | |
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