Exploration and Modeling of a MIMIC III Cohort - Proposal

## **Problem Statement:**

Predicting mortality in patients diagnosed and admitted with Pneumonia and/or Influenza.

## **Cohort Selection:**

The cohort selected for the proposed analysis is based on the following criteria:

The inclusion criteria is defined as all patients with pneumonia & influenza (icd9 code for 480.0 - 488.89). Exclusion criteria are patients with age less than 18yrs.

## **Data tables/fields used from mimic-3 database:**

|  |  |  |
| --- | --- | --- |
| **Variables** | **Table** | **Fields from Table** |
| **Demographic** |  |  |
| Age | PATIENTS | Dob - admit date(admissions table) |
| Gender | PATIENTS | Gender- F/M |
| Race/Ethnicity | ADMISSIONS | ethnicity |
| Insurance | ADMISSIONS | insurance |
| religion | ADMISSIONS | religion |
| Died or not | PATIENTS | expire\_flag |
| **Quality of life indicators** |  |  |
| Smoking History | CHARTEVENTS -  D\_ITEMS | itemid (CHARTEVENTS) joined on itemid (D\_ITEMS)  Itemid value = 227687 or 225108 or 225059 (with value LIKE text = ‘smoke’) |
| Smoking Cessation | CHARTEVENTS  D\_ITEMS | itemid (CHARTEVENTS) joined on itemid (D\_ITEMS)  Itemid value = 227688 |
| **Admission related** |  |  |
| subject\_id | ADMISSIONS | subject\_id |
| hadm\_id | ADMISSIONS | hadm\_id |
| Icustay\_id for above hadm\_id | ICUSTAYS | icustay\_id |
| First\_careunit in ICU | ICUSTAYS | first\_careunit |
| admittime | ADMISSIONS | admittime |
| dischtime | ADMISSIONS | dischtime |
| admission\_type | ADMISSIONS | admission\_type |
| discharge\_location | ADMISSIONS | discharge\_location |
| Admission diagnosis (free text) | ADMISSIONS | diagnosis |
| Icd9 code from that hadm\_id | DIAGNOSES\_ICD | icd9\_code |
| Icd9 code (above) - short title | D\_ICD\_DIAGNOSES | short\_title |
| Icd9 code (above) - long title | D\_ICD\_DIAGNOSES | long\_title |
| **Vitals** |  |  |
| Weight (kg) | INPUTEVENTS\_MV | patientweight |
| Height (cm) | CHARTEVENTS &  D\_ITEMS | itemid (CHARTEVENTS) joined on itemid (D\_ITEMS)  Itemid value = 226730 |
| Blood Pressure |  | itemid (CHARTEVENTS) joined on itemid (D\_ITEMS)  Itemid value = 220181 (Non Invasive Blood Pressure mean) - MAX value event only |
| O2 saturation | CHARTEVENTS &  D\_ITEMS | Itemid (D\_ITEMS) joined to itemid (CHARTEVENTS)  Itemid value = 1037 |
| Peak Flow | CHARTEVENTS &  D\_ITEMS | Itemid (D\_ITEMS) joined to itemid (CHARTEVENTS)  Itemid value = 530  (mean value preferred, if possible) |
| **Lab tests** |  |  |
| Chest Xray | PROCEDURES\_ICD | PROCEDURES\_ICD - icd9\_code IN ('8744' ,'8749')  \*\*\*\*Could not find - how to get results of chest x-ray.\*\*\*\* |
| Total Protein | LABEVENTS | Total protein = 50976  **query** LABEVENTS using  Itemid value = 50976 |
| CRP, mg/L mean | LABEVENTS | Label: C-Reactive Protein  Loinc code: 1988-5  Itemid: 50889  **query** LABEVENTS using  Itemid value = 50889 |
| Albumin, g/L  (Liver Function) | LABEVENTS | Label: Albumin, Body Fluid  Loinc code: 1751-7  Itemid value = 50862 |
| Albumin urine  (Liver Function) | LABEVENTS | **query** LABEVENTS using  Itemid = 51069 |
| Hb, g/dL mean | LABEVENTS | Label:Absolute Hemoglobin  Loinc code: 718-7  Itemid value = 50855 |
| Platelets count | LABEVENTS | Platelet Count = 51265  **query** LABEVENTS using  Itemid = 51069 |
| Creatinine, μmol/L | LABEVENTS | Label: Creatinine, Urine  Loinc id: 2161-8  Itemid value = 51082 |
| UN (Urea Nitrogen)  Renal Function | LABEVENTS | Label: Urea Nitrogen, Urine  Loinc code: 3095-7  Itemid value = 51104 |
| **Comorbidities** |  | Comment: Please include those patients with the following **Comorbidities:**  **For ex:**  The join could contain this condition:  Select subject\_id, hadm\_id  from ADMISSIONS  where diagnosis like '%CONGESTIVE HEART FAILURE%'  AND diagnosis like ‘%PNEUMONIA%’ |
| MYOCARDIAL INFARCTION  MI | ADMISSIONS | Icd9 codes: 41000-41092 |
| STROKE | ADMISSIONS | Icd9 codes: 43301-43600 |
| ASTHMA | ADMISSIONS | Icd9 codes: 49300-49392  AND  LIKE ‘%asthma%’ |
| CHRONIC OBSTRUCTIVE PULMONARY DISEASE | ADMISSIONS | Diagnosis: ICD9 codes: 490-496 |
| HYPERTENSION | ADMISSIONS | Diagnosis ICD 9 code: 401.9 |
| Portal hypertension | ADMISSIONS | Diagnosis ICD 9 code: 572.3 |
| Chronic pulmonary heart disease  **(**includes PULMONARY HYPERTENSION, PULMONARY EMBOLISM) | ADMISSIONS | Diagnosis: ICD9 codes: 416-416.9 |
| ATRIAL FIBRILLATION | ADMISSIONS | Diagnosis : ICD9 codes: 42731 |
| DIABETES or  DIABETES MELLITUS | ADMISSIONS | Icd9 codes: 25000-25093 |
| CANCER , any | ADMISSIONS | Icd9 codes: 140-209 AND 230-239  OR LIKE ... ‘%neoplasm%’,  ‘%carcinoma%’,  ‘%sarcoma%’ |
| CONGESTIVE HEART FAILURE | ADMISSIONS | Diagnosis ICD9 code 428.9 |
| PULMONARY FIBROSIS | ADMISSIONS | Diagnosis: ICD9 codes: 51631 |