COVID-19 Associated Thromboembolic Events and Mortality in Hospitalized Patients– a UC COVID Research Data Set (CORDS) Retrospective Analysis (Poster ID: D79)

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Introduction

Differing rates of deep vein thrombosis (DVT) and pulmonary embolism (PE) have been reported following COVID-19 infection since 2019. Our objective was to identify the rates of thromboembolic events (TE) and mortality in admitted COVID-19 patients and determine the effect of demographic data and comorbidities on outcomes.

Methods

We performed a retrospective cohort study using the UC COVID Research Data Set (UC CORDS), an EHR database consisting of clinical information with more than 460 million data points including SARS-CoV-2 testing results and inpatient treatment information. Using the SQL software, we identify patients that were admitted with a clinically relevant COVID-19 diagnosis from July 31, 2021 until October 15, 2022. We ran descriptive statistics to characterize the sample cohort.

- Covid-19 Concept → Admitted diagnosis
- Demographic Data: age, gender, race, zip code
- Co-morbidities
- Complications: DVT, PT, DVT and PE
- Interventions: Intubation vs. Oxygen
- Mortality

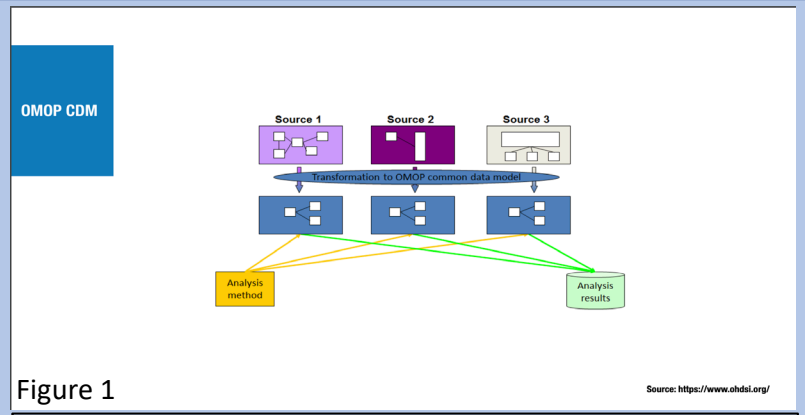

Figure 1

Figure 1: Different institutions input data using Electronic Health Records; this data is organized using different library codes. In order to generate tables using aggregate data, the correct codes and queries must be inputted into SQL in order to scan the Observational Medical Outcomes Partnership (OMOP) Common Data Model (CDM) to query the UC CORDS Database.

Figure 2

```
-- respiratory assistance during hospitalization
update #encounters
set
        artificial_respiration_flag = 1
from
        procedure_occurrence po, #encounters e, #artificial_respiration t
where
        po.person_id = e.person_id and
        po.procedure_date between e.visit_start_date and e.visit_end_date and
        po.procedure_concept_id = t.concept_id

-- pulmonary embolism during hospitalization
update #encounters
set
        pulmonary_embolism_flag = 1
from
        condition_occurrence co, #encounters e, #pulm_embolism t
where
        co.person_id = e.person_id and
        co.condition_start_date between e.visit_start_date and e.visit_end_date and
        co.condition_concept_id = t.concept_id

-- deep vein thrombosis during hospitalization
update #encounters
set
        dvt_flag = 1
from
        condition_occurrence co, #encounters e, #dvt t
where
        co.person_id = e.person_id and
        co.condition_start_date between e.visit_start_date and e.visit_end_date and
        co.condition_concept_id = t.concept_id

-- death during hospitalization
update #encounters
set
        death_flag = 1
from
        death d, #encounters e
where
        d.person_id = e.person_id and
        d.death_date between e.visit_start_date and e.visit_end_date -- between is inclusive

-- copy of other flags from patient-view, relative to each visit (e.g. condition occurs before or during visit)
```

Figure 2: sample SQL query with specific flags that allows for extraction of patients with TE complications, rates of mortality and respiratory interventions.

Results

- 11,856 patients were admitted with COVID-19
- 5323 were female (44.89%) and 6533 male (55.11%). Mean age = 57
- The rate of TE complications was 7.28% (n= 864). Complication rates of M > F (OR=1.4, CI = 1.2-1.6, p<0.01)
- DVT = 377 (3%) , PE = 366 (3%), DVT & PE = 121 (1%), Mortality = 1200 (10%)
- Mortality M > F (OR=1.4, CI = 1.2-1.6, p <0.01)
- TE complications ~ increased age (mean = 61.87), respiratory disorders, pulmonary HTN, IHD, and ARDS
- Mortality Rates ~ Age, Respiratory disorders, IHD, Diabetes and ARDS. Race/Ethnicity was not a predictor for TE complications nor mortality.

Conclusions

Age, males, respiratory disorders, ischemic heart disease and ARDS ~ greater TE complications and mortality in COVID-19 patients.

The UC CORDS data set provides an opportunity for developing statistical tools that predict risk for TE complications and mortality.

Future directions:

- Social Deprivation Index to determine whether zip codes are associated with increased rates of complications
- Publish Code
- Create Risk-Assessment Tool that may be incorporated into standard care practice