emerge network

eMERGE Network: Manuscript Concept Sheet

Reference Number *(to be assigned by CC)*	NT401
Submission Date	7/15/2020
Project Title	An evaluation of statin and the severity among Individuals with COVID-19
Tentative Lead Investigator *(first author)*	TBD
Tentative Senior Author *(last author)*	Wei-Qi Wei
All Other Authors	Todd Edwards, Josh Peterson, Digna Velez Edwards, Dan Roden
Sites Participating	Open to all sites Current participants: Vanderbilt
Background / Significance	Since January 2020, novel coronavirus has spread to nearly every country and territory in the world. As of 04/27/2020, more than 3 million COVID -19 cases have been confirmed throughout the United States. Accumulated evidence suggests that intense inflammation, blood clots, and stroke are some of the most severe symptoms of COVID-19. Statins are not only the first-line drug of lowering cholesterol. They also decrease inflammation, reduce blood clots, prevent damage to endothelial tissue, and may act as antivirals.
Outline of Project	A recent study reported statin treatment during a hospital stay is associated with improved mortality rates among hospitalized COVID-19 patients. We will explore if statin users have a decreased likelihood of developing severe outcomes of COVID-19. We defined hospitalization as the marker for severity. We will also evaluate the feasibility of implementing the WHO multi-level definition of respiratory severity (i.e., (1) normal / not in the hospital, (2) in the hospital requiring oxygen by simple nose cannula or mask, (3) in the hospital requiring more advanced support like a pressurized mask or "high-flow" oxygen device, (4) requiring a mechanical ventilator, (5) Dead). The study cohort will include all individuals either being confirmed COVID-19 positive by a SARS-CoV-2 PCR test or had a COVID-19 ICD10 code (U07.1) after April 1st. We will define cases as statin users while controls as non-statin users. We will conduct a logistic regression to compare the severity between cases and controls. We will adjust our results by age, gender, race, observation length in EHR, and other confounding indications for admission.

Desired Data - Common Variables* *(Available from the CC)*	☒Demographics ☐Common Variable Labs ☒ICD9/10 codes ☐Common Variable Meds ☐CPT codes ☐Other: Case/Control status on Phase I and ☒Phecodes ☐Phase II phenotypes ☒BMI
Other Desired Data ***(Available from participating sites)***	COVID outcomes such as hospitalization, pneumonia, admission and time in ICU, intubation and time intubated, death, supplemental oxygen, and other related outcomes.
Desired Genetic Data	☐eMERGE I-III Merged set (HRC imputed, GWAS) ☐eMERGE PGx/PGRNseq data set ☐eMERGEseq data set (Phase III) ☐eMERGE Whole Genome sequencing data set ☐eMERGE Exome chip data set ☐eMERGE Whole Exome sequencing data set ☐Other (not listed above):
Does project pertain to an existing eMERGE Phenotype?	☒Yes, if so please list: Phecodes and other COVID outcomes ☐No
Planned Statistical Analyses	regression analysis
Ethical Considerations	None noted
Target Journal	Related clinical journal, e.g., circulation
Milestones *(This section should include the key dates for completion of project, including approval, project duration, draft completion, and submission.)*	1. phenotype data collection from participating sites: by the end of 2020 2. Conduct analysis: 2 months 3. Result explanation and manuscript preparation: 2-3 months