GEMINI Project Proposal Form

INSTRUCTIONS: There are two parts to this form. Part A is to be completed and submitted for review by the GEMINI Project and Publications Committee. Part B is to be completed once your project proposal has been approved AND if your project requires GEMINI Data Analyst support.

Part A: PROJECT DESCRIPTION

Please provide a brief (1-2 pages) description of your proposed project. Provide just enough detail for the GEMINI Project and Publications Committee (non-specialist investigators) to determine whether the study is feasible.

Project Title
Patient characteristics, clinical care, resource use, and outcomes associated with hospitalization for COVID-19 in the Toronto area

Project Investigator(s) and GEMINI Leads
Amol, Fahad to lead; will ask all GEMINI Investigators to participate

Study Question/Objective	
The purpose of this study is to characterize patient characteristics, clinical care, resource use and outcomes for patients hospitalized with COVID-19 at 7 hospitals in the Greater Toronto Area. We compared hospitalizations for COVID-19 with hospitalizations for influenza, community-acquired pneumonia, and all medical hospitalizations.	
Please select the GEMINI research objective(s) that applies to your proposal:	☐Develop methods to deidentify, standardize, assess and improve the quality of data for research across multiple hospitals ☒Characterize populations of hospitalized patients, examine variations and associations related to sociodemographic data, clinical characteristics and conditions, processes of care, resource use, and clinical outcomes for COVID and non-COVID illnesses ☐Predict and model clinical outcomes and resource use for patients with COVID and non-COVID illness ☐Study the effects of the COVID-19 pandemic and corresponding changes made to health systems on the demographic and clinical characteristics, processes of care, resource use, and clinical outcomes of patients with non-COVID illness in hospital ☐Quantify the association between organizational aspects of hospital care (e.g. staff scheduling, ward organization, infection control practices, etc.) and resource use and clinical outcomes for patients with COVID and non-COVID illness ☐None of the above

Background/Rationale
COVID-19-related hospitalizations in Canada are not well described. Currently, there are two case series done in the Canadian context (on study sizes of less than 120 patients), but this project

proposal could be one of the first detailed descriptions of hospitalizations for COVID-19 in Canada, covering up to 1000 adult hospitalized cases.

Proposed Study Design

Retrospective cohort study.

Inclusions: All patients discharged from an inpatient medical or medical-surgical intensive care service between November 1, 2019 and June 30, 2020. Medical services included all medical specialties (e.g. general medicine, cardiology, respirology, etc.). These inclusion criteria were designed to capture all patients hospitalized for medical complications related to COVID-19, but could miss a small number of patients who were hospitalized for non-medical reasons (e.g. surgical, psychiatric, obstetrical) and were also found to have COVID-19. The study period was initiated on November 1, 2019 in order to capture hospitalizations for influenza as a comparator group for COVID-19.

Analysis:
We will report patient baseline characteristics: age, sex, presenting labs and (if possible) vitals, comorbidities, LTC residence, transfer from other acute care facility. Clinical care: CT thorax, antibiotic use, any anticoagulant use, systemic corticosteroid use, mechanical ventilation, renal replacement therapy, gastrointestinal endoscopy, and bronchoscopy. Outcomes: ICU (could be thought of as process of care), mortality in hospital, 7-day and 30-day readmission, and hospital LOS.

We will compare outcomes of COVID-19 to influenza and "all medical admissions", adjusting for age and sex. We will compare baseline characteristics between groups using standardized differences. We will compare differences in critical care, resource use and clinical outcomes between groups using chi-square for categorical variables and one-way ANOVA for continuous variables.

Expected Findings and Deliverables

Peer-reviewed manuscript, presentations to government.

What is the timeline for this project? Are there any upcoming deadlines?	We will aim to submit to CMAJ by Dec 2020.

Will you require GEMINI data analyst support for this project?	☒Yes ☐No ☐TBD

Anticipated Challenges/Limitations

Will need to use ICD-10 codes to identify influenza (because of microbiology data quality issues) and COVID-19 diagnoses. Might need to map project-specific lab tests, pharmacy prescriptions and intervention codes (e.g. mechanical ventilation).

Clinical, Scientific, or Policy Implications

Has important implications for Canadian health services research and applications for health system policy-making and planning. Analysis could help in the development of models to forecast/understand clinical care and resource use patterns in COVID and non-COVID populations.

Prior to Submission

Has a GEMINI Investigator reviewed your project proposal? If not, please contact a GEMINI Investigator to review before submitting your project proposal to GEMINI.research@unityhealth.to

☒Yes ☐No

Name of Investigator who reviewed project proposal: ___Amol Verma___