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Factors associated with hospitalization, ICU use and death among vulnerable populations diagnosed with COVID-19

Project Number	Former Number	Contact	Awardee
3RF1AG063811-01S2	1RF1AG063811-01	PI/Project Leader CAI, SHUBING	Organization UNIVERSITY OF ROCHESTER

Description

Abstract Text

Project Summary. As of April 30, 2020, over 1 million individuals in the U.S. have been diagnosed with coronavirus disease 2019 (**COVID-19**). Patients with **COVID-19** may develop various symptoms – while the majority of patients have mild symptoms, some require hospitalization, admissions to intensive care unit (ICU), and may die. To date, there is only limited knowledge on risk factors associated with the severity of **COVID-19**. First, older adults have been found to have higher risks of developing severe symptoms of **COVID-19** and are more likely to be hospitalized or die. Studies have suggested that some underlying conditions, such as hypertension, diabetes, or obesity, are associated with the severity of **COVID-19**. However, it is unknown to what extent these comorbidities explain the variation in the severity of **COVID-19**, whether older age is independently associated with the severity of **COVID-19**; and whether and how older age modifies the relationship between comorbidities and the severity of **COVID-19**. Second, it has been reported that black Americans experienced a higher rate of **COVID**-related hospitalization and were more likely to die of **COVID-19**, compared to white Americans. However, it is unknown what may contribute to such racial difference – whether it is due to the differences in health conditions between blacks and whites, or due to the characteristics of the community where they reside in, or due to some other factors that are also associated with race. The objective of this study is to identify individual risk factors that are associated with the severity of **COVID-19** (i.e. hospitalizations, ICU use and death), especially among older adults, and to understand reasons that may contribute to racial differences in **COVID-19** severity. To achieve these goals, we will use the daily- updated national Veterans Affairs (VA) data, which contain rich individual-level information on veterans diagnosed with **COVID-19**. As of April 30, 2020, almost 9,000 veterans have been diagnosed with **COVID-19**, and about 500 had died, thus providing a large study cohort. This proposed study has two Specific Aims: 1) To identify individual risk factors that are associated with **COVID-19** related hospitalizations, ICU use and mortality, to understand the role of older age in **COVID-19** severity, and to build a predictive model for **COVID-19** severity by machine learning; and 2) To examine reasons for racial differences in illness severity among veterans diagnosed with **COVID-19**: whether and how such difference is related to individual factors and community characteristics, especially socio-economic status. This study is innovative because it will be the first study to examine the role of multiple risk factors in the severity of **COVID-19** by using national data with detailed individual-level information and machine learning algorithm; and it will be the first to examine the reasons, including the role of social determinants, for racial differences in **COVID-19** severity. This proposed research is significant as it will help to identify patients with the highest-risk phenotypes, thus providing insights into disease prevention and resource allocation.

Public Health Relevance Statement

Project Narrative: This proposed research aims to understand risks factors associated with the severity of **COVID-19** (i.e. hospitalization, ICU use and death) and the role of older age in the severity of **COVID-19**; and to examine reasons leading to racial differences in the severity of **COVID-19**. This proposed research is highly relevant to public health because the findings from this study will help target prevention strategies and allocation of resources to high-risk populations and help fight this novel infectious disease.











NIH Spending Category

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Project Number 3RF1AG063811-01S2	Former Number 1RF1AG063811-01	Contact PI/Project Leader CAI, SHUBING	Awardee Organization UNIVERSITY OF ROCHESTER
Communities Ensure	Data Goals	Death Rate Grant	Diabetes Mellitus Health
Diagnosis Intensive Care Units	Diagnosis Knowledge	Diagnosis Machine Learning	Diagnosis Obesity
Diagnosis Patients	Diagnosis Pharmaceutical Preparations	Diagnosis Phenotype	Diagnosis Physiological
Diagnosis Prevention strategy	Diagnosis Public Health	Diagnosis Race	Diagnosis Recording of previous events
Diagnosis Reporting	Diagnosis Research	Diagnosis Resource Allocation	Diagnosis Risk Factors
Diagnosis Read More	Diagnosis Role	Diagnosis Severities	

Details

Contact PI/ Project Leader

Name
[CAI, SHUBING](#)

Title
ASSOCIATE PROFESSOR

Contact
shubing_cai@brown.edu

Other PIs

Not Applicable

Program Official

Name
FAZIO, ELENA

Contact
elena.fazio@nih.gov

Organization

Name UNIVERSITY OF ROCHESTER	Department Type PUBLIC HEALTH & PREV MEDICINE	State Code NY
City ROCHESTER	Organization Type SCHOOL OF MEDICINE & DENTISTRY	Congressional District 25
Country UNITED STATES (US)		

Other Information

FOA PA-18-935	Administering Institutes or Centers NATIONAL INSTITUTE ON AGING	Project Start Date 15-July-2019
Study Section	DUNS Number CFDA Code 041294109 866	Project End Date 31-March-2024
Award Notice Date 09-September-2020		Budget Start Date 15-September-2020
Fiscal Year 2020		Budget End Date 31-March-2024











Project Funding Information for 2020

Total Funding \$578,879	Direct Costs \$376,597	Indirect Costs \$202,282
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Year	Funding IC	FY Total Cost b
2020	NATIONAL INSTITUTE ON AGING	

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Sub Projects

No Sub Projects information available for 3RF1AG063811-01S2

Publications

No Publications available for 3RF1AG063811-01S2

Patents

No Patents information available for 3RF1AG063811-01S2

Outcomes

The Project Outcomes shown here are displayed verbatim as submitted by the Principal Investigator (PI) for this award. Any opinions, findings, and conclusions or recommendations expressed are those of the PI and do not necessarily reflect the views of the National Institutes of Health. NIH has not endorsed the content below.

No Outcomes available for 3RF1AG063811-01S2

Clinical Studies

No Clinical Studies information available for 3RF1AG063811-01S2

News and More

Related News Releases

No news release information available for 3RF1AG063811-01S2

History

No Historical information available for 3RF1AG063811-01S2

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