Share

Back to Search Results

The External Exposome and COVID-19 Severity

Project Number
1R21ES032762-01

Contact PI/Project Leader
HU, HUI Other PIs

Awardee Organization
UNIVERSITY OF FLORIDA

Description

Abstract Text

PROJECT SUMMARY The 2019 novel coronavirus disease (**COVID**-19) is a global pandemic with severe medical and socioeconomic consequences. Young adults without any underlying health conditions can still develop severe **COVID**-19 disease, and there are racial and ethnic disparities in **COVID**-19 hospitalization and mortality rates which cannot be explained by age and underlying health conditions alone. Risk factors of severe **COVID**-19 beyond older age and underlying health conditions are large unknown. There are large overlaps between the currently known risk factors of severe **COVID**-19 and the health conditions that are affected by environmental exposures, and emerging evidence suggested that long-term environmental exposures may be important determinants of **COVID**-19 severity. Traditional environmental epidemiological studies usually examine environmental factors separately without considering “the totality of the external environment”. Such studies are not only time consuming as they examine individual exposures separately, but more importantly, cannot account for confounding by co-exposures. The external exposome is an ideal framework to identify novel exposures associated with severe **COVID**-19 as it can systematically and efficiently screen thousands of environmental exposures. In this project, we will leverage a unique real-world data (RWD) resource – OneFlorida – a large repository of linked electronic health records (EHR), claims and vital statistics data, covering more than 60% of Floridians, contributing to the national Patient-Centered Clinical Research Network (PCORnet). Building on our prior work on the external exposome, we will expand our existing external exposome database to include additional factors that may impact **COVID**-19 outcomes through a systematic analysis of literature and resources. We aim to (1) develop phenotyping algorithms for identifying a **COVID**-19 cohort and their severity and extracting associated individual-level risk factors from the OneFlorida real-world data, and (2) identify external exposome factors associated with severe **COVID**-19, examine how the external exposome contributes to racial and ethnic disparities in severe **COVID**-19, and build predictive models of severe **COVID**-19 with external exposome factors. This study will fill important knowledge gaps by providing timely information to understand how environmental exposures may impact **COVID**-19 severity that will improve identifications of high-risk **COVID**-19 patients and inform the design of future precision interventions. Our approach and initial results for Florida can (1) be readily scaled up to a multi-state study through PCORnet and (2) answer other novel questions such as the external exposome’s contribution to geographic disparities in **COVID**-19 outcomes.

Public Health Relevance Statement

PROJECT NARRATIVE Emerging evidence suggested that environmental exposures may be important determinants of COVID-19 severity. This study leverages a unique data resource – OneFlorida – a large repository of linked electronic health records (EHR), claims and vital statistics data, covering more than 60% of Floridians and builds upon our prior work on the external exposome to (1) identify novel environmental factors associated with severe COVID-19, (2) examine whether the external exposome contributes to racial and ethnic disparities in severe COVID-19, and (3) develop predictive models of high-risk patients with external exposome factors. This study will fill important knowledge gaps and provide timely information to understand how environmental exposures may impact COVID-19 severity to inform future precision interventions.

Thank you for your feedback!

NIH Spending Category

Clinical Research Coronaviruses Emerging Infectious Diseases Health Disparities Infectious Diseases Minority Health Prevention Social Determinants of Health

Project Terms

2019-nCoV Affect Age Air Pollution Asthma **COVID**-19 Cardiovascular Diseases Centers for Disease Control and Prevention (U.S.) Cessation of life Characteristics Chronic lung disease Clinical Clinical Research Consumption Data Data Sources Databases Diabetes Mellitus Diagnosis Disease Elderly Electronic Health Record Environment Environmental Exposure Environmental Risk Factor Ethnic group Exposure to Florida Future Geography Health Hospitalization Individual Joints Knowledge Laboratories Link Literature

Read More

Details

Contact PI/ Project Leader

Name
HU, HUI

Title
ASSOCIATE EPIDEMIOLOGIST

Contact
huhu@bwh.harvard.edu

Other PIs

Name
BIAN, JIANG

Program Official

Name
CUI, YUXIA

Contact
yuxia.cui@nih.gov

Organization

Name
UNIVERSITY OF FLORIDA

City
GAINESVILLE

Country
UNITED STATES (US)

Department Type
BIOSTATISTICS & OTHER MATH SCI

Organization Type
SCHOOLS OF MEDICINE

State Code
FL

Congressional District
03

Other Information

FOA
RFA-ES-19-011

Study Section
Special Emphasis Panel[ZES1 JAB-K (T6)]

Fiscal Year
2020

Award Notice Date
17-August-2020

Administering Institutes or Centers
NATIONAL INSTITUTE OF ENVIRONMENTAL HEALTH SCIENCES

DUNS Number
969663814

CFDA Code
113

Project Start Date
20-August-2020

Project End Date
31-July-2022

Budget Start Date
20-August-2020

Budget End Date
31-July-2021

Project Funding Information for 2020

Total Funding

Direct Costs

Thank you for your feedback!

$221,908	$150,000	$71,908

Year	Funding IC	
2020	NATIONAL INSTITUTE OF ENVIRONMENTAL HEALTH SCIENCES	$221,908

NIH Categorical Spending

Click here for more information on NIH Categorical Spending

Funding IC	FY Total Cost by IC	NIH Spending Category
NATIONAL INSTITUTE OF ENVIRONMENTAL HEALTH SCIENCES	$221,908	Clinical Research; Coronaviruses; Emerging Infectious Diseases; Health Disparities; Infectious Diseases; Minority Health; Prevention; Social Determinants of Health;

Sub Projects

No Sub Projects information available for 1R21ES032762-01

Publications

No Publications available for 1R21ES032762-01

Patents

No Patents information available for 1R21ES032762-01

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 1R21ES032762-01

Clinical Studies

No Clinical Studies information available for 1R21ES032762-01

Thank you for your feedback!

News and More

Related News Releases

No news release information available for 1R21ES032762-01

History

No Historical information available for 1R21ES032762-01

Similar Projects

No Similar Projects information available for 1R21ES032762-01

Thank you for your feedback!