

# Development of a risk prediction model for people with diabetes and COVID-19 in Scotland

<b>Submission date</b> 16/10/2020	<b>Recruitment status</b> No longer recruiting	<input type="checkbox"/> Prospectively registered <input checked="" type="checkbox"/> Protocol
<b>Registration date</b> 19/10/2020	<b>Overall study status</b> Completed	<input type="checkbox"/> Statistical analysis plan <input checked="" type="checkbox"/> Results
<b>Last Edited</b> 05/10/2022	<b>Condition category</b> Infections and Infestations	<input type="checkbox"/> Individual participant data

## Plain English summary of protocol

### Background and study aims

COVID-19 is a condition caused by the coronavirus (called SARS-CoV-2) that was first identified in late 2019. This virus can infect the respiratory (breathing) system. Some people do not have symptoms but can carry the virus and pass it on to others. People who have developed the condition may develop a fever and/or a continuous cough among other symptoms. This can develop into pneumonia. Pneumonia is a chest infection where the small air pockets of the lungs, called alveoli, fill with liquid and make it more difficult to breathe.

In 2020, the virus has spread to many countries around the world and neither a vaccine against the virus or specific treatment for COVID-19 has yet been developed. As of March 2020, it is advised that people minimize travel and social contact, and regularly wash their hands to reduce the spread of the virus.

Groups who are at a higher risk from infection with the virus, and therefore of developing COVID-19, include people aged over 70 years, people who have long-term health conditions (such as asthma or diabetes), people who have a weakened immune system and people who are pregnant. People in these groups, and people who might come into contact with them, can reduce this risk by following the up-to-date advice to reduce the spread of the virus.

There is very little known amount the risk factors among those with diabetes that contribute to risk of COVID-19. This study aims to understand the risks of and risk factors for COVID-19 in people with diabetes

### Who can participate?

People living with or without diabetes in Scotland with COVID-19

### What does the study involve?

Health records of people with COVID-19 will be compared to records of people with and without diabetes to find risk factors that contribute to death with COVID-19 in diabetes patients.

### What are the possible benefits and risks of participating?

None

Where is the study run from?  
Public Health Scotland (UK)

When is the study starting and how long is it expected to run for?  
April 2020 to July 2020

Who is funding the study?  
Public Health Scotland (UK)

Who is the main contact?  
Professor Helen Colhoun, [helen.colhoun@igmm.ed.ac.uk](mailto:helen.colhoun@igmm.ed.ac.uk)

## Contact information

**Type(s)**  
Scientific

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## Additional identifiers

**Protocol serial number**  
PBPP ref. 1617- 0147

## Study information

**Scientific Title**  
Risk of and risk factors for fatal or critical care unit treated COVID-19 and development of a risk prediction model in people with diabetes in Scotland: A cohort study

**Study objectives**  
Objectives:  
1. Ascertain the cumulative risk of fatal or CCU treated COVID -19 in those with diabetes and compare it to those without diabetes

2. Among those with diabetes to investigate risk factors for, and build a cross-validated predictive model of, fatal or CCU treated COVID-19

### **Ethics approval required**

Old ethics approval format

### **Ethics approval(s)**

1. Approved 06/04/2020, Public Benefit Privacy Protection Panel Scotland (no address provided; no telephone number provided; phs.pbpp@nhs.net), PBPP ref. 1617- 0147
2. Approved 01/06/2011, Scotland A Research Ethics Committee (2nd Floor Waverly Gate 2-4 Waterloo Place, Edinburgh, EH1 3EG, UK; +44 (0)131 465 5680; Manx.Neill@nhslothian.scot.nhs.uk), ref: 11/AL/0225

### **Study design**

Observational cohort

### **Primary study design**

Observational

### **Study type(s)**

Other

### **Health condition(s) or problem(s) studied**

COVID-19 (SARS-CoV-2 infection), diabetes

### **Interventions**

In the total population of Scotland (5.6 million) we will ascertain all persons who had developed fatal or critical care unit-treated COVID-19 (hereafter F/CCU-COVID-19) between 1st March and July 31st 2020 from the nationwide virology, critical care unit, hospital discharge and register of deaths databases. Among those with F/CCU-COVID-19, diabetes status will be ascertained by linkage to the national diabetes register. The cumulative incidence of F/CCU-COVID-19 in those with and without diabetes will be compared using logistic regression. Among those with diabetes, data on potential risk factors for F/CCU-COVID-19 will be obtained from diabetes register and other linked health administrative databases. Among those with diabetes we will test association of these factors with F/CCU-COVID-19 and construct a prediction model using stepwise regression and 20-fold cross-validation.

### **Intervention Type**

Not Specified

### **Primary outcome(s)**

Fatal of Critical care Unit COVID-19 defined with cases ascertained on the basis of positive rtPCR test, hospital admission and death certification and this level of severity defined using linkage to the national critical care unit database (SICSAG) and death certification data (types of information included laboratory test results, ICD10 codes for hospital discharge diagnoses, dates of entry into critical care units and cause of death on death certificates)

### **Key secondary outcome(s)**

None

### **Completion date**

31/07/2020

## Eligibility

### Key inclusion criteria

People of any age living with or without diabetes in Scotland

### Participant type(s)

All

### Healthy volunteers allowed

No

### Age group

All

### Sex

All

### Total final enrolment

5782649

### Key exclusion criteria

Does not meet inclusion criteria

### Date of first enrolment

01/03/2020

### Date of final enrolment

31/07/2020

## Locations

### Countries of recruitment

United Kingdom

Scotland

### Study participating centre

Public Health Scotland

Meridian Court

5 Cadogan Street

Glasgow

United Kingdom

G2 6QE

# Sponsor information

## Organisation

Health Protection Scotland

## ROR

<https://ror.org/04zgkpa58>

# Funder(s)

## Funder type

Government

## Funder Name

Public Health Scotland

# Results and Publications

## Individual participant data (IPD) sharing plan

The datasets generated during and/or analysed during the current study are available from the Scottish Public Benefits and Privacy Protection Committee

## IPD sharing plan summary

Available on request

## Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
<a href="#">Results article</a>		01/02/2021	25/03/2021	Yes	No
<a href="#">Protocol file</a>			05/10/2022	No	No