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Multi-centre European study of major infectious disease syndromes (MERMAIDS) – Acute respiratory infections

Submission date 21/07/2015	**Recruitment status** No longer recruiting	[X] Prospectively registered [_] Protocol
Registration date 31/07/2015	**Overall study status** Completed	[_] Statistical analysis plan [_] Results
Last Edited 06/02/2023	**Condition category** Respiratory	[_] Individual participant data [_] Record updated in last year

Plain English summary of protocol

Background and study aims

An acute respiratory infection (ARI) is a serious infection of the sinuses, throat, airways or lungs that prevents normal breathing function. Pathogens (viruses/bacteria) causing ARI are among the most likely candidates to cause the next pandemic. We need to better understand why some people become much more ill than others when they have an ARI. The elderly, people with chronic lung, heart or metabolic disease or immunocompromised (weakened immune system) patients are known to be at risk of developing severe disease. However, some respiratory infections can also cause severe disease in younger previously healthy individuals due to a combination of the virus itself and the individual's immune responses. It is likely that individual risk factors affect the body's response to ARI in different ways and this in turn can influence the severity of disease. Within broad risk groups it is currently not possible to predict which individuals are at increased risk of becoming severely ill. Consequently, there are no opportunities to tailor treatments. In people who become moderately or severely ill, there is an assumption that the body's underlying response to disease is the same and hence that everyone will benefit equally from the same treatments. Increased insight into how different individuals respond to respiratory pathogens can allow us to better anticipate the severity of disease for a particular patient. This in turn will enable us to make strategies for individualized treatment options to reduce disease severity, risk of complications and hospitalisations.

Who can participate?

People aged over 18 attending primary and secondary care with mild to severe ARI.

What does the study involve?

Blood and respiratory (lung) samples will be collected from patients. We will analyse the samples to observe individual gene activity and we will compare samples from people with different risk factors for more severe disease. This will provide a detailed insight into how the body responds to infection and provide opportunities to understand the specific contributions of different risk factors.

What are the possible benefits and risks of participating?
There will be no direct benefit to participants. The study includes serial biological sampling which is in addition to that required for medical management. The results of the tests done on these samples may not contribute to improving the participant's health. The results of this study will not be available in time to contribute to the patient's care for this episode of ARI. This is an observational study and thus it is a very low-risk study. Participants will have three blood draws, which can be associated with pain at the draw site and rarely with infection. Respiratory swabs may be uncomfortable to obtain. Discomfort and risk will be minimized by using experienced clinical staff at each site. Participation in this research study poses a minimal risk of inconvenience through attendance of two follow-up visits. The risks are even lower for secondary care participants as the research sampling will be timed to coincide with routine clinical sampling which normally occurs daily in acutely unwell patients in hospital.

Where is the study run from?
Tropical Medicine, University of Oxford (UK)

When is the study starting and how long is it expected to run for?
October 2015 to January 2021

Who is funding the study?
European Commission (Belgium)

Who is the main contact?
mermaids-ari@ndm.ox.ac.uk

Contact information

Type(s)
Public

Contact name
Dr Study Team

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Additional identifiers

EudraCT/CTIS number

IRAS number

ClinicalTrials.gov number

Secondary identifying numbers
N/A

Study information

Scientific Title
Multi-centre EuRopean study of MAjor Infectious Disease Syndromes (MERMAIDS) – Observational Study of Acute Respiratory Infections in Primary and Secondary Care

Acronym
MERMAIDS-ARI

Study objectives
In this study we will recruit people attending primary and secondary care in order to capture people with mild to severe acute respiratory infections (ARI). We will analyse samples to observe individual gene activity and we will compare samples from people with different risk factors for more severe disease. This will provide a detailed insight into how the body responds to infection and provide opportunities to understand the specific contributions of different risk factors.

Ethics approval required
Old ethics approval format

Ethics approval(s)
NRES Committee West Midlands - The Black Country, 27/08/2015, ref: 15/WM/0254

Study design
Multi-centre observational study

Primary study design
Observational

Secondary study design
Case series

Study setting(s)
Hospital

Study type(s)
Other

Participant information sheet

Health condition(s) or problem(s) studied
Acute respiratory infections

Interventions
This is an observational study. Blood and respiratory samples will be collected at baseline, day 2, date of hospital discharge (if applicable) and day 28. Samples will be analysed to determine aetiology of respiratory infection and to identify host and pathogen related determinants of severity of infection.

Intervention Type
Other

Primary outcome measure
Differentially expressed host genes (nominal ≥ 2-fold difference in expression levels) as assessed by RNA transcriptome microarray in hospitalised and primary care managed cases of ARI, stratified by pathogen* and comorbidity**.
*Influenza virus, Human Rhinovirus, Respiratory Syncytial Virus, Streptococcus pneumoniae
**No comorbidity, chronic pulmonary disease, chronic cardiovascular disease, chronic metabolic disease (diabetes)

Secondary outcome measures
In both groups:
1. Prevalence of detection of putative pathogens in respiratory tract samples
2. Proportion of cases receiving antibiotics, antivirals, antifungals and/or immunomodulators.
3. 28-day mortality

Additional in group 1 (primary care):
1. Proportion of cases requiring hospitalisation

Additional in group 2 (hospitalised patients):
1. Severity of illness at enrolment as assessed by Pneumonia Severity Index (PSI) and CURB-65
2. Proportion of cases requiring during admission: supplemental oxygen; non-invasive or invasive mechanical ventilation; extra-corporeal life support
3. Duration of invasive mechanical ventilation and extra-corporeal life support, if applicable
4. Proportion of cases requiring Intensive Care Unit (ICU)/High Care Unit (HCU) admission
5. Hospital and ICU/HCU length of stay
6. In-hospital mortality

Overall study start date
01/10/2015

Completion date
31/01/2021

Eligibility

Key inclusion criteria
Group 1 – primary care patients:
1. Age ≥ 18 years
2. Patient is self-attending to primary care (i.e. ambulatory)
3. Clinical suspicion of a new episode of acute respiratory tract infection
4. Onset of the following symptoms within the last 7 days:
4.1. Sudden onset of self-reported fever OR tympanic temperature of ≥ 38°C at presentation
AND
4.2. At least one respiratory symptom (cough, sore throat, runny or congested nose)
AND
4.3. At least one systemic symptom (headache, muscle ache, sweats or chills or tiredness)

Group 2 – hospitalised patients:
1. Age ≥ 18 years
2. Clinical suspicion of a new episode of acute respiratory tract infection
3. Patient is admitted to hospital
4. Primary reason for hospital admission is clinical suspicion of a new episode of ARI
5. Onset of the following symptoms within the last 7 days:
5.1. Sudden onset of self-reported fever OR tympanic temperature of ≥ 38°C at presentation
AND
5.2. At least one respiratory symptom (cough, sore throat, runny or congested nose)
AND
5.3. At least one systemic symptom (headache, muscle ache, sweats or chills or tiredness)

Participant type(s)
Patient

Age group
Adult

Lower age limit
18 Years

Sex
Both

Target number of participants
2000

Key exclusion criteria
Group 1 – primary care patients:
1. Patient lacks capacity to provide informed consent
2. No informed consent is provided by patient
3. The attending primary care physician decided to send patient to the hospital for assessment and possible hospital admission
4. Patient is enrolled in an interventional clinical study

Group 2 – hospitalised patients:
1. Patient lacks capacity to provide informed consent
2. No informed consent is provided by patient
3. Patient has been transferred from another hospital
4. Patient is enrolled in an interventional clinical study

Date of first enrolment
01/10/2015

Date of final enrolment
30/04/2019

Locations

Countries of recruitment

Croatia

England

Germany

Ireland

Netherlands

Poland

Romania

Spain

United Kingdom

Study participating centre
Oxfordshire Primary Care Trust
United Kingdom
OX4 2LH

Sponsor information

Organisation
University of Oxford (UK)

Sponsor details
Joint Research Office
Block 60, Churchill Hospital
Oxford
England
United Kingdom
OX3 7LE

Sponsor type
University/education

Website
http://www.admin.ox.ac.uk/researchsupport/ctrg/

ROR
https://ror.org/052gg0110

Funder(s)

Funder type
Government

Funder Name
European Commission

Alternative Name(s)
European Union, Comisión Europea, Europäische Kommission, EU-Kommissionen, Euroopa Komisjoni, Ευρωπαϊκής Επιτροπής, Европейската комисия, Evropské komise, Commission européenne, Choimisiúin Eorpaigh, Europskoj komisiji, Commissione europea, La Commissione europea, Eiropas Komisiju, Europos Komisijos, Európai Bizottságról, Europese Commissie, Komisja Europejska, Comissão Europeia, Comisia Europeană, Európskej komisii, Evropski komisiji, Euroopan komission, Europeiska kommissionen, EC, EU

Funding Body Type
Government organisation

Funding Body Subtype
National government

Location

Results and Publications

Publication and dissemination plan
To be confirmed at a later date

Intention to publish date
31/01/2022

Individual participant data (IPD) sharing plan
Not provided at time of registration

IPD sharing plan summary
Stored in repository

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
HRA research summary			28/06/2023	No	No