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Evaluating a new test of the immune system to better understand recovery from a severe reaction to an infection (sepsis)

Submission date
23/09/2020

Recruitment status
No longer recruiting

Registration date
24/09/2020

Overall study status
Completed

Last Edited
01/05/2025

Condition category
Infections and Infestations

[X] Prospectively registered
[_] Protocol
[_] Statistical analysis plan
[X] Results
[_] Individual participant data

Plain English summary of protocol

Background and study aims
Sepsis is when severe infection leads to organ failure. It is a major global healthcare problem. Recent studies suggest as many as 49 million cases of sepsis worldwide each year leading to 11 million deaths. As sepsis care has improved more patients now recover from the early phases of sepsis but repeat occurrences are a major problem. Patients with sepsis often experience weakening of their immune systems known as immune suppression. This is now recognised as an important feature in a large proportion of patients who have sepsis and it leads to poor outcomes for these patients. At present there is no clinical test to assess the immune function of patients who have sepsis.
The IMPACCT study will investigate whether it is possible to use a new diagnostic test to identify and classify patients with sepsis who are at higher risk of poor outcomes and developing new infections. It is an observational study with no intervention or novel treatment introduced and no change to patients' standard care and treatment when taking part.

Who can participate?
Participants will be adult patients in intensive care who are being, or have been, treated for suspected sepsis and are receiving, or have received, organ support. The patients will have been admitted to an ICU for over 48hours and less than 120 hours (5 days) and are expected to require ongoing care in an environment capable of providing organ support for at least one more calendar day.

What does the study involve?
The study research team will collect data on the patient's medical condition throughout their treatment in hospital and will conduct a clinical diagnostic test on participants' blood samples. Blood samples will be taken from patients at 3 time points during the study and will be taken from indwelling lines where present. The test is a rapid RNA-based diagnostic test that produces an Immune Profiling Panel (IPP). Test results will not be shared with the research team or influence patients' care. Patients will be contacted 90 days after inclusion to complete a diary regarding their wellbeing and any new infections. Over a 2-year period, the study will recruit 600 patients in hospitals in the UK, France, and Sweden.

What are the possible benefits and risks of participating?
As an observational study with no treatment or intervention introduced to patients, there would not be a direct benefit to patients from this study but the results may help future patients and assist doctors in the future in treating people more effectively and successfully. There is no monetary benefit as participants will not be paid to participate.
The physical risks of taking part would be expected to be minimal. Taking blood samples can cause mild discomfort and bruising if taken from a vein. These procedures will only be carried out by an experienced health professional under sterile conditions to minimise these risks.
The study team have considered, and sought to mitigate, risks to patients' data and samples. All data and samples will be collected, handled, processed and stored by the study team in a correct and respectful manner to the highest standards of confidentiality and security. The study will comply with all relevant UK and EU regulations regarding data protection and participants' biological samples. Only de-identified or pseudonymised information would be shared between study partners.
In confirming capacity to consent and communicating with participants, study team members have extensive experience of assessing capacity and caring for patients in intensive care settings. The team is adept in providing information, answering questions from participants and their consultees, and considering the wishes and intentions of patients. The team will all have received training in IMPACCT processes and procedures and would work in accordance with the principles of Good Clinical Practice (GCP).

Where is the study run from?
The IMPACCT study is being organised and sponsored by Imperial College London in the UK and the Chief Investigator is Professor Anthony Gordon. Participants will be recruited from participating sites in the UK, France, and Sweden.

When is the study starting and how long is it expected to run for?
January 2020 to April 2024

Who is funding the study?
1. European Institute of Innovation & Technology (EIT) Health
2. bioMérieux (France)
3. National Institute for Health Research (UK)

Who is the main contact?
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Contact information

Type(s)
Public

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Scientific

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Additional identifiers

Clinical Trials Information System (CTIS)
Nil known

Integrated Research Application System (IRAS)
286417

ClinicalTrials.gov (NCT)
Nil known

Protocol serial number
20SM6207, IRAS 286417

Study information

Scientific Title
IMPACCT: IMmune Profiling of ICU pAtients to address Chronic Critical illness and ensure healThy ageing

Acronym
IMPACCT

Study objectives
There is a subgroup of patients who have sepsis, being treated in ICU, who have an immunosuppressed subphenotype that results in high HAI and mortality rates. Rapid identification of these patients using a clinical diagnostic test would allow more targeted treatment as part of a personalised medicine approach.

Ethics approval required
Old ethics approval format

Ethics approval(s)
Approved 07/12/2020, London - South East Research Ethics Committee (Health Research Authority, Skipton House, 80 London Road, London, SE1 6LH, UK; +44 (0)207 104 8085; londonsoutheast.rec@hra.nhs.uk), ref: 20/LO/1163

Study design
Multi-centre prospective observational study

Primary study design
Observational

Study type(s)
Diagnostic

Health condition(s) or problem(s) studied
Adult patients with suspected sepsis receiving organ support in an intensive care unit

Interventions
The IMPACCT study will investigate whether it is possible to identify and stratify patients with sepsis who are at higher risk of poor outcomes and developing new infections. It is an observational study with no intervention or novel treatment introduced and no change to patients' standard care and treatment when taking part.

Participants will be adult patients in intensive care who are being, or have been, treated for suspected sepsis. The study research team will collect data on the patient's medical condition throughout their treatment in hospital and will conduct a clinical diagnostic test on participants' blood samples. Blood samples will be taken from patients at 3 timepoints during the study and will be taken from indwelling lines where present. The test is a rapid RNA-based diagnostic test that produces an Immune Profiling Panel (IPP). Test results will not be shared with the research team or influence patients' care. Patients will be contacted 90 days after inclusion to complete a diary regarding their wellbeing and any new infections. Over a 2-year period the study will recruit 600 patients in hospitals in the UK, France, and Sweden.

Intervention Type
Other

Primary outcome(s)
90-day all-cause mortality and new hospital acquired infection rates up to 90 days or hospital discharge (whichever comes first) will be assessed through use of medical records and contacting participants to collect their responses.

(New infections will be defined as:
1. Any new infection requiring treatment more than 48 hours after stopping treatment for a previous infection AND
2. Fulfilling a definition based on the criteria used in the REAnimation Low Immune Status Markers (REALISM) study (NCT02638779) and the European Centre for Disease Prevention and Control case definition for a hospital acquired infection from the suspected anatomical site, as determined by the senior treating clinician.)

Key secondary outcome(s))
Assessed through use of medical records and contacting participants to collect their responses:
1. 28-day all-cause mortality
2. ICU and hospital mortality rates
3. Duration of ICU stay, measured as ICU free days / number of days alive and outside of ICU, up to 28 days
4. Duration of organ support, measured as organ support free days / number of days alive without each organ support and also any organ support, up to 28 days in ICU. Organ support includes any of: extracorporeal gas exchange, invasive or non-invasive mechanical ventilation (including continuous positive pressure ventilation or non-invasive ventilation), high flow oxygen therapy (any flow ≥30L/min), vasopressor or inotrope support, any form of renal replacement therapy
5. Duration of Hospital stay, measured as hospital free days / number of days alive and outside of hospital, up to 90 days
6. Hospital readmission(s) as an inpatient up to day 90. We will also collect if any readmission was related to a new infection
7. Health-related quality of life at 90 days, measured using the EQ5D-5L questionnaire
8. New infections after hospital discharge up to day 90, collected via patient diaries

Completion date
30/04/2024

Eligibility

Key inclusion criteria
1. Age ≥18 years
2. Admitted to an ICU for ≥48 hours and <120 hours (5 days)
3. Being (or has been) treated for suspected sepsis during this ICU admission:
3.1. Intravenous antibiotics to treat a known / suspected infection
3.2. Acute organ dysfunction
4. Has received organ support (any of the following):
4.1. Respiratory – any form of mechanical ventilation, non-invasive ventilation or high-flow nasal oxygen for ≥24h, OR
4.2. Cardiovascular – any intravenous continuous infusion of vasopressor or inotrope for ≥24h, OR
4.3. Renal – any form of continuous renal replacement therapy for ≥24 or acute and new intermittent haemodialysis with at least two episodes
5. Is expected to require ongoing care in an environment capable of providing organ support (eg and ICU or HDU) for at least one more calendar day

Participant type(s)
Patient

Healthy volunteers allowed
No

Age group
Adult

Lower age limit
18 years

Sex
All

Total final enrolment
357

Key exclusion criteria
1. Severe neutropenia (neutrophil count <0.5 x 10(9)/L) due to an underlying disease / treatment (but not sepsis)
2. Corticosteroids (intravenously or oral) of more than an equivalent dose of prednisolone 0.1mg /kg for at least 7 days within the past 30 days (not as part of sepsis management)
3. Use of therapeutic antibodies during this admission
4. Onco-haematological disease (eg, lymphoma, leukaemia, myeloma) treated within the 5 years before inclusion
5. Allogenic hematopoietic stem cell transplantation (regardless of timing)
6. Chemotherapy or immunotherapy within the last 6 months prior to inclusion date
7. Innate immune deficiency (eg, severe combined immunodeficiency)
8. Acquired immune deficiency (eg HIV or AIDS, any stage)
9. Receiving any other immunosuppressive therapy (eg anti-TNF therapies)
10. Patients with a 'withdrawal of life-sustaining treatment' decision, at time of inclusion
11. Moribund and not expected to survive 24 hours
12. Participation in an interventional study of immunomodulating therapy or any other unlicensed therapy
13. Pregnant or breastfeeding women
14. No social security insurance (France only)
15. Patients with restricted liberty, prisoners or under legal protection
16. Previously enrolled in IMPACCT

Date of first enrolment
29/03/2021

Date of final enrolment
30/11/2022

Locations

Countries of recruitment
United Kingdom

England

France

Sweden

Study participating centre
St Mary's Hospital
Imperial College Healthcare NHS Trust
South Wharf Road
London
United Kingdom
W2 1BL

Study participating centre
University College London Hospitals NHS Foundation Trust
250 Euston Road
London
United Kingdom
NW1 2PG

Study participating centre
John Radcliffe Hospital
Oxford University Hospitals NHS Foundation Trust
Headley Way
Headington
Oxford
United Kingdom
OX3 9DU

Study participating centre
Hôpital Cochin
Assistance Publique – Hôpitaux de Paris
27 rue du Faubourg Saint-Jacques
Paris
France
75014

Study participating centre
Karolinska Institutet
173 Karolinska Universitetssjukhuset
Huddinge
Stockholm

Sweden
14186

Sponsor information

Organisation
Imperial College London

Funder(s)

Funder type
Government

Funder Name
EIT Health

Alternative Name(s)

Funding Body Type
Government organisation

Funding Body Subtype
National government

Location

Funder Name
bioMérieux

Funder Name
National Institute for Health Research

Alternative Name(s)
National Institute for Health Research, NIHR Research, NIHRresearch, NIHR - National Institute for Health Research, NIHR (The National Institute for Health and Care Research), NIHR

Funding Body Type
Government organisation

Funding Body Subtype
National government

Location
United Kingdom

Results and Publications

Individual participant data (IPD) sharing plan
Requests for access to the data from this study will be considered by the IMPACCT investigators, on submission of a request to the Chief Investigator, including a scientific rationale. The investigators will aim to share anonymous data from this study with important and valid scientific studies, subject to any ethics, regulatory and contractual requirements and subject to the signing of a data sharing agreement.

IPD sharing plan summary
Available on request

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article		03/03/2025	01/05/2025	Yes	No
Study website	Study website	11/11/2025	11/11/2025	No	Yes