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Can better tests improve the right use of antibiotics in respiratory infections?

Submission date
22/05/2019

Recruitment status
No longer recruiting

Registration date
18/07/2019

Overall study status
Completed

Last Edited
18/07/2019

Condition category
Respiratory

[X] Prospectively registered
[ ] Protocol
[ ] Statistical analysis plan
[ ] Results
[ ] Individual participant data
[ ] Record updated in last year

Plain English summary of protocol

Background and study aims
There is an international drive to simplify antibiotic treatments to stop side effects from antibiotics and to stop the development of superbugs.
Pneumonia is an infection of the lung affecting 5 to 11 people out of 1,000 in the population. About 9% of patients admitted to hospital with pneumonia will die. Prompt and appropriate antibiotic treatment is needed to cure the pneumonia. International guidelines suggest using a combination antibiotic treatment for 7 to 10 days for patients admitted with pneumonia. However it is not completely known what antibiotics to prescribe or for how long antibiotic treatment is needed.
By the time patients are admitted to hospital with pneumonia many of them will already have had antibiotic therapy by their GPs. This can limit the results from standard pneumonia investigations. Tests currently used in the NHS can identify the cause of pneumonia in only 39% of patients. In addition, traditional methods to investigate pneumonia in the NHS take too long to give an answer. In many cases clinicians do not have enough information to confidently shorten or reduce antibiotic treatments.
We have developed a molecular test that identifies the cause of pneumonia in 87% of patients. Our test still works even if the patient has already started antibiotic treatment. Our test is very quick and we can have a result within a few hours. We call our test a "MICAP" molecular investigation of community acquired pneumonia.
The main aim of the study is to determine if the PIB CAP test can reduce the amount of antibiotics prescribed without any undesirable clinical side effects. We will count up how much antibiotic treatment each participant had, including any additional antibiotics that might have been needed after initial treatment.

Who can participate?
Any patient at the hospital over 18 years of age who has three or more of the symptoms of lower respiratory tract infection can participate.

What does the study involve?
We will invite patients who have been admitted to hospital with lower respiratory tract infection to enrol onto our study. We will use a computer program to randomly decide which test participants will have. Half the participants will have the usual NHS tests and will receive the

normal treatment for pneumonia. The other half of participants will have our molecular test and the results will customise their antibiotic treatment. We estimate that we will need to enrol 600 participants to the study in order to detect any differences between the group receiving standard NHS treatment and the group receiving customised antibiotic treatment. After 30 days each participant will have medical examinations and tests to see if it is safe to treat pneumonia with less antibiotics. We will also calculate if personalised antibiotic therapy is cost-effective for the NHS compared to the current treatment.

What are the possible benefits and risks of participating?
Benefits: guide to the best treatment for infection and limit the antibiotics to only those that are required for treatment
Risk: antibiotics that are not specific for treatment may have a benefit and these would not be provided to those taking part in the study

Where is the study run from?
Royal Infirmary of Edinburgh, UK.

When is the study starting and how long is it expected to run for?
June 2019 to June 2021

Who is funding the study?
Chief Scientist Office, Division Scotland

Who is the main contact?
Dr Kate Templeton,
kate.templeton@ed.ac.uk

Contact information

Type(s)
Public

Contact name
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Additional identifiers

Protocol serial number

246355

Study information

Scientific Title
Measuring the impact of improved diagnostics on antimicrobial stewardship in respiratory tract infection (MIDAS Study)

Acronym
MIDAS

Study objectives
The MICAP assay to diagnose the aetiological agents in CAP and LRTI will have a result within 36 hours of hospital admission and give personalised targeted antibiotic treatment safely reducing the antibiotic burden or giving the appropriate antibiotic based on the pathogen identified.

Ethics approval required
Old ethics approval format

Ethics approval(s)
Approved 24/08/2018 South East Scotland REC 1 (NHS Lothian, Waverley Gate, 2 - 4 Waterloo Place, Edinburgh, EH1 3EG; 0131 465 5473; Sandra.Wyllie@nhslothian.scot.nhs.uk), ref: 18/SS/0093, IRAS ID 246355

Primary study design
Interventional

Study design
Single centre randomised controlled trial

Study type(s)
Diagnostic

Health condition(s) or problem(s) studied
Pneumonia, Lower respiratory tract infection

Interventions
Study arm (intervention arm) – patient sputum sample will be tested by rapid pneumonia assay (MICAP) and then have treatment guided in response to results. The treatment guidance is as per standard treatment based on NHS Lothian guidelines (available at https://www.ljf.scot.nhs.uk/LothianJointFormularies/Adult/5.0/(b)/Pages/default.aspx)

The control arm – receive standard microbiology investigations and treatment in accordance with NHS Lothian guidance.

Intervention Type
Device

Phase
Not Applicable

Primary outcome(s)
To explore whether participants admitted with LRTI can safely receive personalised antibiotic therapy within 12 hours of consent for this test on existing sputum sample assessed by review of patient notes.

Key secondary outcome(s)
1. CAP resolution at days 7 and 30 (Y/N)
2. Major adverse events (Y/N) and number. Major adverse events = complicated parapneumonic effusion, empyema, lung abscess, vascular event (acute coronary syndrome or cerebrovascular accident) or antibiotic-associated C. difficile, need for inotropic support, non-invasive or invasive ventilation or another major adverse event reported by the clinician and confirmed by the adjudication committee
3. Readmissions to hospital within 30 days due to LRTI
4. Death (at 30 days and time to death)
5. Narrowing spectrum of antibiotics assessed by drug chart for antibiotics given daily from date of consent
6. Macrolide DDD assessed by drug chart for antibiotics given daily from date of consent
7. Alteration or addition of antibiotic therapy assessed by drug chart for antibiotics given daily from date of consent
8. Length of hospital stay assessed by date of admission to date of discharge. Recovered for hospital records
9. Antibiotic side effects measured from date of consent assessed by notes of side effects attributed to antibiotics in clinical notes
10. Antibiotic costs assessed by costs from Pharmacy unit of current drug costs for the course given
11. Patient symptoms assessed using a pneumonia specific questionnaire
12. Antibiotic resistance in bacteria isolated assessed by MICs of bacteria isolated, resistance markers via molecular methods for bacteria detected by PCR
13. Assess the optimum specimen(s) for assessment of LRTI for bacteria, atypical bacteria and Viruses assessed by comparison of PCR results with sputum to throat swab where they exist
14. Cost per Quality-Adjusted Life Year at 30 days
15. Cost per DDD of antibiotics at 30 days

Completion date
01/06/2021

Eligibility

Key inclusion criteria
1. Aged 18 and over
2. Hospitalised
3. Lower respiratory tract specimen taken for routine microbiology within 48 hours of admission and - 3 or more of following signs or symptoms of respiratory tract infection:
-new or worsening cough
-new or worsening expectoration of sputum
-haemoptysis
-new or worsening dyspnea
-pleuritic chest pain

-fever
-headache
-abnormalities on chest auscultation or percussion

Participant type(s)
Patient

Healthy volunteers allowed
No

Age group
Adult

Lower age limit
18 Years

Sex
Not Specified

Key exclusion criteria
1. Hospitalisation for more than 48 hours
2. No capacity to consent
3. Active malignancy
4. Immunodeficiency - defined as being on long term (28 days) oral prednisolone 10mg or more per day or other long term disease modifying drug
5. Solid organ transplant
6. All forms of pulmonary fibrosis including usual interstitial pneumonia, asbestosis, non-specific interstitial pneumonia, hypersensitivity pneumonitis, active sarcoidosis
7. Palliative treatment only
8. Mechanical ventilation
9. End of life care
10. Previously randomised into this trial
11. Participation in another CTIMP or CIMD interventional study

Date of first enrolment
22/07/2019

Date of final enrolment
31/01/2021

Locations

Countries of recruitment
United Kingdom

Scotland

Study participating centre

Royal Infirmary of Edinburgh
51 Little France Crescent
Edinburgh
United Kingdom
EH16 4SA

Sponsor information

Organisation
NHS Lothian

ROR
https://ror.org/03q82t418

Funder(s)

Funder type
Government

Funder Name
Chief Scientist Office

Alternative Name(s)
CSO

Funding Body Type
Government organisation

Funding Body Subtype
Local government

Location
United Kingdom

Results and Publications

Individual participant data (IPD) sharing plan
The datasets generated during and/or analysed during the current study will be stored in a publically available repository (http://www.edinburghlabmed.co.uk/ClinicalResearch/Pages/default.aspx).

IPD sharing plan summary

Stored in repository

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
HRA research summary			26/07/2023	No	No