ISRCTN13185152 https://doi.org/10.1186/ISRCTN13185152

Is it practical to perform a study to manage antibiotic delivery in febrile neutropenia for children and young people undergoing treatment with anti-cancer drugs with the routine serial use of PCT measurements?

Submission date
01/07/2020

Recruitment status
No longer recruiting

Registration date
02/07/2020

Overall study status
Completed

Last Edited
10/11/2023

Condition category
Cancer

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

Plain English summary of protocol

Background and study aims
A blood test called procalcitonin (PCT) can help to show who has a severe infection. Researchers now want to show that it's safe to use this test to shorten the amount of time children spend on antibiotics. Ideally they need to undertake a very large 'supertanker' of a study, with hundreds of children, half getting the PCT-test management and half not getting it, to test if this really makes a difference. In order to do this though, they need to firstly check that it is possible – that the patients, families and doctors will be prepared to take part in such a study. This is what this study is for; a pilot study, to make sure that the big 'supertanker' is feasible. This pilot study will work with 10-20 families who agree to have their FN managed this way. It will see if it is possible to do the blood tests quickly, act on the results, and send children home. The researchers will discuss with doctors, nurses, ANP (advanced nurse practitioners) and the families to hear about and understand their views on this way of managing infections. They will also look to see what proportion of people who might have been able to take part in the study agreed to do so. These findings will be used to work out whether the supertanker study is possible and how to do it well.

Who can participate?
Children aged birth to 18 years with cancer or cancer-like conditions who are currently having systemic anticancer treatment and at risk of developing febrile neutropenia, and under treatment in the Leeds Children's Hospital Paediatric Haematology and Oncology Department

What does the study involve?
When a child is admitted with febrile neutropenia they will have an extra blood sample taken when routine blood samples are taken from their central line. The extra blood will be taken when they come into the ward (day 1), and of each subsequent day of the admission while they are being treated for febrile neutropenia. The extra amount of blood taken each time will be about 5 ml (one teaspoon). For children where a blood test is not routinely planned on day 2 the

researchers would still need to take a blood sample on day 2 for the study. Every time the child is admitted with febrile neutropenia the researchers will want to take the same set of samples until the study ends. The maximum number of samples taken per episode will be seven. The blood samples will be tested and used to measure procalcitonin; if these levels are low or fall dramatically, the clinical team will discuss stopping antibiotic therapy, even if the child's temperature has not been low for more than 48 hours. Families will also have the option to participate in an interview over the phone or in person. This will involve answering questions about their and their child's experiences; the child may also wish to take part. This should not take any longer about 30 minutes. The interview will be recorded using a secure audio device, and parts of the interview typed into an anonymized document. Once the study has been completed the audio recording will be deleted.

What are the possible benefits and risks of participating?
Where possible, extra blood samples will be taken at the same time as routine blood sampling. For some children, an extra sample of blood may need to be taken during the admission from their central line when routine bloods were not. Reducing the amount of antibiotic used for an episode of FN might mean participants will need to be re-admitted if an infection recurs. This study will add to the information already available about the use of inflammatory biomarkers, and how they may be safely used to reduce antibiotic use as duration of stay in hospital.

Where is the study run from?
Leeds Children's Hospital (UK)

When is the study starting and how long is it expected to run for?
January 2020 to April 2021

Who is funding the study?
Candlelighters (UK)

Who is the main contact?
Dr Bob Phillips
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Contact information

Type(s)
Scientific

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Additional identifiers

Clinical Trials Information System (CTIS)
Nil known

Integrated Research Application System (IRAS)
279915

ClinicalTrials.gov (NCT)
Nil known

Protocol serial number
IRAS 279915

Study information

Scientific Title
Procalcitonin-guided antibiotic therapy for febrile neutropenia in children and young people with cancer. A single-arm pilot study

Acronym
PAnTHer-cub

Study objectives
The hypothesis is: serial procalcitonin will indicate more rapidly than fever which children and young people do not have a serious bacterial infection and in whom their antibiotics can be stopped, and that parents and clinical teams will be happy to undertake such a study to see (in a larger trial) if it is clinically and cost-effective.

Ethics approval required
Old ethics approval format

Ethics approval(s)
Approved 28/08/2020, West Midlands - Black Country REC (The Old Chapel, Royal Standard Place, Nottingham, NG1 6FS, UK; +44 (0)207 104 8284; blackcountry.rec@hra.nhs.uk), ref: 20/WM/0205

Study design
Single-arm unblinded study

Primary study design
Interventional

Study type(s)
Treatment

Health condition(s) or problem(s) studied
Febrile neutropenia in children and young people undergoing treatment for cancer

Interventions
Single-arm study: procalcitonin-guided management of antibiotic duration; to consider discontinuing empiric antibiotics if repeat PCT measurements are <80% of peak or <2, whichever is the higher value.

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Follow-up: 7 days after stopping antibiotics.

Intervention Type
Other

Primary outcome(s)
Recruitment rate recorded as the number of eligible participants who consent to participate in the study over 6 months

Key secondary outcome(s))
1. Discontinuation adherence: proportion of episodes where antibiotics stopped according to PCT-guided recommendation over 6 months
2. Safety: number potentially infection-related admissions to critical care after discontinuation of antibiotics over 6 months
3. Recruitment strategy: proportion of potentially eligible patients who were approached to consent over 6 months
4. Attrition: proportion of enrolled patients who then discontinued or declined intervention over 6 months
5. Data quality: proportion of missing data on primary outcome measures over 6 months
6. Impact on PCT on clinical decision making and reasons for adherence and non-adherence (qualitative data)
7. Patient, parent and clinician attitudes to study (qualitative data) including the outcomes important to CYP/families

Completion date
11/04/2021

Eligibility

Key inclusion criteria
Children aged birth to 18 years with cancer or cancer-like conditions* who are currently having systemic anticancer treatment and at risk of developing febrile neutropenia

Participant type(s)
Patient

Healthy volunteers allowed
No

Age group
Mixed

Sex
All

Total final enrolment
28

Key exclusion criteria
Lack of informed consent

Date of first enrolment
01/10/2020

Date of final enrolment
01/03/2021

Locations

Countries of recruitment
United Kingdom

England

Study participating centre
Leeds Children's Hospital
Great George Street
Leeds
United Kingdom
LS1 9TX

Sponsor information

Organisation
Leeds Teaching Hospitals NHS Trust

ROR
https://ror.org/00v4dac24

Funder(s)

Funder type
Charity

Funder Name
Candlelighters

Results and Publications

Individual participant data (IPD) sharing plan
The datasets generated during and/or analysed during the current study are/will be available upon request from Dr Bob Phillips (bob.phillips@york.ac.uk). IPD will be available from the key infectious outcomes (documented infection, duration of antibiotic therapy) and key presentation details (max temp, blood count, global assessment of illness severity) and non-identifiable patient data (age in years, broad diagnostic grouping). Raw qualitative data will not be available because of the impracticality of de-identification. Specific consent for such sharing will be requested. Such requests will be considered by the trial management team only after the primary study has been published.

IPD sharing plan summary

Available on request

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article		16/03/2022	10/11/2023	Yes	No
Basic results		10/11/2021	10/11/2021	No	No
HRA research summary			28/06/2023	No	No
Protocol file	version 1.2		11/08/2022	No	No