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Ward-based goal-directed fluid therapy (GDFT) in acute pancreatitis

Submission date
26/03/2018

Recruitment status
No longer recruiting

Registration date
09/04/2018

Overall study status
Completed

Last Edited
10/05/2024

Condition category
Digestive System

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

Plain English summary of protocol

Background and study aims
Acute pancreatitis (inflammation of pancreas) occurs in 18,000 people in the UK every year, and around 6 out of 100 people die from it. There is no effective drug treatment for acute pancreatitis. The main treatment is to replace the salts and fluids which are lost from the leaky blood vessels by giving fluids by a drip. Providing the right amount of fluid allows enough oxygen to be carried to the vital organs in the body so that they can work as normal and the patient can get better. Normally, fluid is given based on the pulse rate, blood pressure, and the amount of urine produced by the kidneys (standard care). In goal directed fluid therapy (GDFT), the amount of fluid required is worked out using a machine which calculates the amount of blood being pumped by the heart and the amount of oxygen in the blood. Although this is usually possible only in intensive care unit, the availability of small portable machines allows this to be done on the ward, although special training is required to perform this. This study is the first to use a GDFT portable machine in the surgical ward. The aim is to find out whether it is possible and safe to use GDFT on normal wards to treat acute pancreatitis. It will also help to design a larger study later on to show the effectiveness and costs of GDFT, which will determine whether GDFT in acute pancreatitis provides value for money.

Who can participate?
Patients with acute pancreatitis

What does the study involve?
Participants are randomly allocated to be treated with either GDFT or standard treatment for the first 48 hours of the hospital stay. After 48 hours standard fluid treatment is provided based on the usual measures. All participants are followed up for 3 months.

What are the possible benefits and risks of participating?
In patients who undergo operations, GDFT given in the intensive care unit has been shown to decrease complications. If the ward-based GDFT provides similar benefits, participants will recover better and quicker than if they received standard treatment. No side effects are expected, but there is a possibility of the heart not pumping enough blood to the organs (heart failure) and fluid accumulation in the lungs if participants receive too much fluid as guided by the GDFT machine. They will be monitored closely to identify early signs of heart failure or fluid

accumulation in the lungs. If these early signs are noticed, GDFT will stop and participants will be given appropriate treatment to improve heart function and reduce fluid accumulation in the lungs.

Where is the study run from?
Royal Free Hospital NHS Trust (UK)

When is the study starting and how long is it expected to run for?
July 2017 to March 2020

Who is funding the study?
National Institute for Health Research (NIHR) (UK)

Who is the main contact?
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Contact information

Type(s)
Public

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Additional identifiers

EudraCT/CTIS number

IRAS number

ClinicalTrials.gov number

Secondary identifying numbers
35347

Study information

Scientific Title
Role of ward-based goal-directed fluid therapy (GDFT) in acute pancreatitis: a feasibility randomised controlled trial

Acronym
GAP

Study objectives
Acute pancreatitis, inflammation of pancreas, occurs in18,000 people in the UK every year; around 6 out of 100 people die from it. There is no effective drug treatment for acute pancreatitis. The main treatment is to replace the salts and fluids which are lost from the leaky blood vessels by giving fluids by a drip. Providing the right amount of fluid allows enough oxygen to be carried to the vital organs in the body so that they can work as normal and the patient can get better. Normally, we give fluid based on the pulse rate, blood pressure, and the amount of urine produced by the kidneys. In goal directed fluid therapy (GDFT), the amount of fluid required is worked out using a machine which calculates the amount of blood being pumped by the heart and the amount of oxygen in the blood. Although this is usually possible only in intensive care unit, the availability of small portable machines allows this to be done on the ward, although special training is required to perform this. This study at the Royal Free London and Royal London Hospitals will be the first trial to use GDFT portable machine in the surgical ward. This study will find out whether it is possible and safe to use GDFT on normal wards to treat acute pancreatitis. It will also help to design a larger trial later on to show the effectiveness and costs of GDFT, which will determine whether GDFT in acute pancreatitis provides value for money.

Hypothesis: Ward-based management of intravenous fluid requirements using a non-invasive cardiac output monitor according to a GDFT protocol in patients with acute pancreatitis will be both feasible and safe. In addition, outcomes can be improved in this patient group through the use of GDFT, however, the feasibility of this approach must be thoroughly explored prior to a definitive large-scale trial.

Ethics approval required
Old ethics approval format

Ethics approval(s)
Health Research Authority, London - Central Research Ethics Committee, 10/08/2017, IRAS Number: 221872, REC ref: 17/LO/1235

Study design
Randomised; Interventional; Design type: Treatment, Prevention, Process of Care, Device, Management of Care, Active Monitoring

Primary study design
Interventional

Secondary study design
Randomised controlled trial

Study setting(s)
Hospital

Study type(s)
Prevention

Participant information sheet
Not available in web format, please use the contact details to request a patient information sheet

Health condition(s) or problem(s) studied
Acute pancreatitis

Interventions
Patients admitted with acute pancreatitis will be randomised using sealed envelope (www.sealedenvelope.com) to one of the following groups for the first 48 hours of the hospital stay:

Standard care:
The amount and rate of fluid therapy (balanced electrolyte solution) will be based on the blood pressure, heart rate and urine output as per clinician choice.

Ward based GDFT:
GDFT will be carried out for 48 hours after admission. It can take up to 48 hours for the severity of pancreatitis to manifest. GDFT will be based on a standard algorithm which uses the stroke volume (SV) derived from non-invasive cardiac output monitoring using the Cheetah NICOM. The fluid administration will be as follows: Maintenance fluid should be administered at 1.5 ml/kg/hr as a balance crystalloid solution. On admission SV is recorded and an initial bolus of 250ml of IV fluid (balanced electrolyte solution) is given over 5 to 10 minutes. If there is a sustained rise in stroke volume for 15 minutes or more, this indicates fluid responsiveness and a repeat 250ml bolus will be given. If there is a rise in SV of more than 10%, the patient is deemed to be fluid responsive and the process of administering a fluid bolus repeated. If there is not a rise in SV of 10% or more then the patient is deemed fluid unresponsive and no further fluid bolus is administered. SV monitoring continues four hourly and if it decreases by more than 10% a further fluid bolus is administered as above.

Total duration of follow-up is 3 months.

Intervention Type
Device

Phase
Not Applicable

Drug/device/biological/vaccine name(s)
Not provided at time of registration

Primary outcome measure
Feasibility assessed at the end of the study period by the following criteria:
1. A consent rate of at least 30% is achieved
2. The ability to recruit 50 patients to the study at the two sites over 17 months
3. GDFT can be successfully performed within 6 hours of diagnosis of acute pancreatitis and can be continued until at least 48 hours after admission in a minimum of 80% of participants

randomised to GDFT
4. The complication rate in the intervention group is not more than 10% higher than that of the control group at 90 days

Secondary outcome measures
A number of outcome measures will also be collected in order to assess safety and determine the optimum primary outcome and for a subsequent larger randomised controlled trial in which both clinical and cost effectiveness shall be assessed:
1. Mortality, recorded up to the end of the 3 month follow-up period
2. Health-related quality of life (HRQoL), assessed by EQ-5D-5L questionnaire at admission (estimated from information prior to onset of acute pancreatitis), 7 days, 30 days and 90 days following the attack of pancreatitis
3. Outcomes including treatment-related adverse events and serious adverse events as well as proportion of people with severe acute pancreatitis, necrotising pancreatitis, infected pancreatic necrosis, requiring intensive therapy unit (ITU) stay, requiring renal replacement therapy, requiring ventilation, surgical interventions for complications related to pancreatitis, positive blood cultures, duration of ventilation, length of ITU and hospital stay, time to return to pre-pancreatitis activities, number of work days lost (in those who work), and costs (NHS and PSS (personal social services) perspective, collected until discharge and at 30 and 90 days follow-up
4. Routine blood tests including inflammatory markers (C-reactive protein, WCC), liver function tests, clotting, renal function and arterial blood gases, recorded daily for up to 7 days after acute onset of pancreatitis and twice weekly until discharge (if longer admission than 7 days)
5. Serum samples collected by venesection for markers of endothelial injury, collected at the start of intervention (t=0), 6, 12, 24 and 48 hours
6. Microcirculatory changes assessed using sublingual videomicroscopy (Cytocam-IDF) at baseline and post-intervention (48 hours)

Overall study start date
17/07/2017

Completion date
08/03/2020

Eligibility

Key inclusion criteria
Acute pancreatitis will be confirmed by international consensus criteria for diagnosis of acute pancreatitis i.e. two of the following three features:
1. Abdominal pain consistent with acute pancreatitis (acute onset of a persistent, severe, epigastric pain often radiating to the back)
2. Serum amylase or lipase activity at least three times greater than the upper limit of normal
3. Characteristic findings of acute pancreatitis on contrast-enhanced computed tomography (CECT) and less commonly magnetic resonance imaging (MRI) or transabdominal ultrasonography

Participant type(s)
Patient

Age group
Adult

Sex

Both

Target number of participants
Planned Sample Size: 50; UK Sample Size: 50

Key exclusion criteria
1. Patients transferred for the management of complications of acute pancreatitis
2. Patients requiring immediate admission to the Intensive Therapy Unit (ITU)
3. Chronic pancreatitis in whom an acute exacerbation cannot be confirmed
4. Current or past cardiac failure
5. Unable to provide fully informed consent

Date of first enrolment
08/01/2018

Date of final enrolment
08/07/2019

Locations

Countries of recruitment
England

United Kingdom

Study participating centre
Royal Free Hospital NHS Trust
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Sponsor information

Organisation
Royal Free London NHS Foundation Trust

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Sponsor type
Hospital/treatment centre

ROR
https://ror.org/04rtdp853

Funder(s)

Funder type
Government

Funder Name
NIHR Central Commissioning Facility (CCF); Grant Codes: PB-PG-0815-20002

Results and Publications

Publication and dissemination plan
The protocol for this study is in preparation for publication and will be provided once published. Publication of the results in a high impact peer-reviewed journal.

Intention to publish date
10/10/2020

Individual participant data (IPD) sharing plan
Participant level data is collected and stored on a secure live database via RedCap system on UCL School of Life and Medical Sciences (SLMS) secure servers and is available to monitoring committees and regulatory bodies. Access to the database requires secure login permissions from UCL SLMS.

IPD sharing plan summary
Stored in repository

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Protocol article	protocol	09/10/2019	14/10/2019	Yes	No
Results article		12/07/2022	12/07/2022	Yes	No
HRA research summary			28/06/2023	No	No
Other publications	Reflections	25/03/2023	10/05/2024	Yes	No