CENTRE FOR TRAUMA SCIENCES

NHS Blood and Transplant

CRYOSTAT-2

EARLY CRYOPRECIPITATE IN TRAUMA

Annual Training Update

September 2018

Key contacts

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Background

- Fibrinogen falls early in major trauma haemorrhage
- Low fibrinogen is an independent predictor of death
- Early deaths from bleeding occur within 3 to 6 hours of hospital admission
- Cryoprecipitate contains fibrinogen, which helps to form stable clots
- Previous feasibility study (CRYOSTAT-1) suggested giving 2 pools of cryoprecipitate within 90 minutes of arrival in the Emergency Department (ED) maintains fibrinogen levels, causes no harm to the patient and suggested a possible mortality benefit

Current UK Practice:

- Cryoprecipitate is usually given in pack 2 or 3 of Major Haemorrhage Protocol (MHP)
- This means that fibrinogen replacement often occurs late (on average 184 minutes)

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What is cryoprecipitate?

"G" number Unique identifier matching donor and patient

Product label "CRYOPRECIPITATE"

Yellow colour

Comes from blood bank in a **sealed bag** ready for administration

What is it?: Cryoprecipitate is a blood product prepared from plasma and contains fibrinogen, von Willebrand factor, factor VIII, factor XIII and fibronectin.

Transfusion training: Complete local mandatory training for blood transfusion awareness/safe transfusion practice if not already in your training matrix.

Send it: Make it easily identifiable as study cryoprecipitate (use yellow study bags).

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Study specifics

- International, multi-centre, parallel randomised controlled trial comparing:
  - 3 pools of early cryoprecipitate (~6g fibrinogen) given within 90 minutes of arrival in ED plus MHP
  - Standard MHP alone
- Recruiting 1568 patients over three years
- Running in UK Major Trauma Centres and North America
- Follow up: 12 months (28 days at sites)

Primary outcome All cause mortality at 28 days post-injury

Secondary outcomes include death from bleeding, transfusion requirements, quality of life, hospital resource use and thrombotic events

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Inclusion and exclusion

INCLUSION CRITERIA

The patient is an adult (judged to be over 16) and has sustained severe traumatic injury

AND

The patient is deemed by the trauma team leader to have active haemorrhage

AND

Requires activation of the local major haemorrhage protocol for management of severe blood loss

AND

The patient has started or has received at least one unit of any blood component

EXCLUSION CRITERIA

The participant has been transferred from another hospital

OR

The trauma team leader considers the injuries are incompatible with life

OR

More than 3 hours have elapsed from the time of injury

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Rapid identification

- Think about the possibility of the patient being eligible for the trial before they arrive
- Please DO NOT randomise patients before they arrive, even if the MHP has been activated in advance as the clinical picture can change
- Ask HEMS at handover if the patient is in the RePHILL trial – we can't co-enrol patients with this study
- Doctor or nurse who are study trained to assess eligibility of patients on arrival in ED
- Trauma Team Leader must confirm eligibility

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Consent

- Patients are usually unconscious or lacking capacity to consent
- Even if patients do have capacity, too much going on to get informed consent
- Trauma Team Leader must confirm eligibility

Patients are entered into the study via emergency waiver

- Research Fellows / Research Nurses follow up for consent and / or consultee declarations later

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Randomisation in ED

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Think about potential patients before they arrive in ED

On arrival in ED
Ask HEMS – is the patient in the RePHILL study?
Doctor or nurse who are trial trained assesses eligibility

Trauma Team Leader must confirm eligibility

Randomisation
Take out the next sequentially numbered envelope in the box
Write date and time of randomisation on the back of the envelope and sign it
Open the envelope and read the group allocation
Return the envelope to the back of the box – never destroy any envelopes!

Intervention patients:

Call blood bank
Activate MHP and tell blood bank patient is CRYOSTAT-2 intervention group and request 3 pools of cryoprecipitate
OR
If MHP already activated, tell blood bank patient is CRYOSTAT-2 intervention group and request 3 pools of cryoprecipitate

Cryoprecipitate arrives in ED*

Administer cryoprecipitate

*ED, or other patient location (e.g. theatres, radiology)

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Randomisation in blood bank

Call from ED

Call received from ED to activate MHP **OR** if MHP already activated, ED call blood bank and say the patient is eligible for the CRYOSTAT-2 study

Ask/double check the patient is to be randomised to CRYOSTAT-2

Ask if Trauma Team Leader has confirmed eligibility

Note name of caller

Randomisation

Take out the next sequentially numbered envelope in the box

Write date and time of randomisation on the back of the envelope and sign it

Open the envelope and read the group allocation

Give the caller the randomisation number (RXXXXX) and group allocation

Return the envelope to the back of the box – never destroy any envelopes!

Intervention patients:

Thaw 3 pools of cryoprecipitate for transfer following usual local procedures (e.g. porters)

Use study specific labels/boxes or yellow study bags to clearly identify that this is study cryoprecipitate

Cryoprecipitate arrives in ED*

Administer cryoprecipitate

*ED, or other patient location (e.g. theatres, radiology)

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Administration of the intervention

- Follow usual local procedures to deliver cryoprecipitate to ED (e.g. porter), deviation from these can cause confusion and missed checks
- Always carry out your patient and blood product ID checks
- Do not use a blood warmer
- If the patient goes to interventional radiology or theatre, study cryoprecipitate can be given there as long as the staff administering it are:
    1. Aware of the study and it's aims
    2. Know what the intervention is

Make sure Anaesthetists know not to normalise ratios – the aim is the administer 3 pools of cryo early **in addition** to the standard MHP and further doses of cryo as per local MHP protocol

Remember that the aim is to administer cryoprecipitate within 90 minutes of arrival in ED – think about location of administration

Tell your Intensivists, Anaesthetists and Theatre colleagues about the study!

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Top Tips

- Use any checklists or helpful guides that your local research team has provided to help you identify appropriate patients
- Remember that patients must have started or received at least one unit of a blood product – double check this!
- If no approximate time of injury is known, use time of 999 call
- Once the randomisation envelope is opened, the patient is in the study (even if it was opened in error) and data should be collected as you would for any other participant – please send us a file note if you randomise a patient in error
- No co-enrolling patients who are in the RePHILL study please!

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