Fibrinogen in Paediatric Trauma
Getting a little FEISTY!

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on behalf of the FEISTY investigators
@FEISTY_RCT

The University Of Queensland AUSTRALIA
Queensland Health
Queensland Government
National Blood Authority Australia
Emergency Medicine Foundation
Australian Red Cross BLOOD SERVICE
PCCRG Paediatric Critical Care Research Group

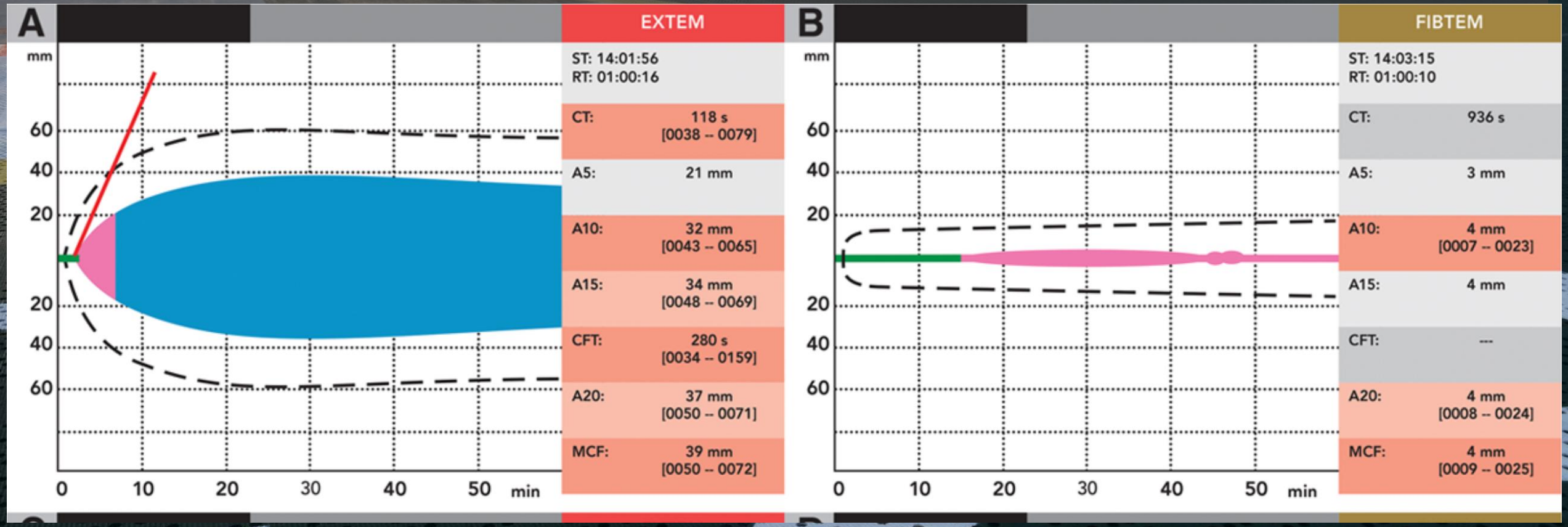
Background

- Injury and trauma are the leading cause of morbidity and mortality in children over 1 year of age in high income countries
- Traumatic haemorrhage is the leading cause of potentially preventable death in this group
- Adults aren’t just big children

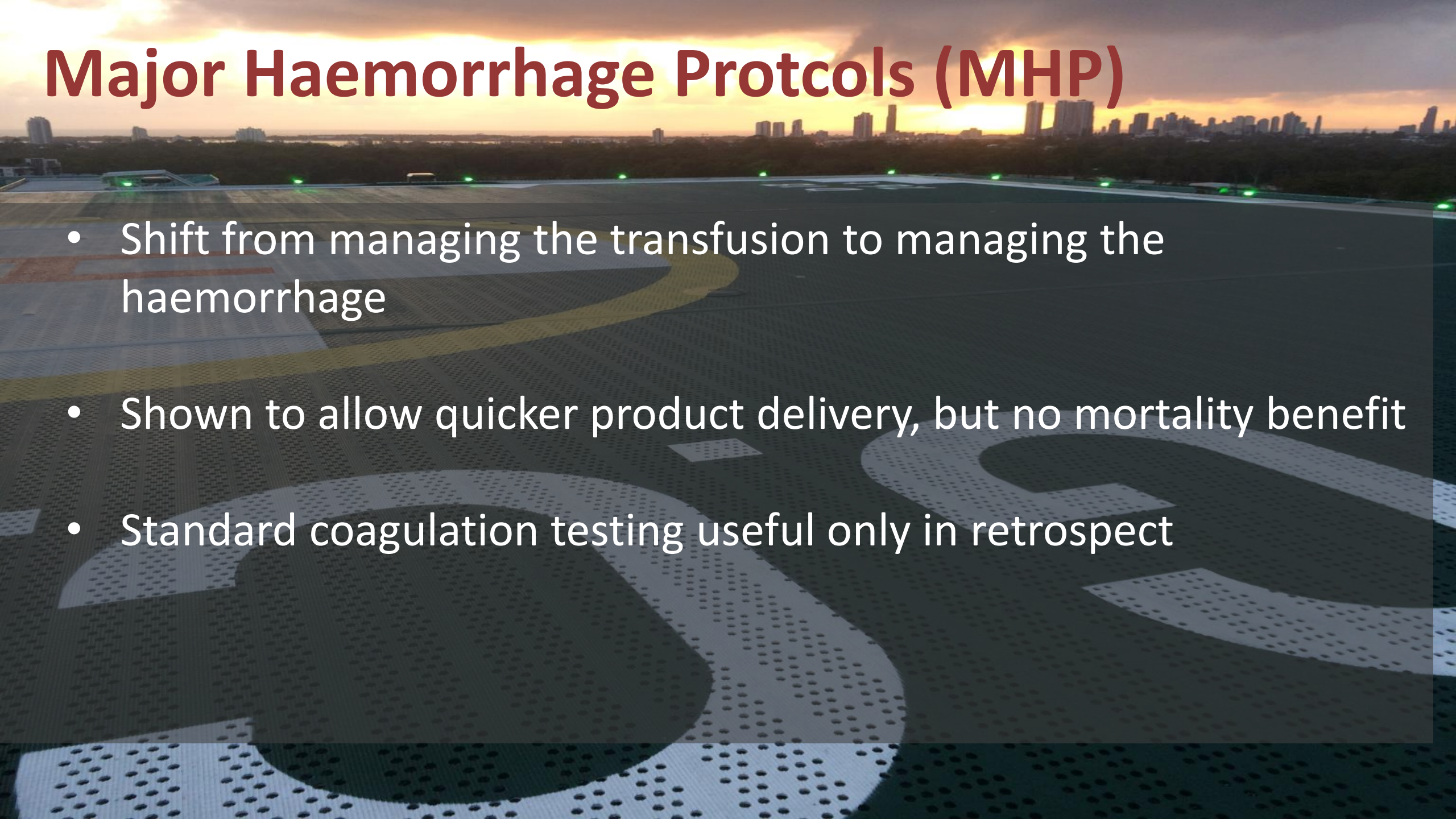
Coagulopathy of Trauma

- Haemorrhage in trauma is compounded by Acute Traumatic Coagulopathy (ATC)
- ATC is not caused by haemodilution
- ATC is detectable at presentation and associated with increased morbidity and mortality
- The challenge is how to detect it early and treat it

Detection of ATC



Major Haemorrhage Protcols (MHP)



- Shift from managing the transfusion to managing the haemorrhage
- Shown to allow quicker product delivery, but no mortality benefit
- Standard coagulation testing useful only in retrospect

Major Haemorrhage Protocols (MHP)

- VHA have potential temporal advantage in providing guidance to product transfusion
- Limited data on VHA guided transfusion in paediatric trauma
- Does VHA make a difference or is it the system changes that occur as part of integrating VHA into practice?

Fibrinogen in ATC

- Fibrinogen is the first clotting factor to fall in major haemorrhage
- Treatment thresholds are currently based on expert opinion
- Low fibrinogen levels are associated with increased mortality
- Low FIBTEM or FF accurately predict massive transfusion

Fibrinogen Replacement

- Controversial topic without high quality evidence to support practice
- Fibrinogen replacement recommended early in MHP
- Significant regional variation across the world (and even within Australia)

Fresh Frozen Plasma

- 2g/L fibrinogen
- No statically significant survival benefit in increased FFP MHP ratios in children (eg 1:1:2)
- Use associated with increased MOD and longer PICU LOS

Cryoprecipitate

- 8-16g/L fibrinogen
- Most common fibrinogen replacement option in Australia
- Slow to obtain and administer

Fibrinogen Concentrate

- 20g/L fibrinogen
- Long shelf life, room temperate
- Rapidly reconstituted and administered
- “Expensive”

Fibrinogen

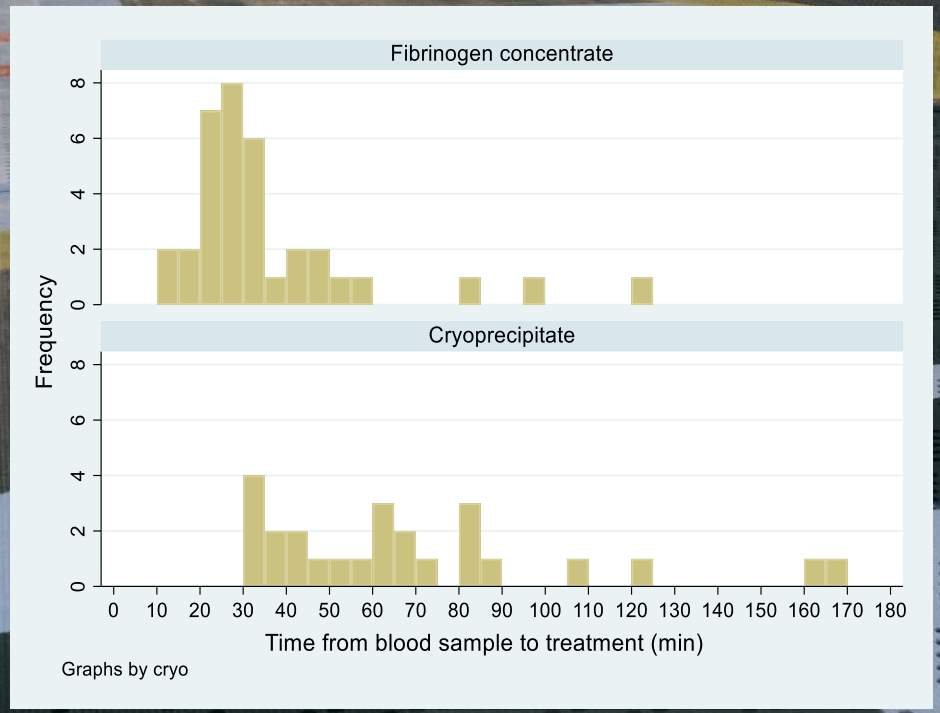
OR

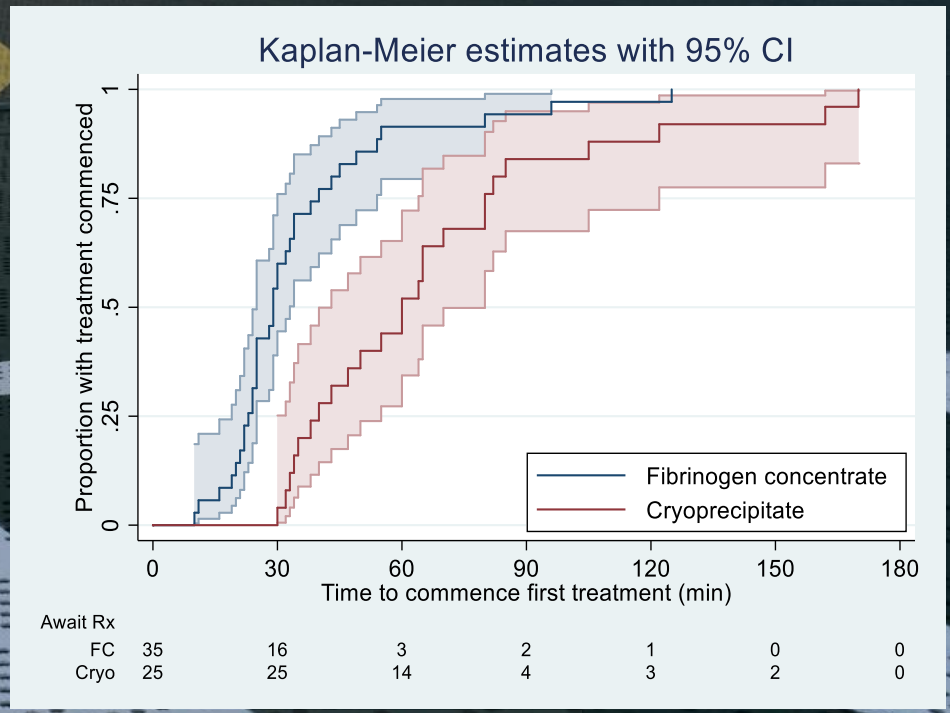
FIBRINOGEN EARLY IN SEVERE TRAUMA STUDY ~ FEISTY Junior

FIBRINOGEN EARLY IN

FEISTY

SEVERE TRAUMA STUDY





FC 29 mins vs Cryo 60 mins (p = 0.0001)

- Fibrinogen Concentrate vs. Cryoprecipitate in Traumatic Haemorrhage in children: A pilot randomised controlled trial

- Prospective multi-centre, open label, randomised, two arm parallel study

- Based on Adult study – with modifications based on lessons learned and paediatric differences

Are children really that different?

- Short answer = YES!

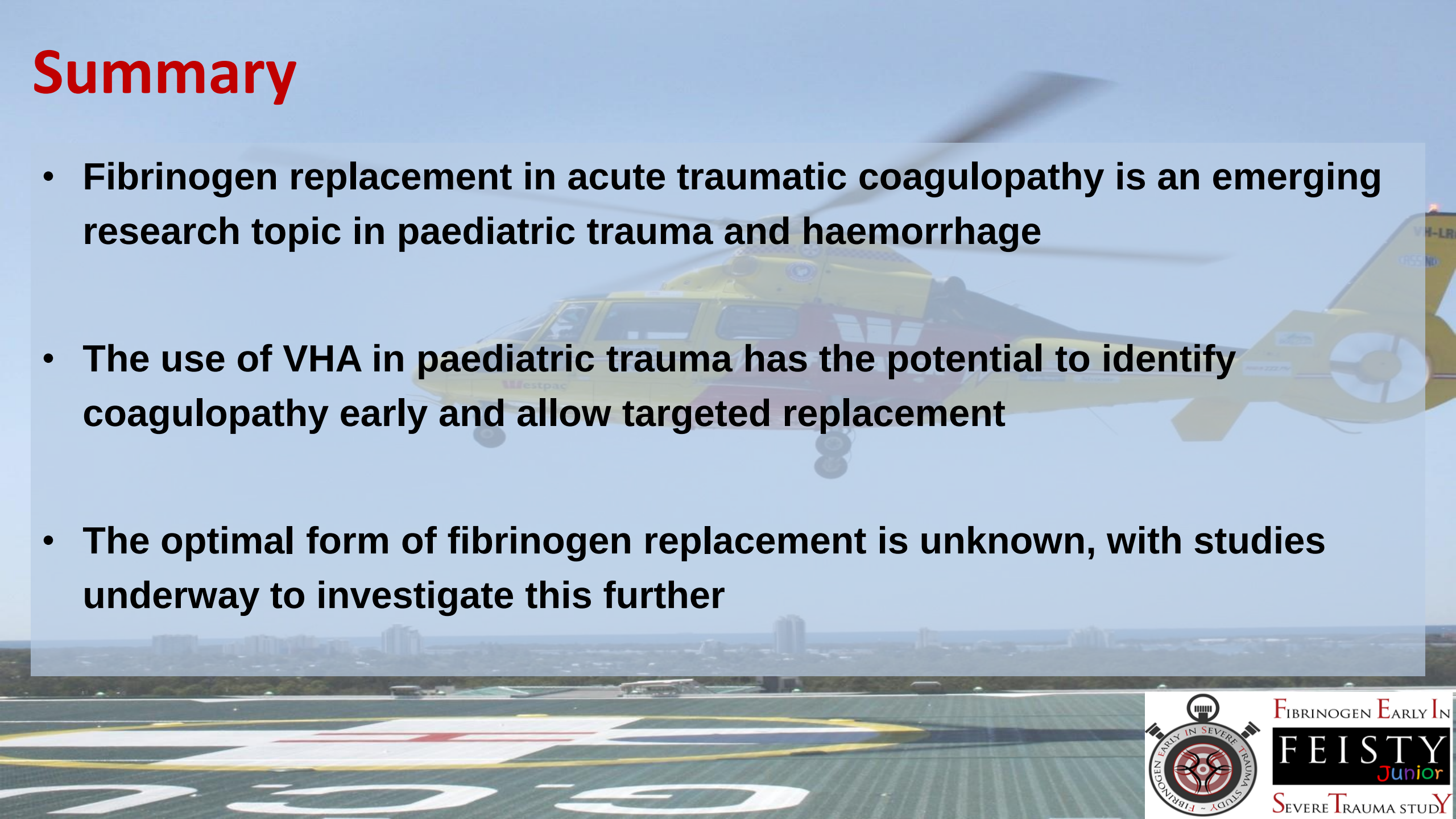
- Different patterns of injury
- Differences in management of solid organ injury (predominantly non-operative)

- More difficult IV access in younger children impairs ability to deliver products efficiently, and collect blood samples

- Maturing haemostatic system in younger children

Summary

- **Fibrinogen replacement in acute traumatic coagulopathy is an emerging research topic in paediatric trauma and haemorrhage**
- **The use of VHA in paediatric trauma has the potential to identify coagulopathy early and allow targeted replacement**
- **The optimal form of fibrinogen replacement is unknown, with studies underway to investigate this further**



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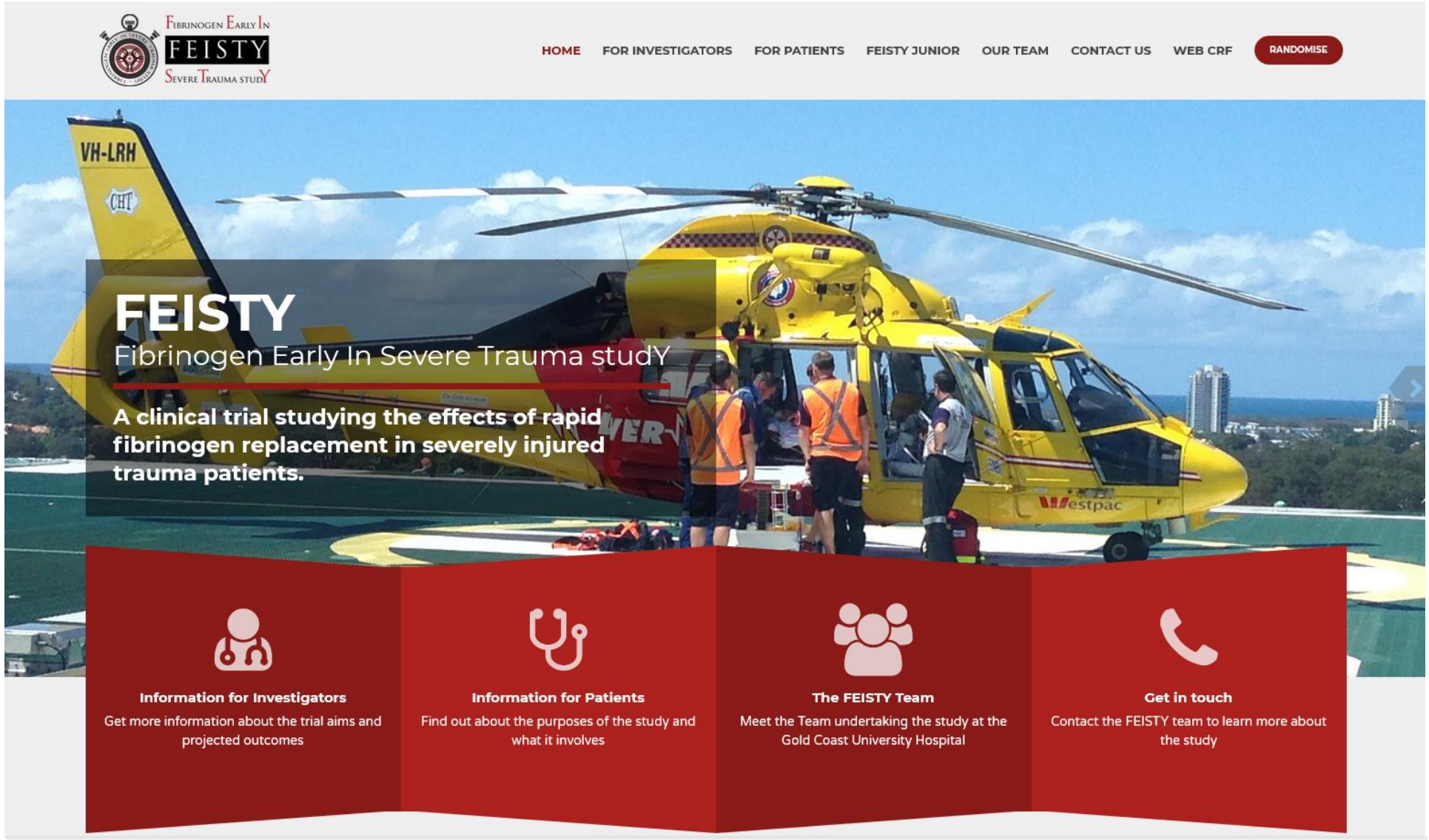
http:// www.feisty.org.au



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