Multicentre unblinded randomised trial comparing 4-Factor Prothrombin Complex Concentrate (4F-PCC) vs Frozen Plasma (FP) for Coagulopathic Bleeding in Cardiac Surgery

FARES-II trial[1]

Conducted using non-CSL branded 4F-PCC.

Adults (≥18 years)

12 hospitals

Canada and US

POPULATION

Adults (mean age 66 years) who developed bleeding related to coagulation factor deficiency during cardiac surgery.^ Patients were followed up until postoperative day 30.

METHOD

420 analysed

213 received **4F-PCC** (1500 or 2000 IU)

207 received **Frozen Plasma** (3 or 4 units)

… after cardiopulmonary bypass in the operating room and within 24 hours if necessary

PRIMARY ENDPOINT

Effective haemostatic response

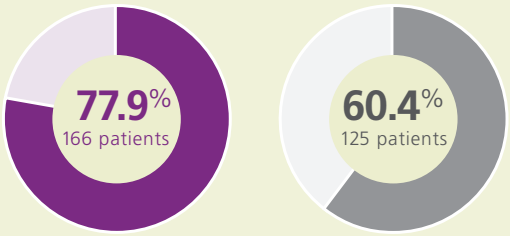
Defined as requiring no haemostatic interventions[¥] between 60 min → 24 hrs after treatment

KEY SECONDARY ENDPOINTS INCLUDE:

– Allogeneic blood transfusions[†]

– Severe or massive bleeding*

PRIMARY OUTCOME:



4F-PCC Frozen Plasma

Superior haemostatic effectiveness

44% RRR haemostatic response failure

4F-PCC vs FP difference = 17.6% (95% CI, 8.7%–26.4%);
RR =0.56; (95% CI, 0.41–0.75); *P*<0.001 for non-inferiority & superiority

KEY SECONDARY OUTCOMES	4F-PCC	FP
Lower rate of severe or massive bleeding* (P =0.001)	14.1%	27.5%
Reduced allogeneic blood transfusions[†] (LS mean; P =0.002)	6.6 units 95% CI: 5.7–7.7	9.3 units 95% CI: 8.0–10.8

KEY SAFETY OUTCOMES	4F-PCC	FP
Similar rate of thromboembolic events[‡]	8.5%	7.2%
Lower incidence of serious adverse events[‡§]	36.2%	47.3%
Reduced acute kidney injury[‡¶]	10.3%	18.8%

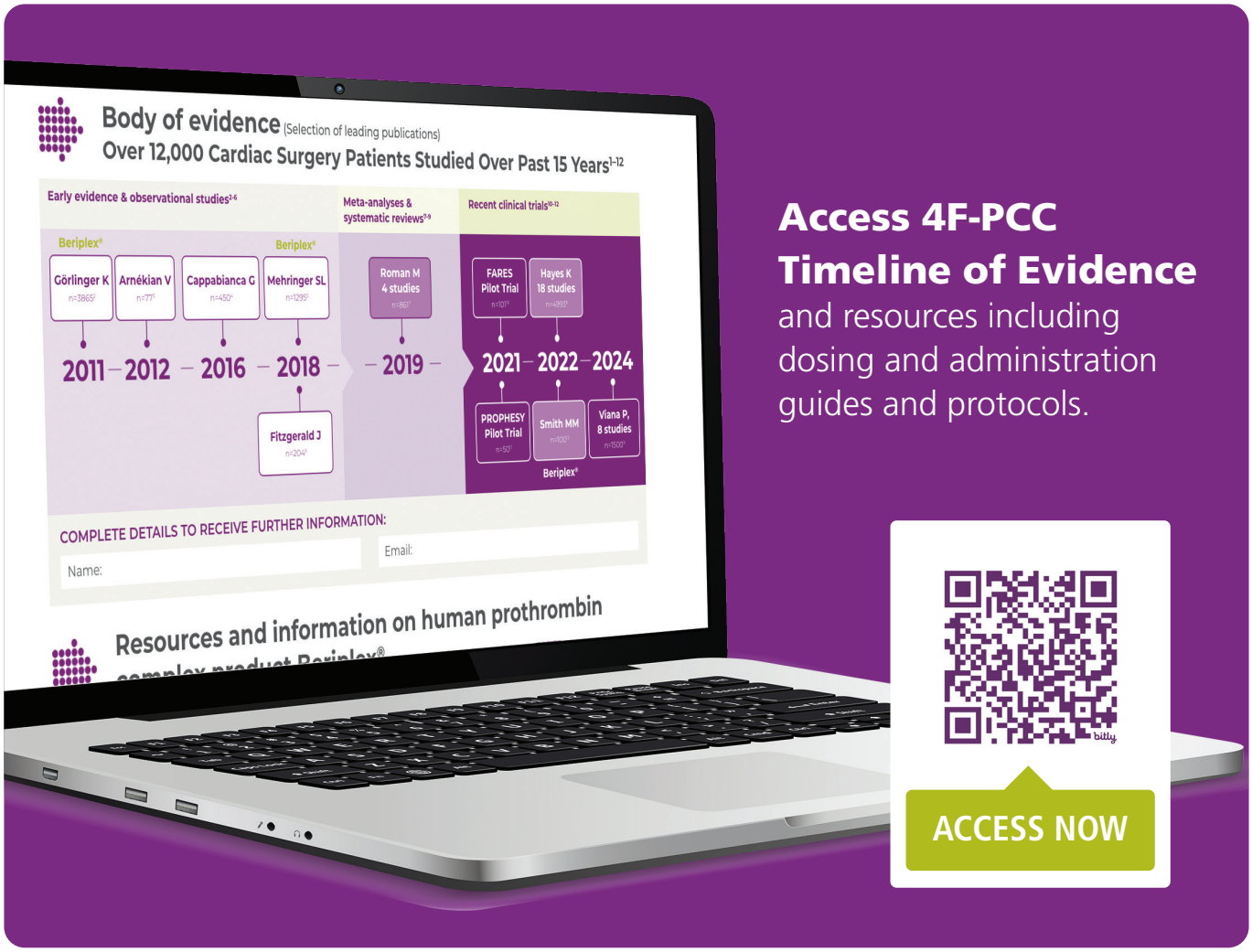
CONCLUSION

"4F-PCC had superior haemostatic efficacy and safety advantages to FP among patients requiring coagulation factor replacement for bleeding during cardiac surgery[1]**"**

Please refer to the full paper for complete information.

Beriplex®

Human Prothrombin Complex



Access 4F-PCC Timeline of Evidence

and resources including dosing and administration guides and protocols.

ACCESS NOW

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Please refer to the National Blood Authority for details www.blood.gov.au

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^Exclusion criteria included heart transplant, ventricular device insertion/removal, thoracoabdominal aneurysm, concomitant non-cardiac surgery;[1]
¥Surgical re-opening for bleeding, second dose of IMP, transfusion of any allogeneic blood products (excluding red blood cells) or administration of any coagulation factor concentrates;[1]
*Meeting criteria for universal definition of perioperative bleeding classes 3 or 4 (not including IMP frozen plasma) during the first 24 hours after termination of cardiopulmonary bypass. Positive if during the measured 24-hour time interval: received 5 or more RBC units or 5 or more non-IMP frozen plasma units; underwent surgical re-exploration due to bleeding; or received recombinant-activated factor VII or if chest tube drainage was more than 1 L at 12 hours after chest closure;[1]
†Including red blood cells, non-study FP and platelets, administered non-IMP products, administered as a single dose of apheresis platelets or a 4-unit dose of pooled buffy-coat prepared platelets; each dose counted as 4 units;[1]
‡Data are for treatment-emergent adverse events, for which first onset or worsening was after the first treatment with study drug. The percent is the number of patients with an event as a percentage of all patients in that treatment group;[1]
§Includes data on 2 patients in whom informed consent could not be obtained but the research ethics board approval was obtained to collect serious adverse events;[1]
¶Data are for any treatment-emergent acute kidney injury (defined by the Kidney Disease: Improving Global Outcomes criteria), including acute kidney injury and renal failure.[1]
Abbreviations: 4F-PCC = 4-Factor Prothrombin Complex Concentrate; CI = confidence interval; FP = frozen plasma; IMP = investigational medicinal product; LS = least squares; RR = relative risk; RRR=relative risk reduction.

Reference: 1. Karkouti K *et al*; FARES-II Study Group. *JAMA*. 2025:e253501.

Australian Red Cross Lifeblood
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