Hoxworth BLOOD CENTER
UNIVERSITY OF CINCINNATI

Dana-Farber Cancer Institute

HARVARD MEDICAL SCHOOL
TEACHING HOSPITAL

14° CONGRESO COLOMBIANO
20° CONGRESO IBEROAMERICANO
Cali, Valle del Cauca, Colombia
24 de abril de 2026

Plasma Fresco Congelado:

Nuevas Formulaciones

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Association for the Advancement of Blood & Biotherapies

Disclosures

Jose A. Cancelas

- *AABB: President*
- *Teleflex: consultant**
- *Westat: contractor & grant support**
- *Velico Medical and HHS/BARDA: consultant and grant support**
- *Terumo BCT: grant support*
- Hemerus Medical LLC: grant support and consultant
- Hemanext: consultant
- Fresenius Kabi: consultant
- Rion: consultant
- Preservation Bio: consultant and share holder
- Platefuse: patent holder

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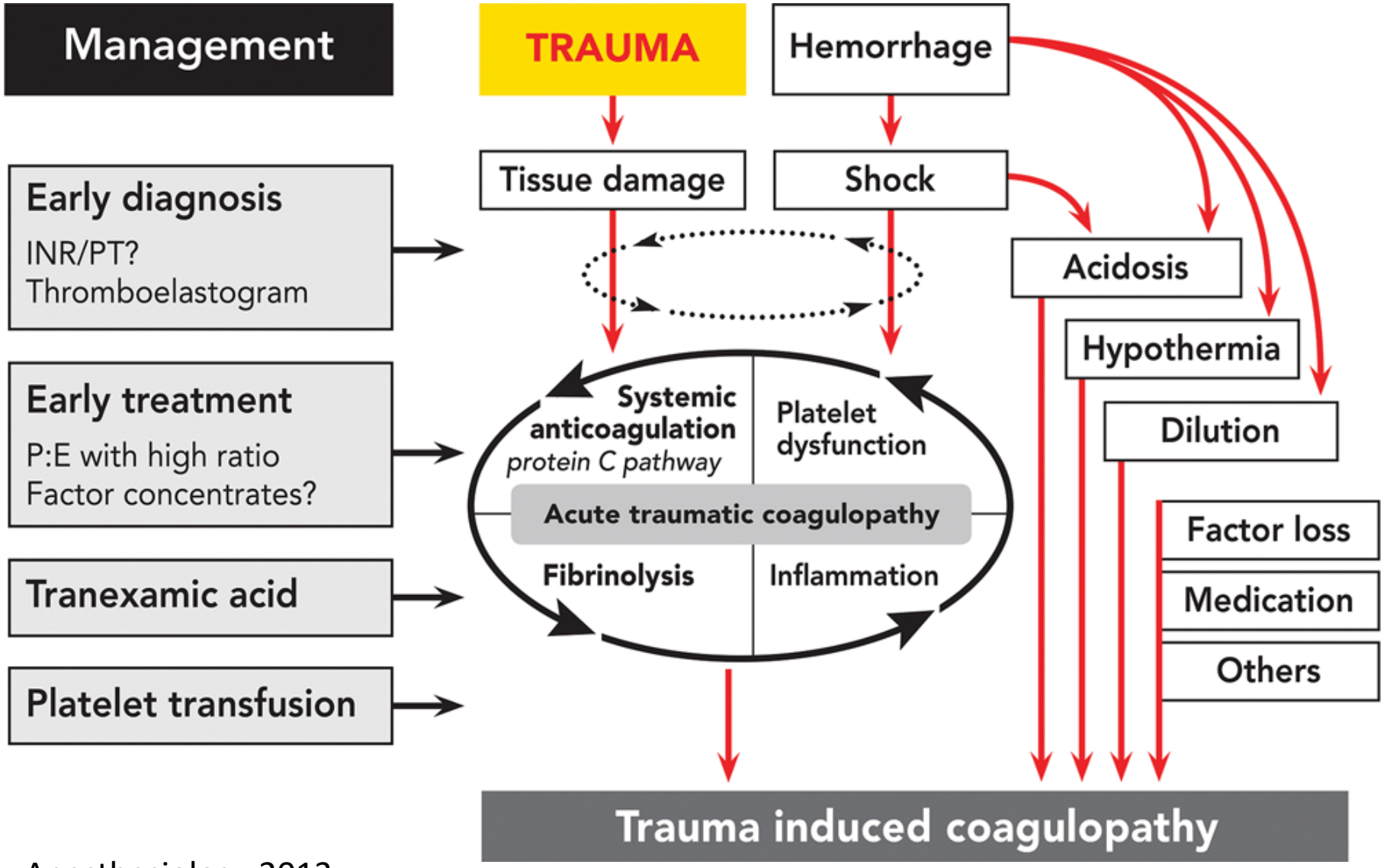
Therapeutic Indications for FFP, PF24 & PF24RT24

1. Hemostatic therapy in single coagulation factor deficiencies where no concentrate is available (e.g. Factor V)
2. Hemostatic therapy in multiple coagulation deficiencies (trauma/massive transfusion; DIC; liver transplantation; bleeding premature neonates)
3. TTP and some situations of complement dependent hemolytic microangiopathies

Trauma induced coagulopathy



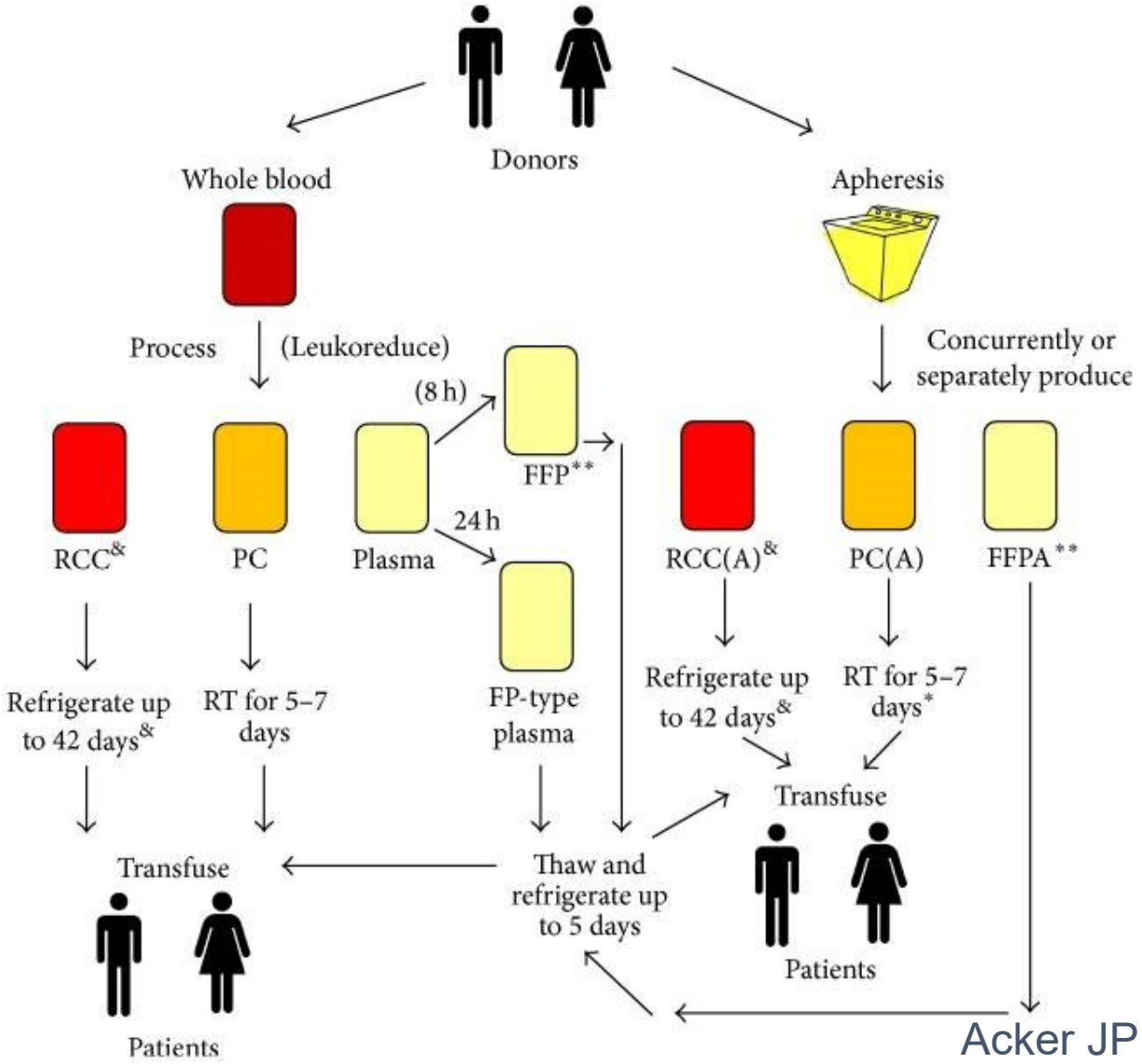
David J-S et al., Anesthesiology 2013

Trauma Resuscitation:

Early plasma infusion correlates with better survival in distant pre-hospital settings

- **Increasing the ratio of plasma to RBCs from 1:3 to 1:1 demonstrated a 40% decrease in mortality** (*Borgman, et al., J Trauma 2007;63: 805-813).*
- **Positive correlation between FFP:PRBC ratio and survival** *(Teixeira P.G. et al., J. Trauma 2009).*
- **Ratio of 1 Plasma:1 Platelet:1 RBC equally safe and achieved hemostasis by 24 hours vs. 1:1:2 product ratio** (PROPPR study, *Holcomb JB, JAMA* 2015).
- **Rapid ground rescue to an urban level 1 trauma center, use of prehospital plasma was not associated with survival benefit** *(Moore H.B. et al., Lancet 2018)*
- **Prehospital administration of plasma results in lower 30-day mortality and lower median PT-time ratio than standard-care resuscitation** (*Sperry JL, et al., NEJM, 2018).*

Classical plasma collection/processing for allogeneic transfusion



Acker JP et al., J. Blood Transfus. 2016

Current plasma products in US

Plasma product	Preparation	Storage	Shelf-life	Expiration after thawing
FFP (+/- pathogen reduction)	Rapid freezing within 8 h			24 hours or 5 days
Solvent detergent filtered FFP	Re-frozen	<-18°C	12 months	Not specified
PF24/PF24RT24	Rapid freezing within 8-24 h			24 hours or 5 days
Liquid plasma	Up to 5 days over WB expiration			24 hours or 5 days
Cryoprecipitate	Within 1h post-thaw of FFP			4 or 6 hours
Plasma Cryoprecipitate reduced	Within 1h post-thaw of FFP			24 hours
Recovered plasma	Multiple donors	Variable	No expiration date	Variable

Fresh Frozen Plasma

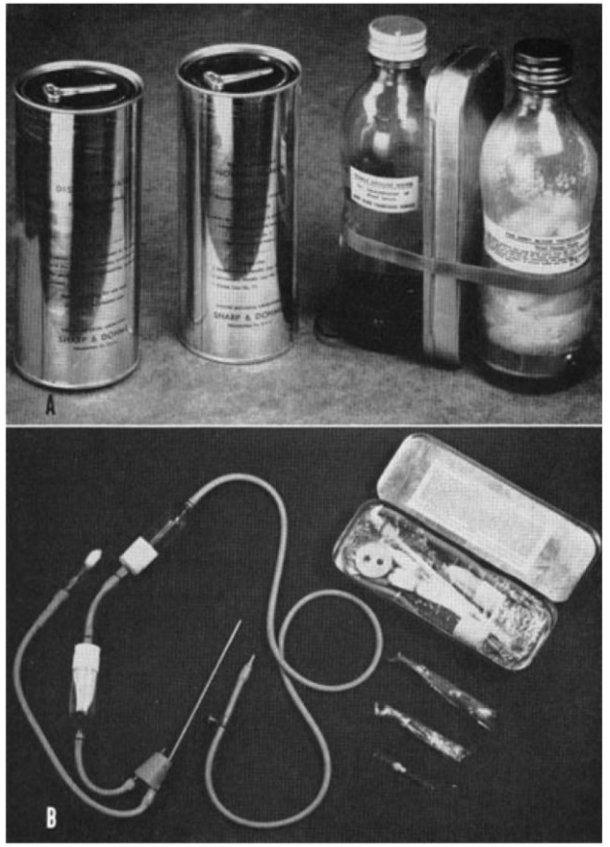
Fresh Frozen Plasma (FFP) is a component for transfusion or fractionation, prepared either from whole blood or from plasma collected by apheresis, frozen within a period of time and to a temperature that adequately maintains functional activity of labile coagulation factors.

Dried Plasma in World War II & Korea War

Dried plasma preparations have most often been prepared by lyophilization, a process in which plasma is frozen and dehydrated by sublimation under vacuum for several days.

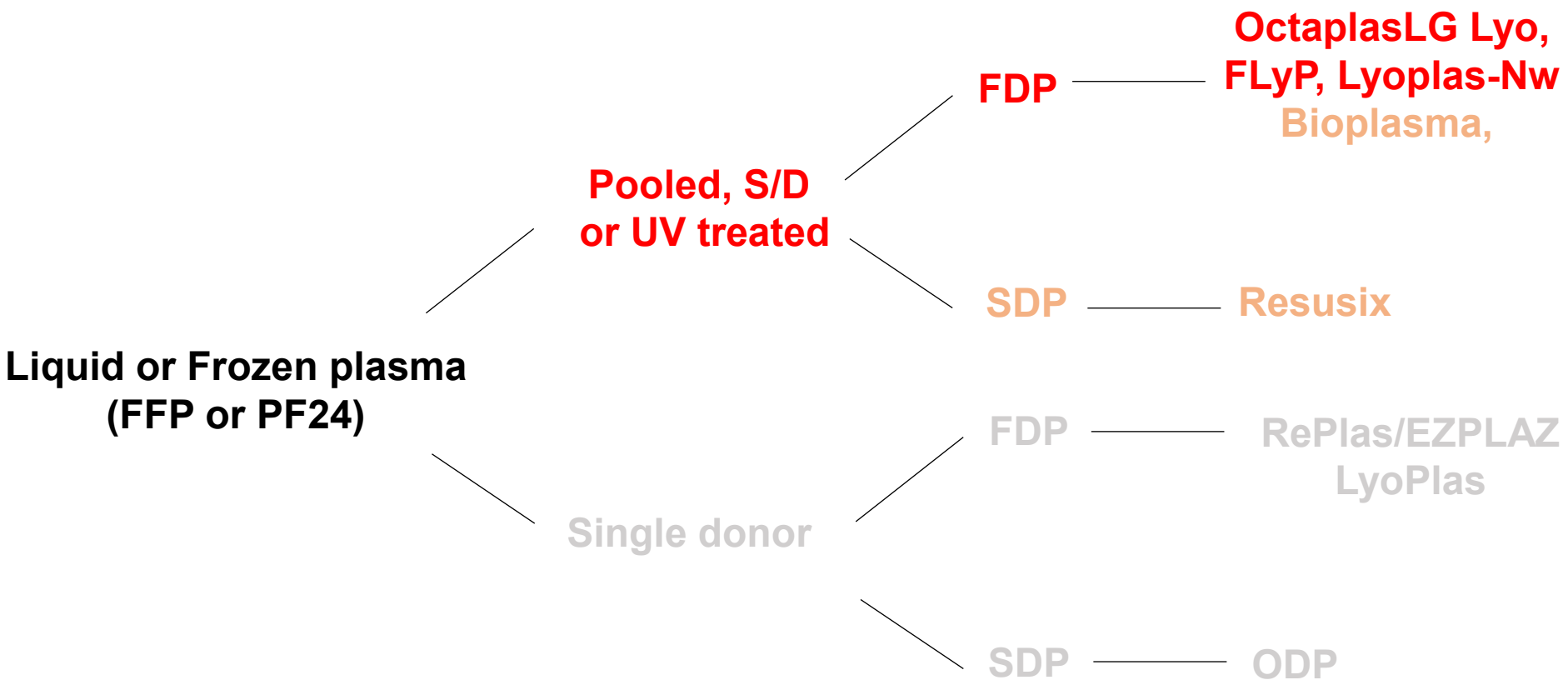
Dried plasmas are expected to have reduced cold chain requirements, rapid reconstitution, and other advantages over frozen plasma.

During WWII, US and Britain used freeze dried plasma. Sweden manufactured SDP.



Office of Medical History
U.S. Army Medical Department

Current lyophilized plasma products, licensed or in development



NATIONAL ARCHIVES
FEDERAL REGISTER
The Daily Journal of the United States Government

Notice

Authorization of Emergency Use of a Freeze-Dried Plasma Product for Treatment of Hemorrhage or Coagulopathy During an Emergency Involving Agents of Military Combat; Availability

A Notice by the Food and Drug Administration on 08/27/2024

PUBLISHED DOCUMENT: 2024-18971 (89 FR 68625)

PDF

Document Details

DOCUMENT HEADINGS

Department of Health and Human Services
Food and Drug Administration
[Docket No. FDA-2024-N-3925]

OctaplasLG Lyo as a modification of OctaplasLG

Fast thawing and pooling of single-donor FFP

Complete cell, cell fragment and aggregate removal
(1.0 µm size-exclusion filtration)

Virus inactivation by S/D-treatment
(1% TNBP/1% Octoxynol 1–1.5 hours at +30.0°C ± 1°C)

Removal of S/D reagents
(Oil extraction, phase separation, C18 chromatography)

Prion protein removal
(Affinity ligand chromatography)

Sterile filtration,
Aseptic filling and sealing of bags

Fast freezing

OctaplasLG

pH adjustment[a]

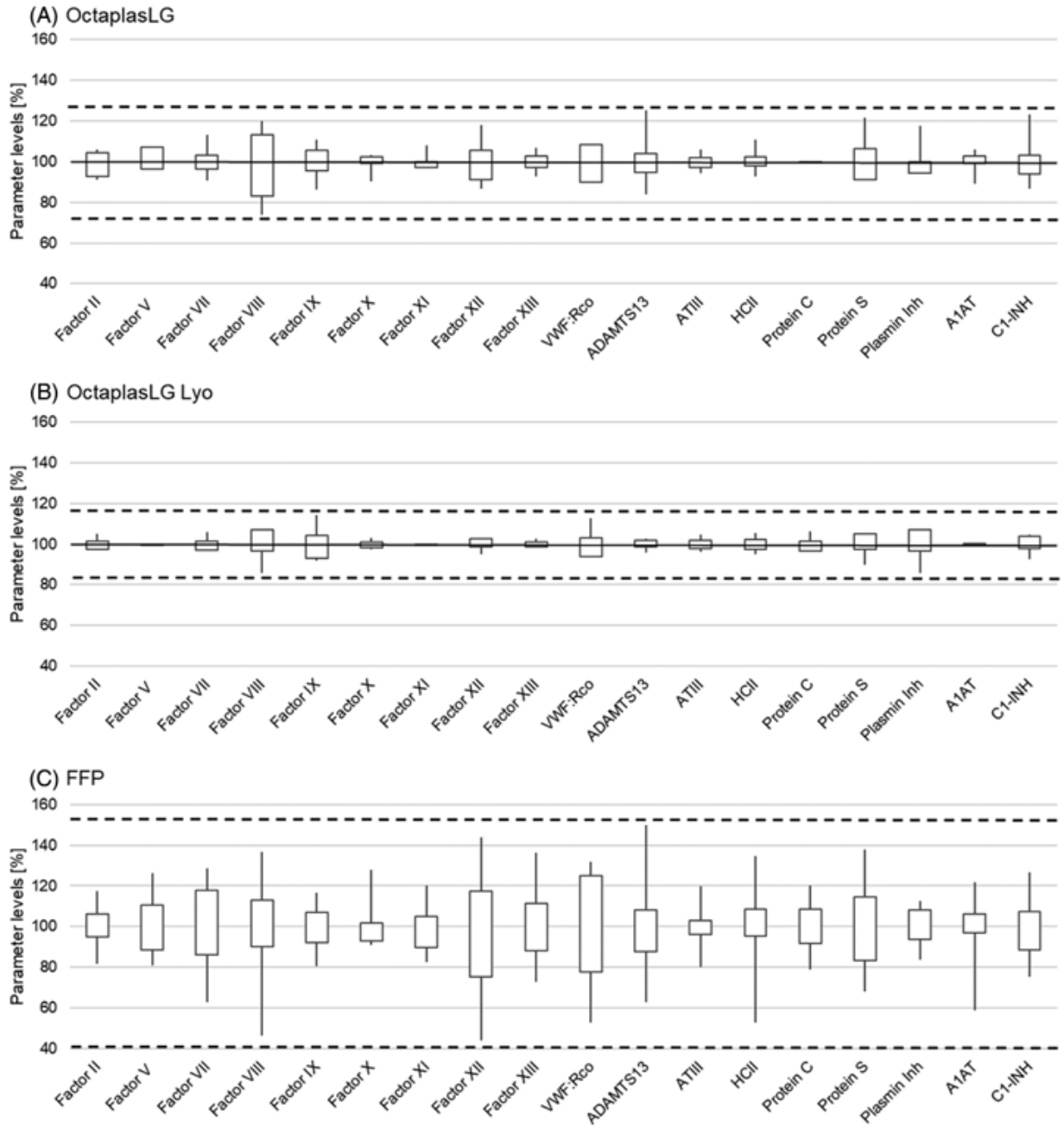
Sterile filtration,
Aseptic filling[b]

Fast freezing

Freeze-drying process

OctaplasLG Lyo

Heger & Gruber, Transfusion 2022


(A) OctaplasLG
(B) OctaplasLG Lyo
(C) FFP
Parameter levels [%]
160
140
120
100
80
60
40
Factor II
Factor V
Factor VII
Factor VIII
Factor IX
Factor X
Factor XI
Factor XII
Factor XIII
VWF:Rco
ADAMTS13
ATIII
HCII
Protein C
Protein S
Plasmin Inh
A1AT
C1-INH

Available dried plasma products for transfusion: clotting factor content

	FLyP		LyoPlas	
Process	Lyophilized Pooled (<11 donors)		Lyophilized Single-donor	
Storage	2 years at room temperature		15 months at 2°C – 25°C	
Characteristics	Most factor levels normal ABO universal Leukoreduced		Most factor levels normal ABO-type specific Leukoreduced	
Reconstitution	Sterile water (minutes)		Sterile water (minutes)	
Parameter	Mean ± SD	Reference range	Mean ± SD	Reference range
PT (ratio test/control)	1.2 ± 0.1	< 1.5		
aPTT (s)	39.0 ± 2.4	30 - 40	35.46 ± 2.02	26 - 37
INR	Not reported		1.21 ± 0.05*	0.8 – 1.2
Fibrinogen (g/l)	2.4 ± 0.3	2 - 4	2.3 ± 0.4	2 - 4
Factor V (%)	51 ± 16*	70 – 120	78.0 ± 11.7	65 - 100
Factor VIIIc (%)	62 ± 10	50 -150	83.7 ± 11.7	60 - 150
Factor XI (%)	79 ± 11	50-140	87.5 ± 13.8	65 - 150
Factor XIII (%)	103 ± 12	20 - 120	Not reported	
Protein C (%)	96 ± 9	70 - 120	97.6 ± 20.0	80 – 150
Protein S (%)	77 ± 16	70 - 140	71.7 ± 6.5	60 – 150
Antithrombin (%)	101 ± 5	80 - 120	90.0 ± 8.6	80- 135
Alpha-2 Antiplasmin (%)	95 ± 3	80 - 120	Not reported	
Von Willebrand (%)	Not reported		90.00 ± 16.91	60 – 160

Clinical trials using FDP/SDP

Pre-hospital freeze-dried plasma for critical bleeding after trauma: A pilot randomized controlled trial (Mitra et al., Acad. Emerg. Med., 2023)

- **Australian Helicopter paramedics with suspected critical bleeding after trauma randomized to receive 2 units of freeze-dried plasma (Lyoplas N-w) or standard care (no plasma).**
- **25 eligible patients, of whom 20 (80%) were enrolled in the trial and 19 (76%) received the allocated intervention.**

- **No serious adverse events related to the trial interventions were reported.**
- **This first reported experience of freeze-dried plasma use in Australia indicates prehospital administration is feasible.**

Is currently available FDP equivalent to plasma?
FLyP: Freeze-dried Plasma in the Initial Management of Coagulopathy in Trauma Patients (TRAUCC) study

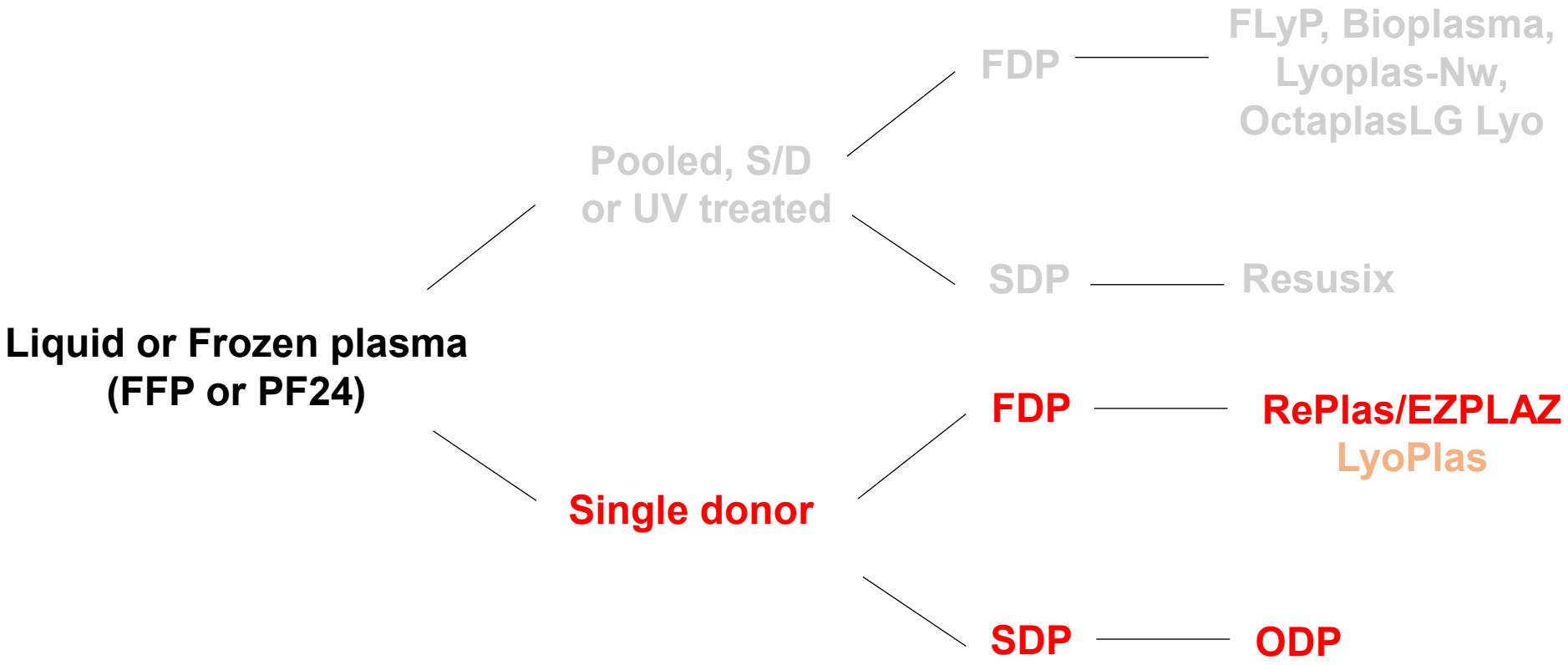
Garrigue D et al.,
J. Thromb. Hemost., 2018

1. Open-label, phase 3, randomized trial
2. Adult trauma patients requiring an emergency pack of 4 plasma units within 6 h of injury.
3. Randomly assigned patients to receive 4-FLyP units or 4-FFP units.
4. 48 patients were randomized (FLyP, n = 24; FFP, n = 24).
5. FLyP reduced the time from randomization to transfusion of first plasma unit compared with FFP (14 vs. 77 min).
6. FLyP achieved a higher fibrinogen concentration 45 min after randomization compared with FFP (baseline-adjusted mean difference, 0.29 g/L) and a greater improvement in prothrombin time ratio, factor V and factor II.
7. The between-group differences in coagulation parameters remained significant at 6 h. FLyP reduced fibrinogen concentrate requirements.
8. 30-day in-hospital mortality rate was 22% with FLyP and 29% with FFP.

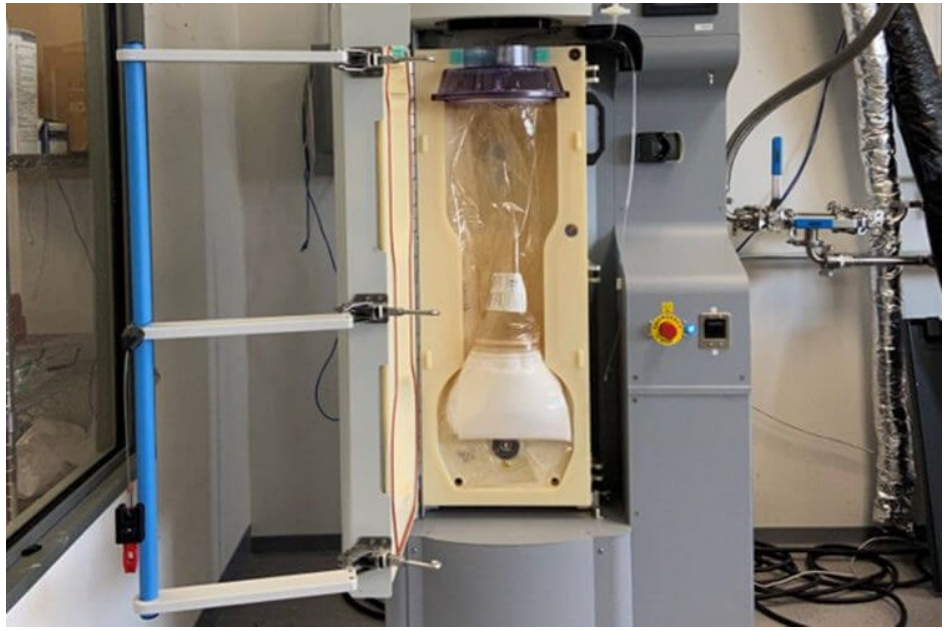
Is currently available FDP superior to crystalloids?

	RePHILL	PRE-HO PLYO
Study Duration	2016-2021	2016-2019
Publication	Lancet Haematol., 2022	JAMA Netw Open, 2022
Setting	UK multicenter air/ground EMS; open- label prehospital treatment	French multicenter EMS; open-label prehospital treatment
Inclusion	SBP < 90 mm Hg or no radial pulse	SBP < 70 mM Hg or shock index > 1.1
Intervention	Up to 2 units PRBC + 2 units LyoPlas versus up to 4 X 250 ml normal saline	Up to 4 units FLyP (and saline as needed for hemodynamic goals) versus up to 1000 ml normal saline
Enrollment & rationale	438 to give 80% power to detect 10% difference in primary outcome	140 to give 80% power to detect mean difference in INR of 0.3
Patients (n)	432	150
Age	Medians 38 (27-57), 39 (24-59)	Medians 36.6 (26.8-49.5) vs 33.6 (25.2-47.6)
Male (%)	82 vs 82	86.8 vs 77.3
Blunt injury (%)	78 vs 80	58.8 vs 60.6
Pre-hospital crystalloid (ml)	Means: 422 vs 437	Median 700 (475-1000) vs 1000 (700-1350)
Tranexamic acid (%)	87 vs 92	84 vs 91
Primary outcome	Composite of mortality + failure to clear lactate	INR at hospital arrival
Analysis	ITT, model-based	ITT
Outcome	**No difference between groups, 64% vs 65%**	**No difference between groups, Median 1.21 vs 1.20**

Current lyophilized plasma products, licensed or in development



Lyophilized products in plastic bags



Considerations for the Development of Dried Plasma Products Intended for Transfusion

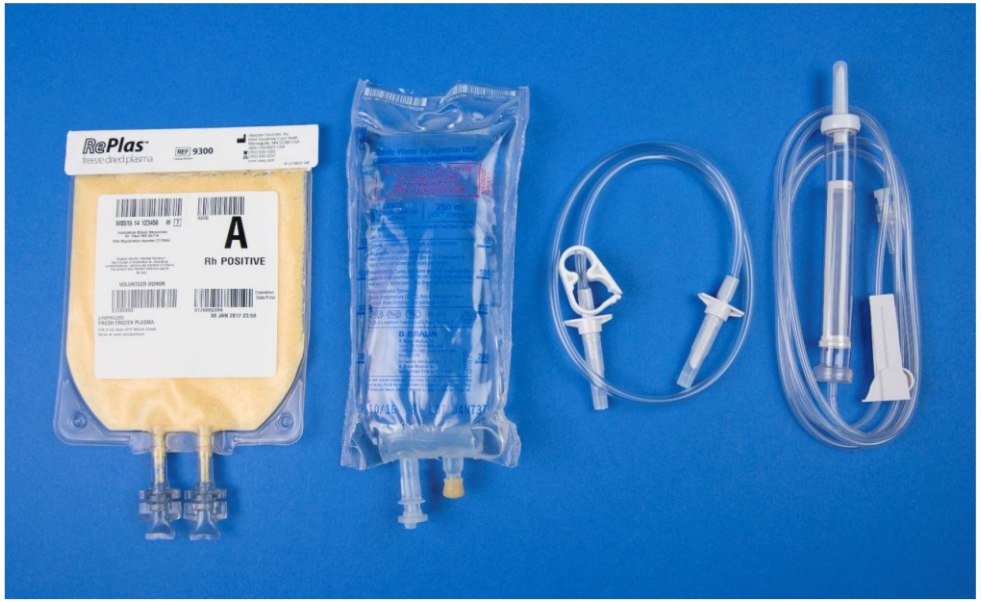
Guidance for Industry

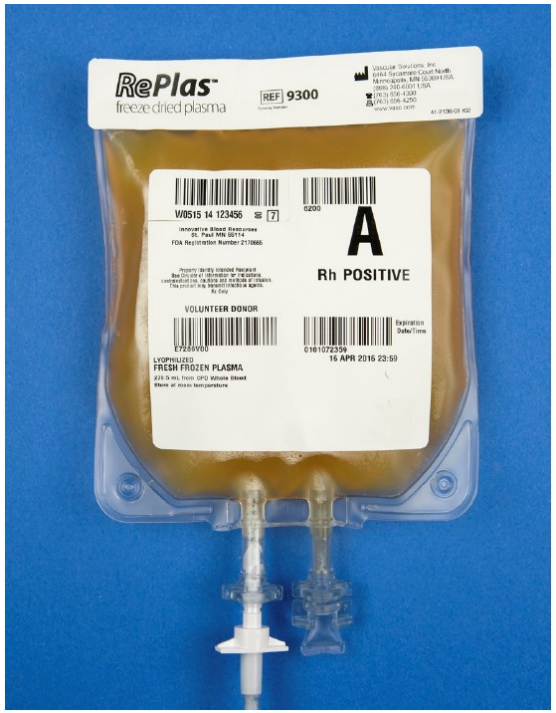
U.S. Department of Health and Human Services
Food and Drug Administration
Center for Biologics Evaluation and Research
December 2019

For indications where conventional plasma (such as FFP or PF24) is unavailable or impractical for use, FDA recommends conducting safety and coagulation factor recovery studies in healthy subjects, following thorough *in vitro* product characterization. Autologous plasma may be used, provided the processing is conducted in a manner identical to that of the ultimate product, except for pooling. The initial safety cohort should receive one unit of the reconstituted dried plasma product, and optimally, subsequent cohorts should be randomized to receive additional units of reconstituted dried plasma or conventional plasma (as control). Additional studies may be recommended. Adverse events must be recorded for all enrolled subjects and reported to FDA when required under 21 CFR Part 312 or 812. As part of the randomized studies, FDA recommends the conduct of coagulation testing, and the determination of factor levels in the subjects prior to and following the administration of both conventional plasma and reconstituted dried plasma.

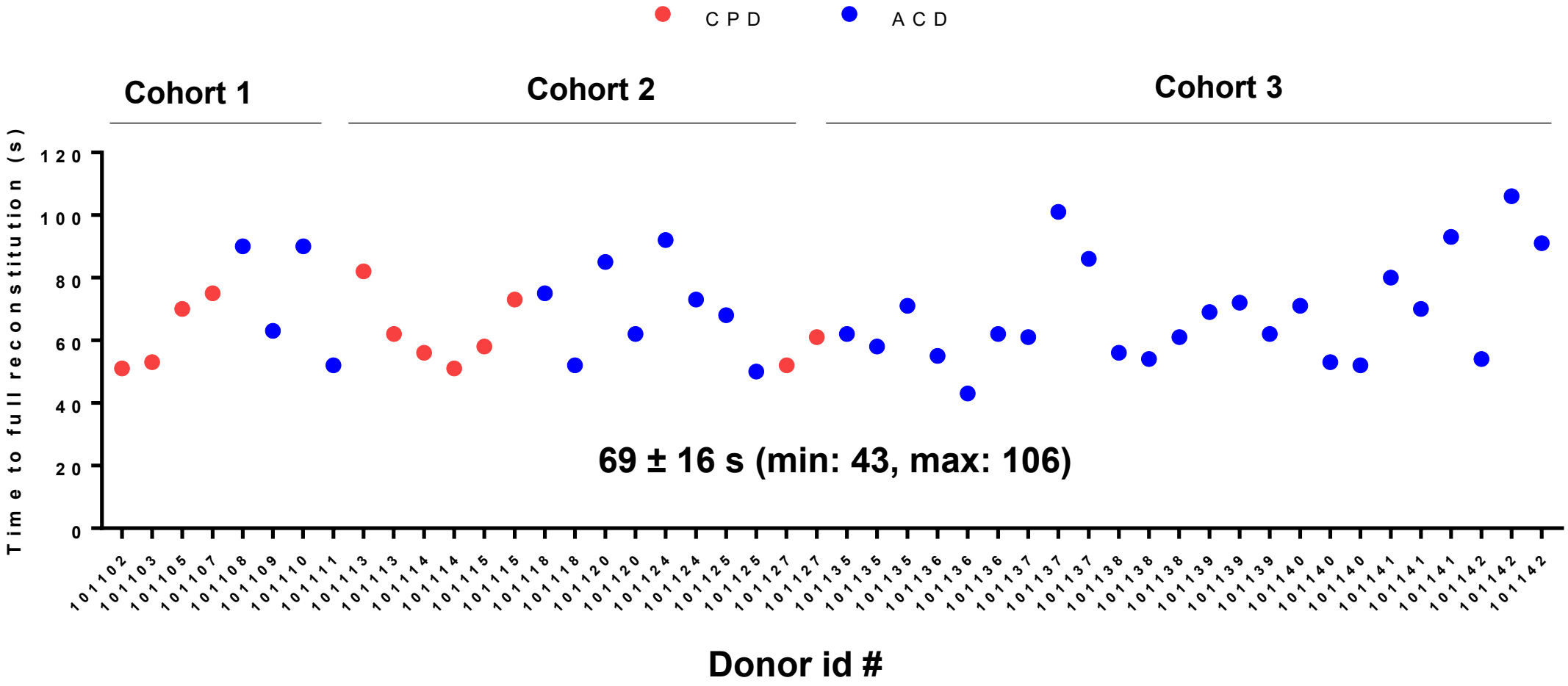
To expand the indications for use of dried plasma to situations where conventional plasma (such as FFP or PF24) is available, additional adequate and well-controlled clinical studies would likely be necessary and should be discussed in advance with FDA.

RePlas/EZPlaz FDP

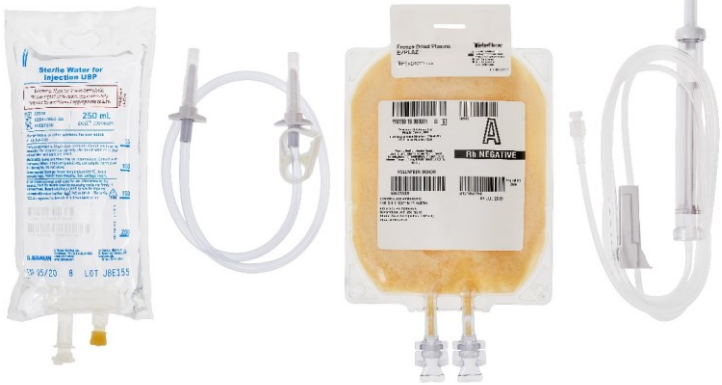




Time to reconstitution of RePlas FDP



RePlas/EZPLAZ FDP lyophilized in bags: clotting factor content

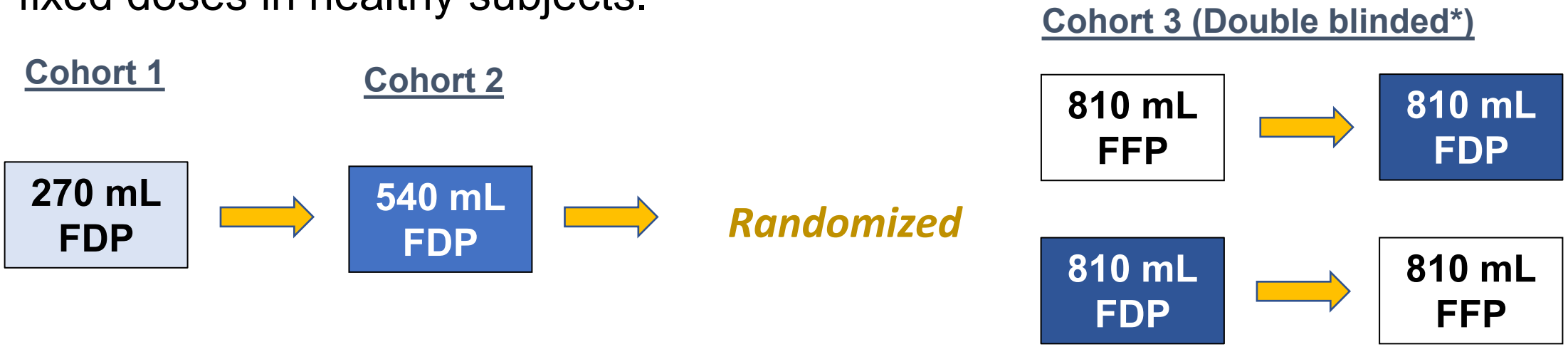


Test Parameter	Clinical Ref Range Per Test Instrument	ACD	CPD
		Mean ± SD	Mean ± SD
PT	9.4-12.5 sec	12.9 (±1.0)	12.6 (± 0.9)
INR	0.9-1.1	1.18 (±0.0)	1.1 (± 0.1)
aPTT	25.1-36.5 sec	31.1 (±2.1)	35.3 (± 3.2)
NAPTT	> 60 Seconds	192.4 (±34.3)	178.0 (± 23.8)
TT	15.8-24.9 sec	24.2 (±2.0)	22.3 (± 2.5)
Fibrinogen	200-393 mg/dL	237.2 (±40.8)	250.9 (± 55.7)
Factor II Activity	79-131 %	82.2 ± (9.6)	77.7 (± 7.9)
Factor V Activity	62-139 %	73.8 (±13.7)	79.0 (± 12.9)
Factor VII Activity	50-129 %	75.4 (±18.5)	77.1 (± 18.0)
Factor VIII Activity	50-150 %	129.8 (±28.9)	107.9 (± 29.1)
Factor IX Activity	65-150 %	92.8(±13.4)	95.3 (± 17.2)
Factor X Activity	77-131 %	73.4 (±11.7)	81.2 (± 13.2)
Factor XI Activity	65-150 %	97.9 (±24.0)	102.9 (± 17.8)
Factor XII Activity	50-150 %	80.9 (±17.0)	83.1 (± 21.2)
Factor VIIa	10.0-105.0 mU/mL	49.2 (±20.4)	39.8 (± 18.6)
Protein C Activity	70-140 %	89.2 (±15.5)	90.5 (± 15.6)
Protein S Activity	54.7-146.1 %	90.8 (±15.4)	92.7 (± 13.5)
Plasmin Inhibitor	98-122 %	86.9 (±9.9)	92.5 (± 6.8)
Plasminogen Activity	80.2-132.5 %	82.3 (±13.5)	86.8 (± 17.4)
Antithrombin	83-128 %	85.0 (±9.6)	90.7 (± 9.8)
vWF Activity	40.3-163.4 %	121.4 (±35.5)	111.4 (± 40.0)
vWF Antigen	42.0-176.3 %	142.8 (±40.1)	123.0 (± 44.0)

Cancelas et al., Transfusion 2022

Phase I: Dose Escalation
Primary Objective

- Assess the safety of single infusions with autologous FDP product at increasing fixed doses in healthy subjects.



- Eligible to donate per FDA/AABB criteria (less travel-related deferrals), Duke Activity Status Index ≥ 35, and D-Dimer < 0.5 FEU/m, provide informed consent.

- Subject, medical/nurse staff blinded. Transfusion service unblinded.

Cancelas et al., Transfusion 2022

IND# 17154; NCT02930226

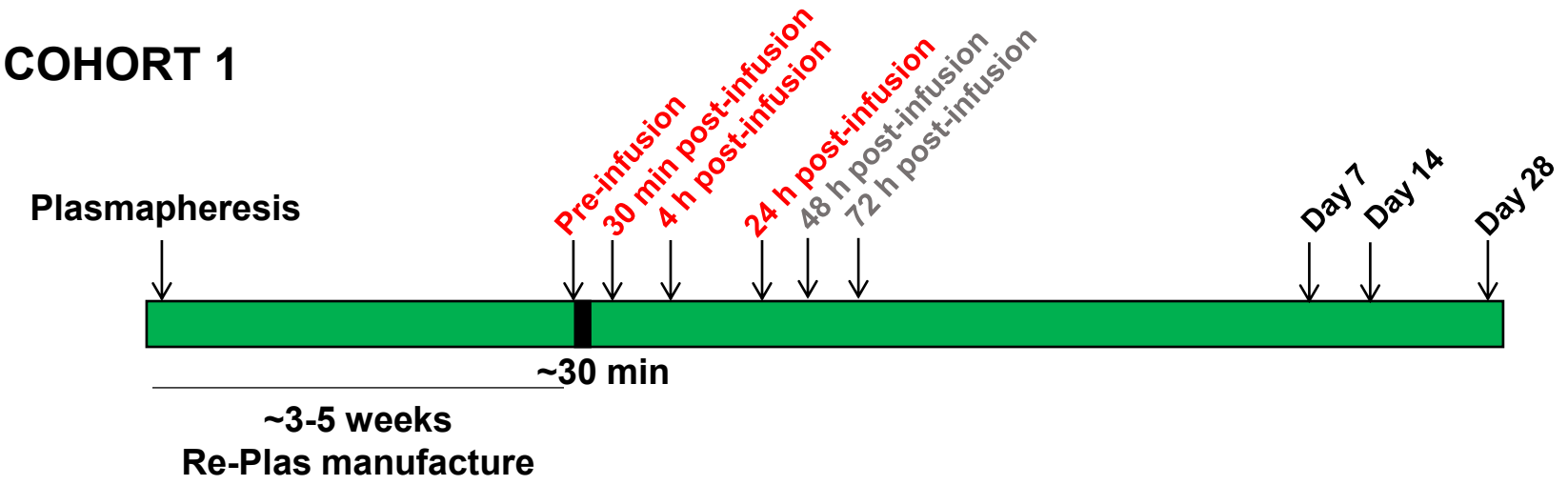
Endpoints

- **Primary**. **Observation of treatment emergent adverse events (TEAEs) served as the basis of conclusions regarding safety (all cohorts)**:
  - Monitored vital signs, clinical laboratory parameters (chemistry, hematology, urine analysis, and coagulation), and physical examination results during and after infusion.
- **Secondary.** In Cohort 3 only, **compared change in pre- and post-infusion measurement (FDP vs. FFP) o**f:
  - PT, INR, aPTT, Factors I, II, V, VII, VIII, IX, X, XI, D-Dimer, von Willebrand factor activity, Protein S activity, Protein C activity, PF1+2, TAT, Antithrombin III, Alpha-2 Antiplasmin, and C3a des Arg
  - Hematology and chemistry values

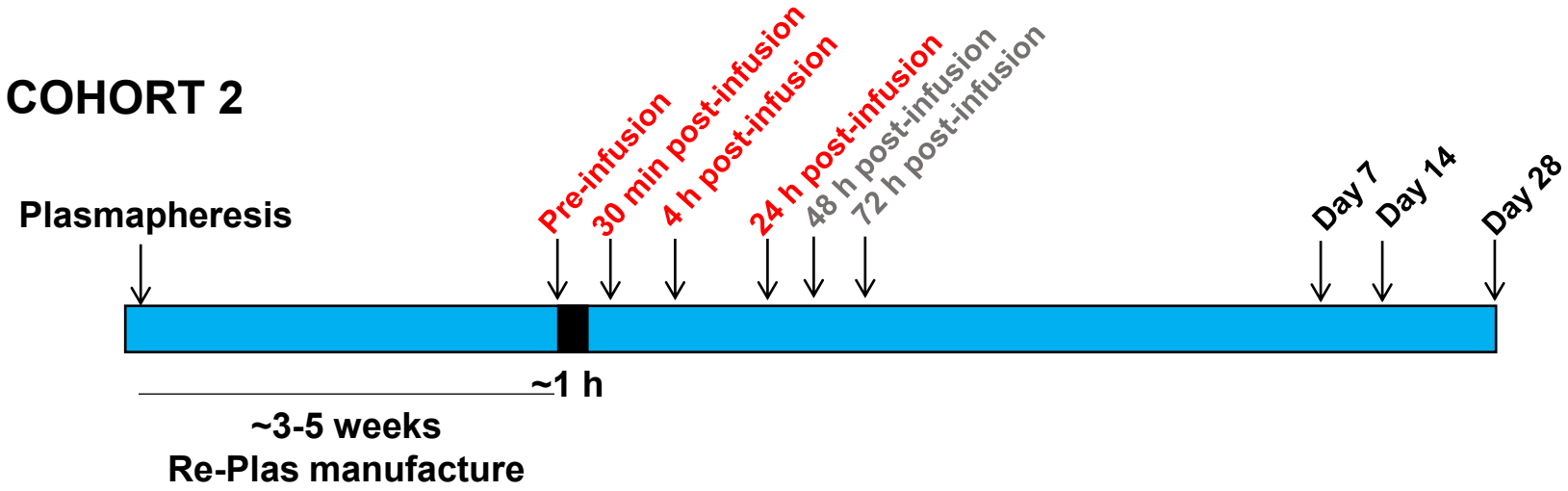
Cancelas et al., Transfusion 2022

Timeline for Cohorts 1 and 2

COHORT 1

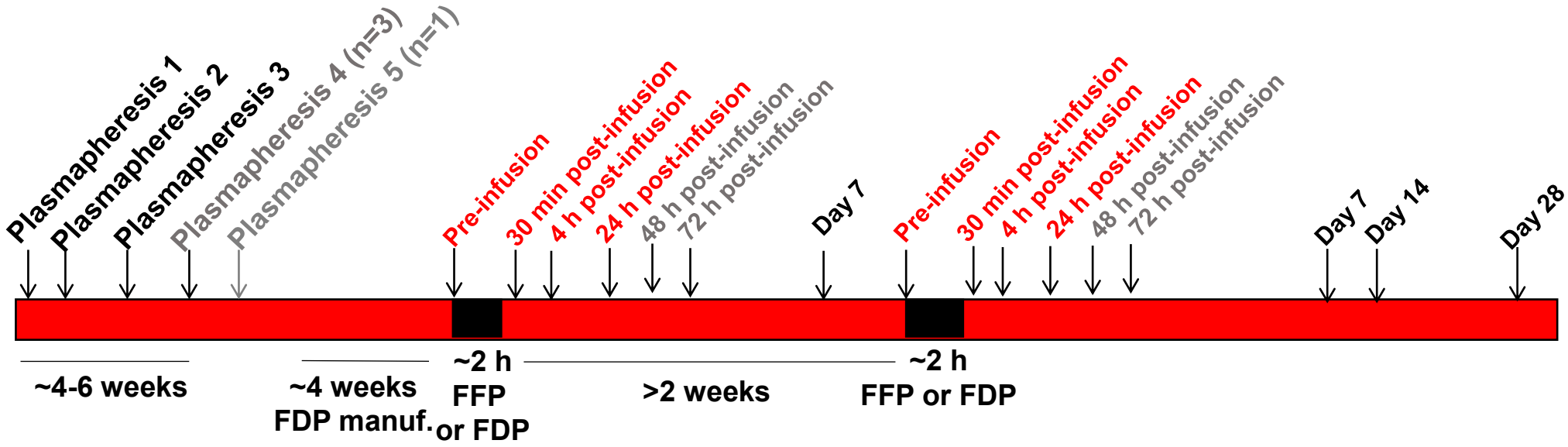


COHORT 2



Infusion: 3-10 mL/min

Timeline for Cohort 3



Infusion: 3-10 mL/min

Summary of AEs

Cohort	# Subjects w/ AE	Pre-infusion	Post FDP Infusion		Total AE
1	4 of 8	0	6		**6**
2	2 of 8	4	0		**4**
			Post FDP-FFP	Post FFP-FDP	
3	7 of 8	13	7	4	**24**
TOTALS	**13 of 24**	**17**	**17**		**34**

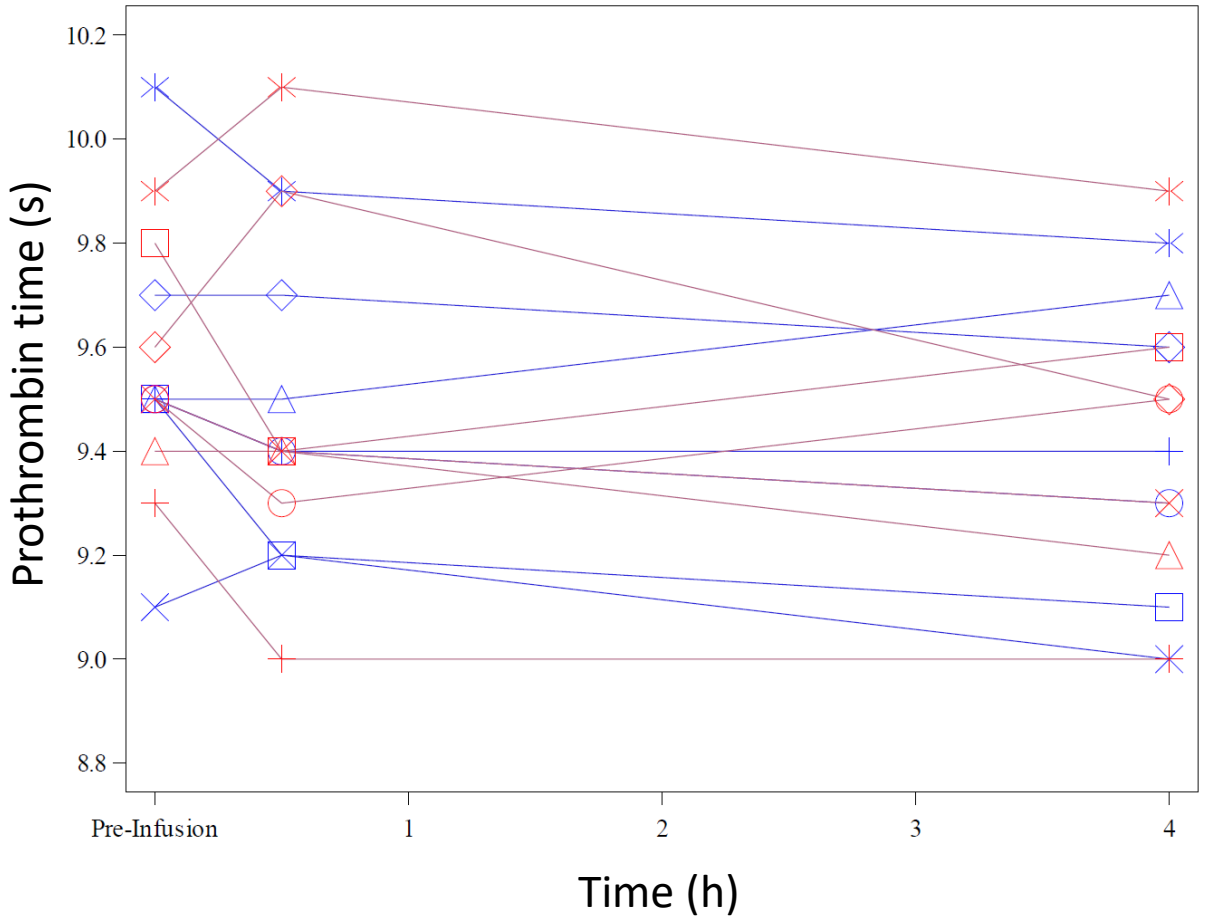
- **No SAEs experienced by any subjects**

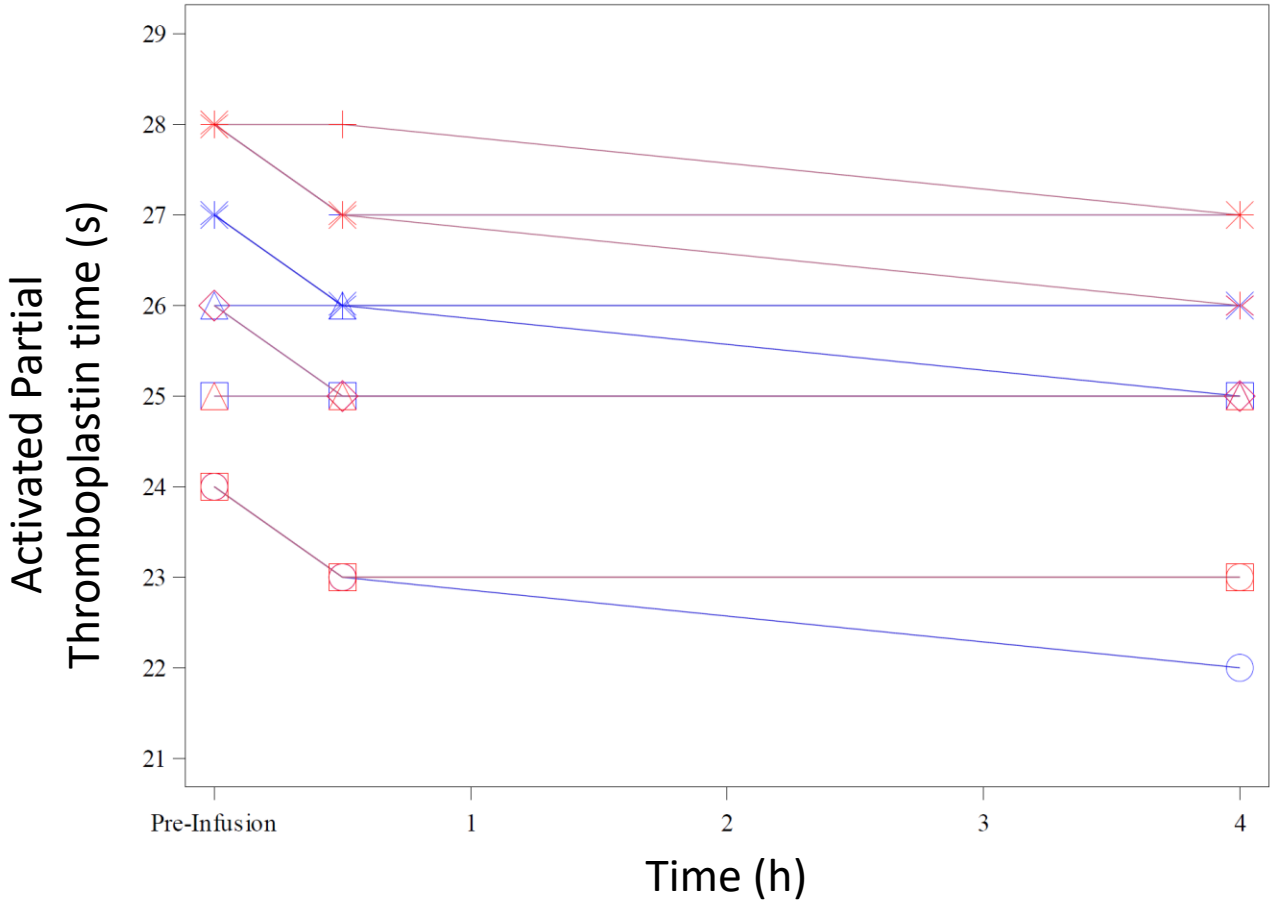
Summary of TEAEs

Cohort	Arm	Subject ID	TEAE	Treatment/ Timing	Therapy	Relationship
1	1	101107	**DAT+ (weak)**	FDP (day +29) Unconfirmed	None	**Unlikely**
1	2	101110	**Transient postprandial Hyperglycemia/Glycosuria**	FDP (+4 hours, 30' post-lunch)	None	**Unlikely**
1	2	101111	**Transient (1 time point) modest AST/ALT elevation**	FDP (day +7)	None	**Unlikely**
3	FFP-FDP	101135	**Increased both TAT & PF1.2**	FFP +30' – 4 hours	None	**Possible FFP?**
3	FFP-FDP	101142	**Transient (1 time point) modest AST/ALT elevation**	FDP (day +7)	None	**Unlikely**

* Referred to GP for glucose intolerance

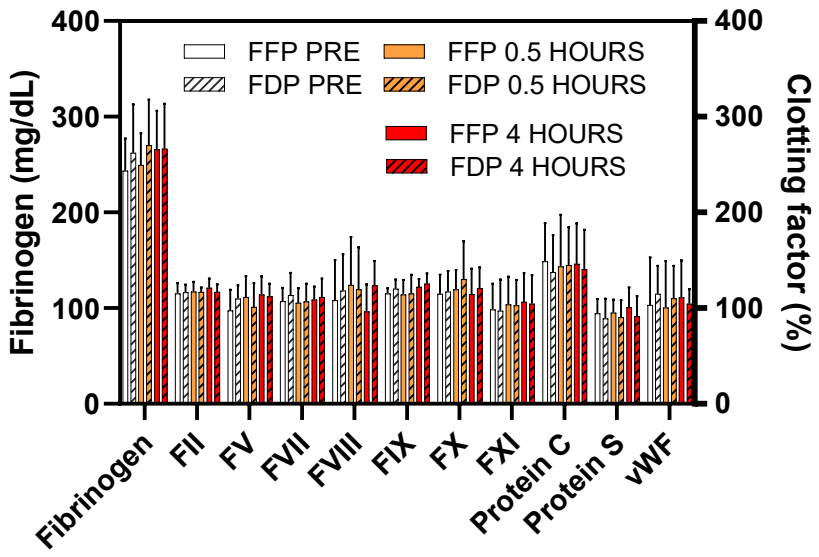
Coagulation parameters remain stable after infusion of 810 mL FDP

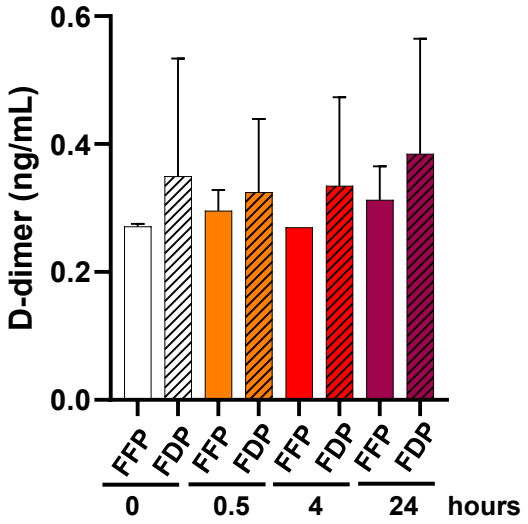


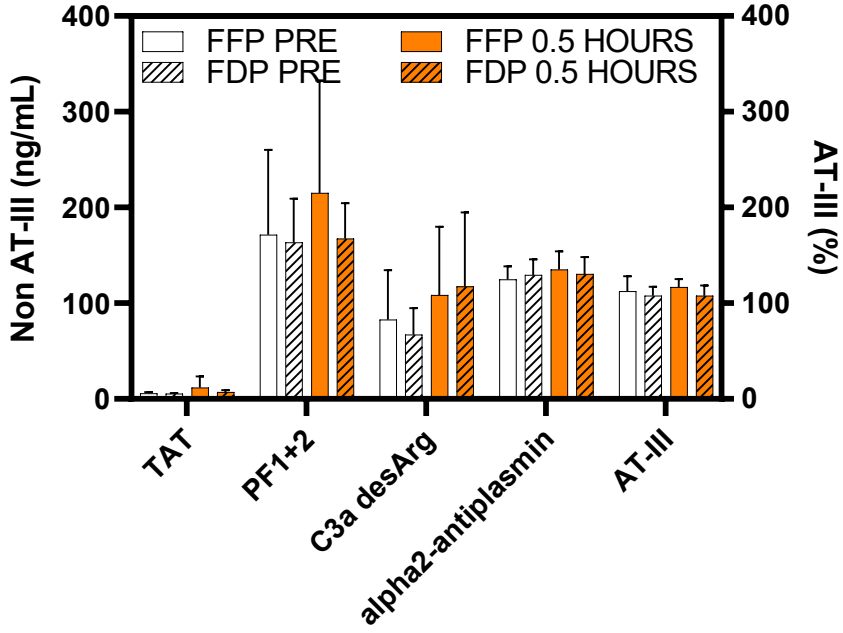


FDP
FFP

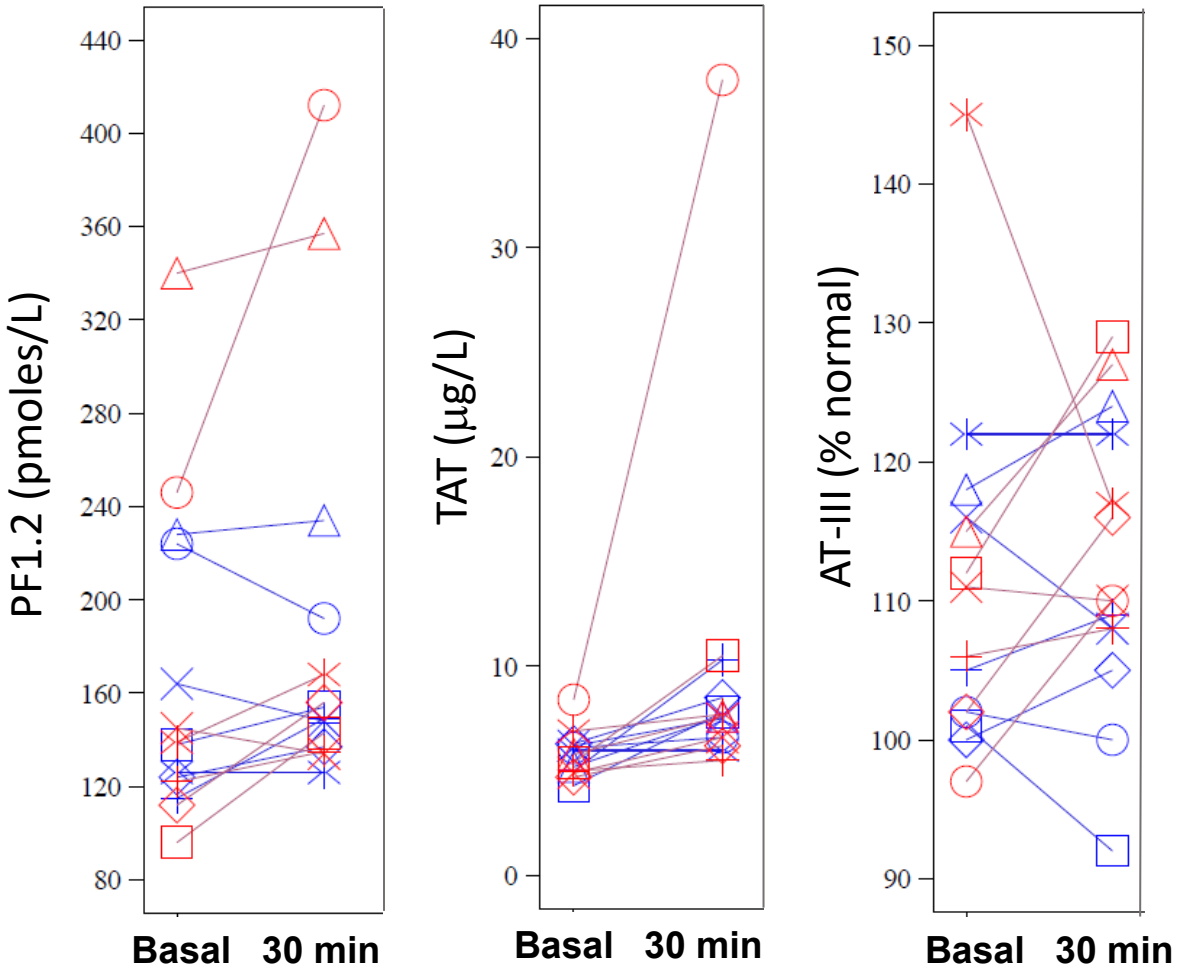
Time kinetics of clotting factor levels and pro-thrombotic indicators in plasma before and after 750 mL of EZ-PLAZ (FDP) or FFP







Thrombin activation in healthy volunteers is minimal



FDP
FFP

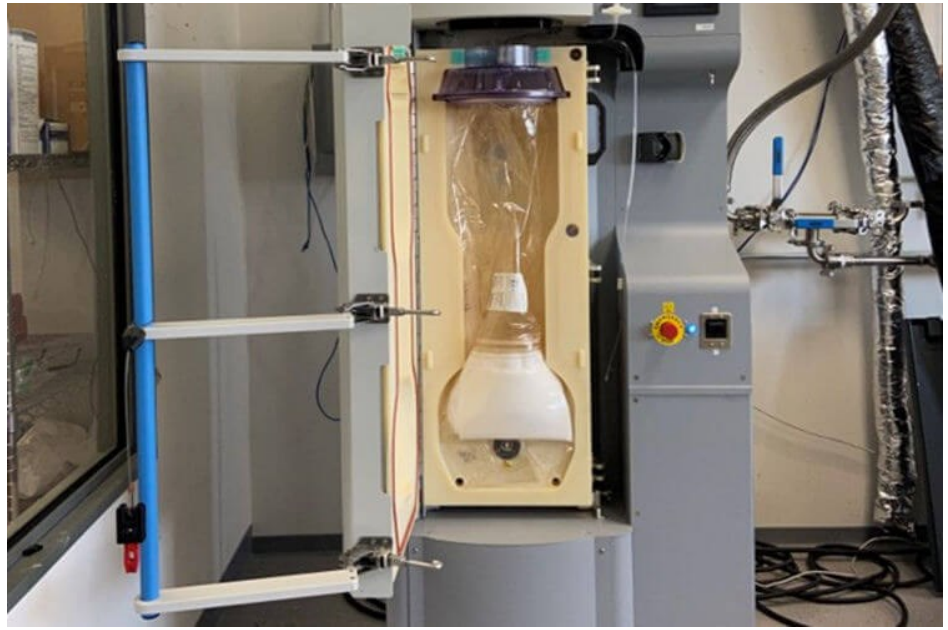
Summary of other laboratory results

- Consistent with absence of clinical evidence of thrombosis, no D-dimer level elevation was observed associated with the infusion of either plasma preparation.
- Direct antiglobulin tests (DATs) were always negative before and after infusions in cohort 3
- Similar, mild Hct reduction after FFP and FDP infusions, probably due to hemodilution.
- No significant changes in other hematological or blood/urine chemistry analysis compared with basal or between FFP and FDP large dose infusions.

Next-gen FDP: Conclusions

- **No SAEs related to product infusion and no occurrence of predetermined AEs** including thromboembolic events, infections, evidence of unusual bleeding/bruising, or relevant changes in coagulation parameters after FDP infusion.
- **No relevant clinical difference was observed between large FFP and FDP infusions.**
- **No signs of either local or systemic allergic reactions** were observed after infusions.
- **FDP is tolerated well in normal healthy volunteers** with no SAEs or safety concerns.

SDP Processing



Atomization of liquid plasma to droplets and brief exposure to hot (up to 150ºC) gas in the drying chamber, followed by rapid evaporative cooling. Removes water with minimal alteration of plasma protein levels.
This method can dry a unit (250 mL) of plasma in approximately 25 minutes.

This process may result in some loss of vWF multimer activity (vWF:CoR).

Single-donor Spray Dried Plasma: Dose-escalating safety trial

Single-donor SDP

	SpDP	FFP Paired Control
pH	7.11 ± 0.33	7.48 ± 0.17
Protein concentration (mg/mL)	73.2 ± 2.2	72.9 ± 2.1
Osmolality (mOsm/kg)	295.2 ± 5.6	314 ± 4.9
PT (sec)	12.0 ± 0.4	11.5 ± 0.5
aPTT (sec)	37.0 ± 3.6	25.7 ± 1.8
Fibrinogen (mg/dL)	250.0 ± 53.4	287.7 ± 62.9
Factor V activity (IU/dL)	81.1 ± 18.4	99.2 ± 14.5
Factor VII activity (IU/dL)	80.5 ± 11.5	85.6 ± 12.1
Factor VIII activity (IU/dL)	80.0 ± 26.4	92.7 ± 20.9
Factor IX activity (IU/dL)	101.7 ± 20.2	111.8 ± 18.1
Factor XI activity (IU/dL)	92.3 ± 24	97.4 ± 23.3
Protein S activity (IU/dL)	108.2 ± 20.5	119.6 ± 18.7
Protein C activity (IU/dL)	81.6 ± 26.3	90.0 ± 22.2
Antithrombin III activity (IU/dL)	92.6 ± 11.4	94.1 ± 8.8
vWF antigen (IU/dL)	151.3 ± 49.4	145.7 ± 51.9
vWF RCo (IU/dL)	44.8 ± 15.5*	104.2 ± 35.9
vWF activity (IU/dL)	95.1 ± 24.9	136.8 ± 30.5
Protein S antigen (IU/dL)	93.5 ± 12.1	95.6 ± 10.9
Plasminogen (IU/dL)	94.4 ± 10.3	94.1 ± 10.3
TAT (Thrombin antithrombin) (μg/L)	2.9 ± 1.3*	2.2 ± 1.1
PF1 + 2 (Prothrombin fragment 1 + 2) (pmol/L)	105.8 ± 34.7	106.6 ± 33.9
ADAMTS-13 protease (IU/dL)	79.8 ± 65.6	88.2 ± 58.7

Spray dried plasma (n = 20) was rehydrated and compared to paired FFP control plasmas (n = 20). Data are shown as mean- ± standard deviation. All values for SpDP were within 20% of paired controls except as noted.

* >20% change

	Arm	Number of Subjects	Minimum Volume of Autologous Plasma Collected (mL)	Targeted Volume of Plasma Collected (mL)[a]	Number of Donations Per Subject
Cohort 1: 1 unit, single infusion (approximately 200 mL)	1: ODP	6	400	625 – 800	1
Cohort 2: 2 units, single infusion (approximately 400 mL)	2: ODP	6	600	625 – 800	1
Cohort 3: 4 units, 2 infusions (approximately 800 mL for each infusion)	3: ODP × PF24	6	2400	2500 – 3200	4
	4: PF24 × ODP	6	2400	2500 – 3200	4

Abbreviations: ODP, on demand plasma; PF24, plasma refrigerated within 8 hours of collection and frozen within 24 hours of collection.

Next-gen SDP (ODP) Phase I: Dose Escalation

A total of 24 subjects (6 in each arm) are to fully complete the study. Depending on the cohort, study completion is defined as:

Cohort 1 (Arm 1): infusion with 1 unit of autologous FrontlineODP and completion of the 7-day postinfusion follow-up visit

Cohort 2 (Arm 2): infusion with 2 units of autologous FrontlineODP and completion of the 7-day Postinfusion follow-up visit

Cohort 3 (Arms 3 & 4): infusion with 4 units each of autologous FrontlineODP and PF24 per the assigned treatment sequence and completion of the 7-day postinfusion follow-up visit after the second infusion

SDP (ODP) Phase I: Dose Escalation

Table 5-1 Cohorts and Treatment Arms

	Arm	Number of Subjects	Minimum Volume of Autologous Plasma Collected (mL)	Targeted Volume of Plasma Collected (mL)[a]	Number of Donations Per Subject
Cohort 1: 1 unit, single infusion (approximately 200 mL)	1: ODP	6	400	625 – 800	1
Cohort 2: 2 units, single infusion (approximately 400 mL)	2: ODP	6	600	625 – 800	1
Cohort 3: 4 units, 2 infusions (approximately 800 mL for each infusion)	3: ODP × PF24	6	2400	2500 – 3200	4
	4: PF24 × ODP	6	2400	2500 – 3200	4

Abbreviations: ODP, on demand plasma; PF24, plasma refrigerated within 8 hours of collection and frozen within 24 hours of collection.

Summary of Results of SDP Phase 1 trial

1. Sixty-six ODP units manufactured with no breakage. Infusions were well tolerated in all 24 subjects.
2. In cohort 3 there was a total of product unrelated 26 AEs, of which 21 were mild/moderate TEAEs that did not interfere with the life of the subjects.
3. There were no SAEs or stopping rules invoked.
4. No symptoms/signs or laboratory values suggestive of DVT/PE or arterial thrombosis were found. Minimal D-dimer elevations (<2 ng/mL) were seen in seven subjects.
5. SDP was shown to be comparable in safety to standard frozen plasma.

Cost and implementation

Currently, there are no dried plasma products approved for use in the USA, although several companies are navigating the FDA approval process.

Frozen or liquid plasma costs ~US$40-100 per unit; however, its short shelf life limits its prehospital utilization and may lead to wastage. Dried plasma in glass bottles costs ~US$500 to US$1,500 per unit.

Although dried plasma may have a higher initial investment cost, increased shelf stability and not needing to replace frequent expirations, makes them an ideal choice for rural and other lower call volume EMS systems.

Additional cost considerations that contribute to the total cost include implementation factors such as training, administration equipment and supplies, quality management, inventory control/management systems

Plasma products still require donors. Broader community strategies to educate the public and encourage donation are also necessary for the long-term sustainability of prehospital blood product programs.

Nextgen Dried Plasma products: Conclusions and Expectations

- A new generation of FDP/SDP products are in different phases of clinical development, with clear logistical advantages and specific pharmaceutical profiles.
- The administration of nextgen dried plasma product seems not to associate with thrombogenic safety concerns in healthy volunteers.
- Primary, secondary and tertiary outcomes in future clinical trials using dried plasmas should be standardized to allow a fair comparison of different resuscitation fluid approaches.
- These trials should track all-cause mortality and/or patients that MTP in 24 hours; organ failure, days in critical care, type and amount of each blood components, cell salvage, and additional hemostatic agents; and, assess coagulation and inflammatory parameters at multiple time points.
- Dried plasmas may be more beneficial in hemorrhagic shock at distant regions from advanced care. However, further clinical research will be required to provide evidence that prehospital administration has an impact on outcome, especially in the context of administration of TXA.

Association for the Advancement of Blood & Biotherapies

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Improving lives by making transfusion medicine and biotherapies safe, available, and effective worldwide.

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A connected community dedicated to advancing transfusion medicine and biotherapies. From donor to patient. From lab to bedside.

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Founded in **1947**

1st Standards for Blood Banks and Transfusion Services 1958

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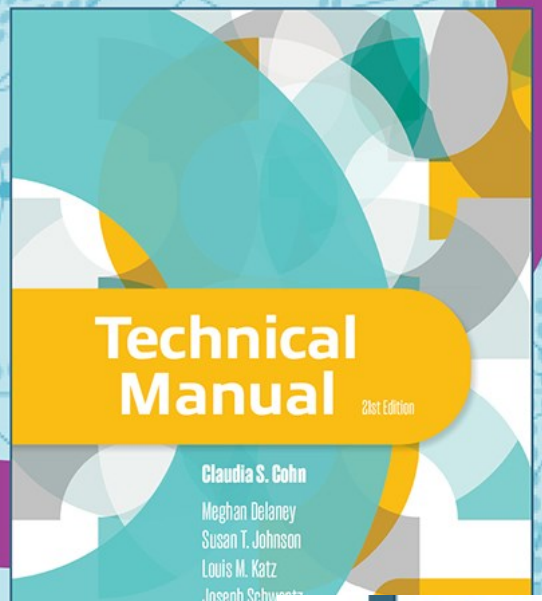
6,000 professionals
80 countries

Accredited Facilities
1,300 facilities
40 countries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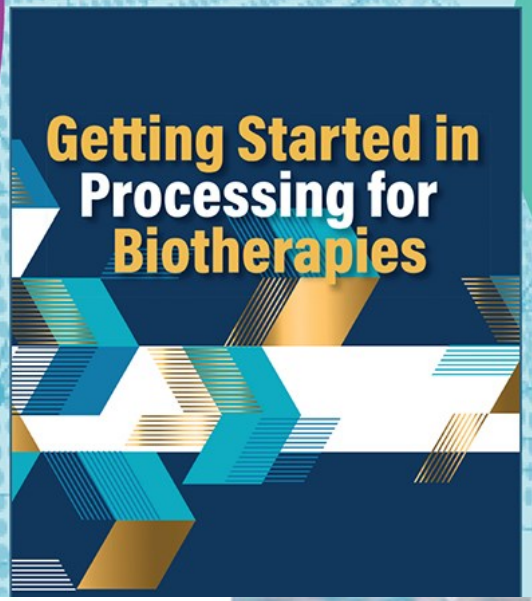
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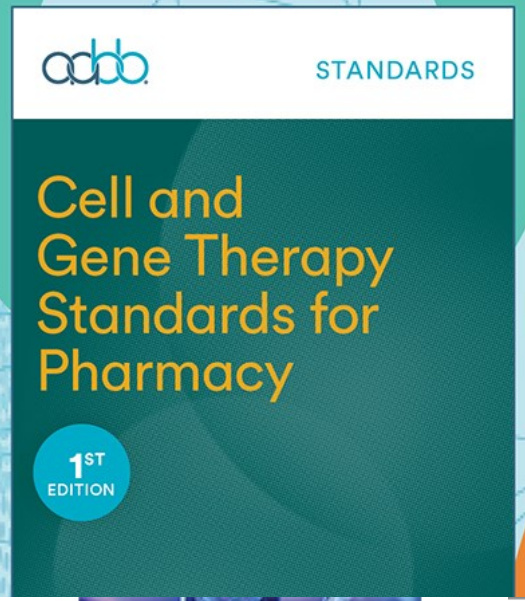
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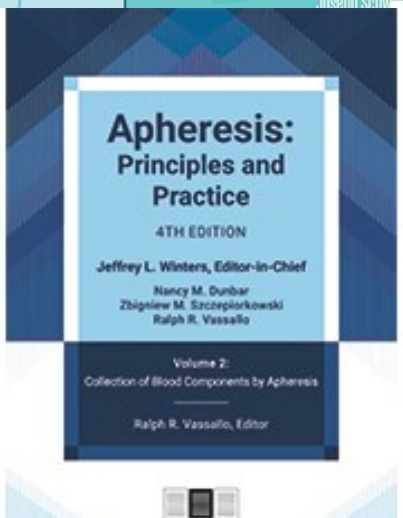
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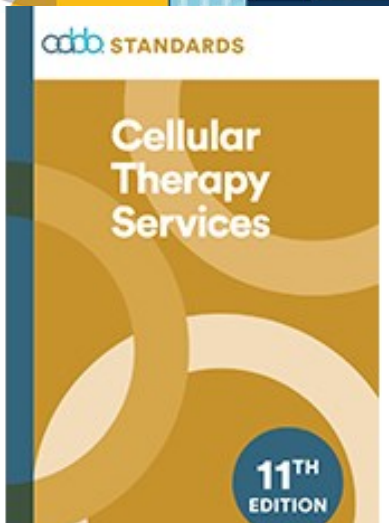
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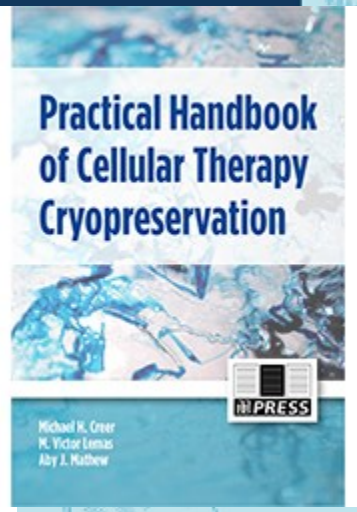
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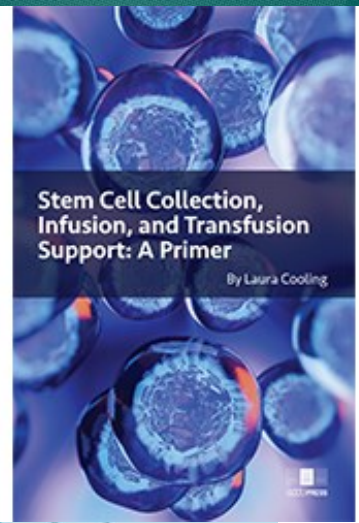
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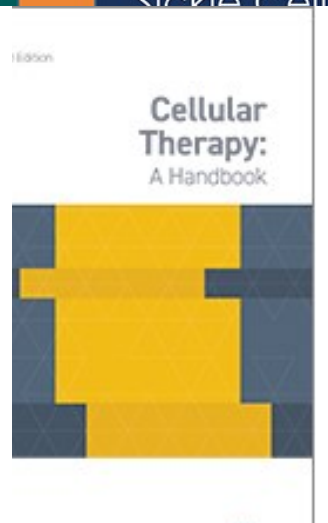
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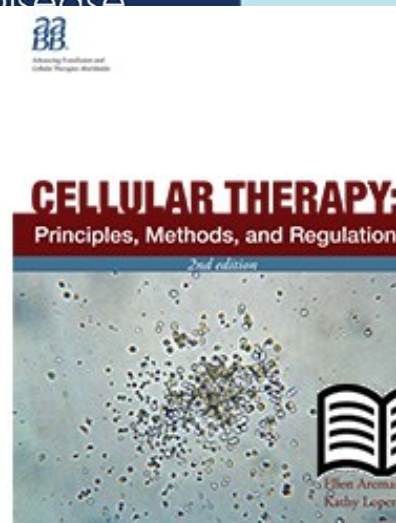
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