cerus

Be Ready. When Minutes Matter™

Pathogen Reduced Cryoprecipitated Fibrinogen Complex

(INTERCEPT® Fibrinogen Complex)

produced from the INTERCEPT® Blood System for Cryoprecipitation

INTERCEPT Fibrinogen Complex is available for immediate use for up to 5 days when stored thawed; and when stored frozen requires thawing prior to use.

INTERCEPT® Fibrinogen Complex

Breakthrough Device to CONTROL BLEEDING

The ready-to-use INTERCEPT® Fibrinogen Complex (IFC)* is approved specifically for the treatment and control of bleeding, including massive hemorrhage, associated with fibrinogen deficiency.

FDA Breakthrough Device
INTERCEPT® Blood System for Cryoprecipitation

- Immediate, enriched source of key factors in effective hemostasis[1–3]
  - » Fibrinogen
  - » Factor XIII
  - » von Willebrand Factor
  - » Other vital clotting proteins

TRANSFUSE IMMEDIATELY With the First Blood Products*

Thaw IFC in advance to minimize wait times. Plus, IFC is approved for empirical use.

PRODUCT	IMMEDIATE AVAILABILITY	MTP[4] ROUND 1	MTP[4] ROUND 2	MTP[4] ROUND 3
INTERCEPT® Fibrinogen Complex	**Room Temp ≤ 5 Days***	✓	✓	✓
— OR —				
Cryoprecipitated AHF[5]	**Room Temp ≤ 4-6 Hours**	Availability delayed due to time to thaw-on-demand, and establishment into later rounds of MTPs[4]		✓

* INTERCEPT Fibrinogen Complex is available for immediate use for up to 5 days when stored thawed; and when stored frozen requires thawing prior to use.

**There is no pathogen inactivation process that has been shown to eliminate all pathogens. Certain non-enveloped viruses (e.g., hepatitis A virus (HAV), hepatitis E virus (HEV), parvovirus B19 and poliovirus) and Bacillus cereus spores have demonstrated resistance to the INTERCEPT process.

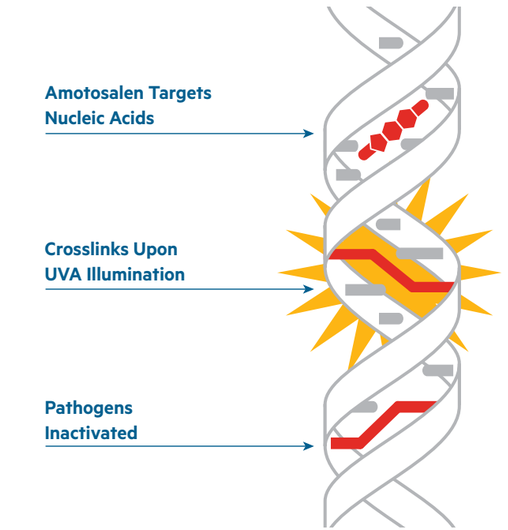
PROTECT PATIENTS: Pathogen Reduction

IFC provides broad spectrum transfusion transmitted infection (TTI) risk reduction, including viruses, bacteria, and emerging pathogens.[6,7,]**

- Produced from plasma treated by the INTERCEPT Blood System.
- Pathogen reduction enables IFC's 5-day post-thaw shelf life.

The INTERCEPT® Blood System has 20 years of clinical and post-market surveillance experience.

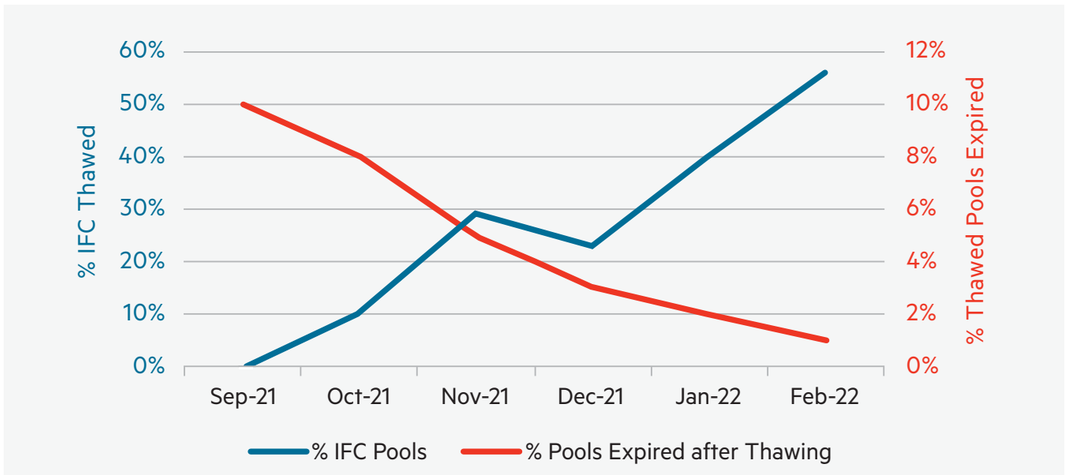
INTERCEPT® Blood System for Plasma Mechanism of Action



Upon UVA illumination, amotosalen cross-links nucleic acids to block replication and inactivates pathogens

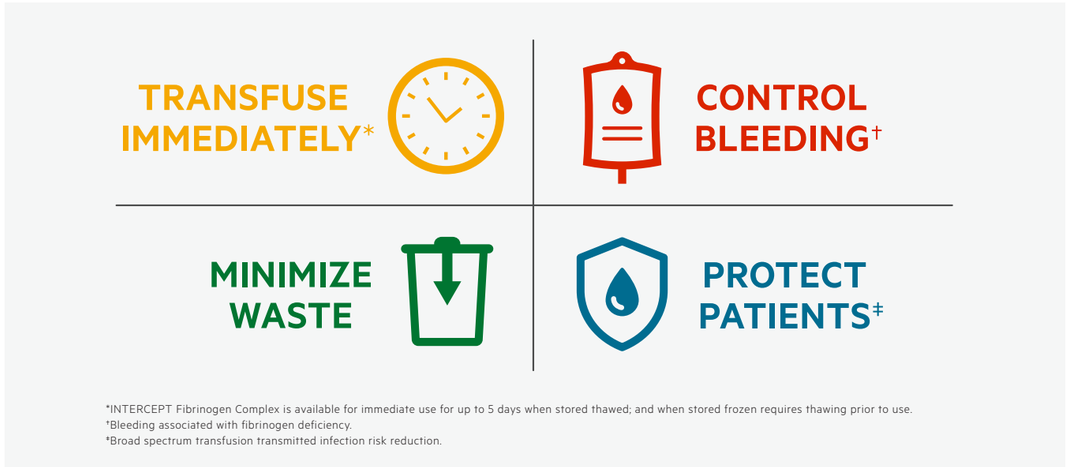
MINIMIZE WASTE

IFC's 5-day post-thaw shelf life enables product to be returned to inventory if not immediately transfused and reallocated to another patient.



UF Health Case Study 2022[8]
Blood product wastage after thawing decreased as the proportion of IFC thawed increased.

The INTERCEPT® Fibrinogen Complex Advantage



*INTERCEPT Fibrinogen Complex is available for immediate use for up to 5 days when stored thawed; and when stored frozen requires thawing prior to use.
†Bleeding associated with fibrinogen deficiency.
‡Broad spectrum transfusion transmitted infection risk reduction.

Availability

Ready for Immediate Use!

Once thawed, may be stored at room temperature for up to 5 days.

- Provided in single-use containers
- Components may be purchased as single or pre-pooled units

Catalog #	Description	Average Fibrinogen (mg)*	# Donors†
FC10	Pooled Fibrinogen Complex 1.0, Cryoprecipitated, Psoralen Treated	740	2
FC15	Pooled Fibrinogen Complex 1.5, Cryoprecipitated, Psoralen Treated	1,457	4
FC20	Pooled Fibrinogen Complex 2.0, Cryoprecipitated, Psoralen Treated	2,220**	6
FC30	Pooled Fibrinogen Complex 3.0, Cryoprecipitated, Psoralen Treated	3,117	8
FC40	Pooled Fibrinogen Complex 4.0, Cryoprecipitated, Psoralen Treated	3,700**	10

* Mean fibrinogen content (per package insert). Fibrinogen content depends on donor plasma fibrinogen levels.
** Calculated based on pooling of FC10.
† Number of donors based on whole blood donors.

Hemorrhage Increases Mortality In


Trauma[9,10]


Postpartum Hemorrhage[11]


Cardiac (CV) Surgery[12]

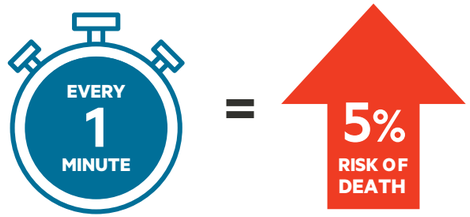

Combat[13,14]

Hemorrhage is a Leading Cause of Preventable Death[15]

Trauma is the
#1
cause of death
in adults <45 years old[16]

Of trauma deaths
~40%
from hemorrhage[16]

Hours until death
~1.6
from exsanguination*[17]



DELAY INCREASES MORTALITY[18]

Severe loss of blood

Faster is Better in Hemorrhage Control[18]

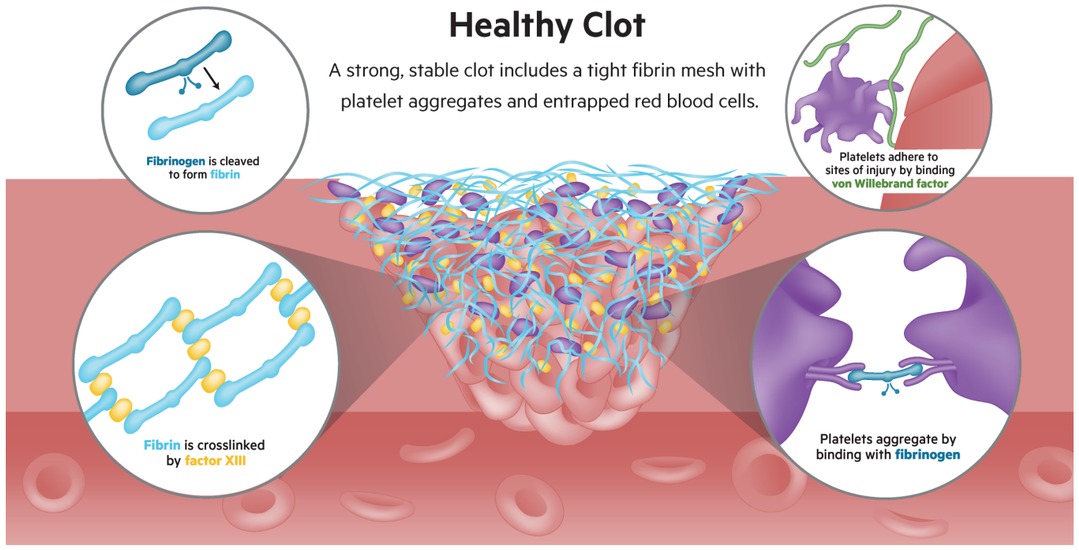
Massive Transfusion Protocols (MTP) were developed to improve hemorrhage outcomes by delivering blood products quickly.

- Every minute of delay between the activation of an MTP and the arrival of the first blood products, results in a 5% increase in the odds of mortality.
- Timely delivery of blood products is an important metric, similar to “door-to-balloon” time.

Effective Treatment: Restoring Fibrinogen & Other Clotting Factors

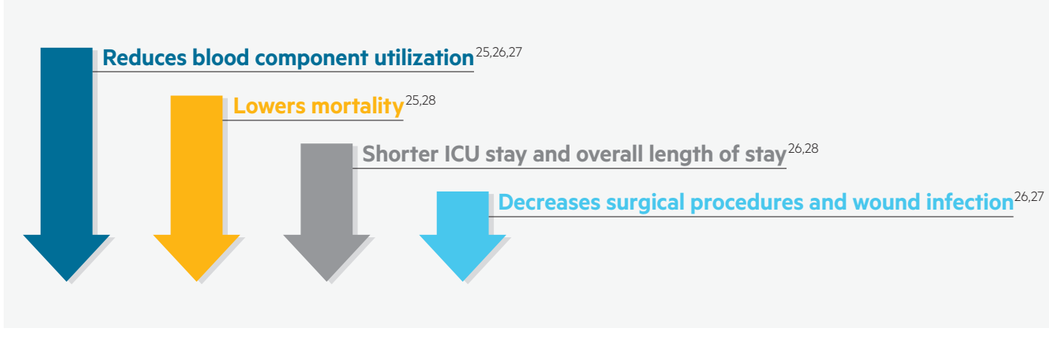
Early fibrinogen supplementation restores clot strength, reduces blood loss, and lowers mortality[10]

- Fibrinogen and other key clotting factors decrease rapidly and significantly in hemorrhage.[10,19]
- Fibrinogen level is an independent risk factor for hemorrhage and mortality in trauma,[20] cardiac (CV) surgery[21] and postpartum hemorrhage.[22]



Early delivery of **Fibrinogen**, **factor XIII** and **von Willebrand factor** adds the clotting strength needed to achieve stable clot formation and restore hemostasis.[10,23,24]

Early Fibrinogen Supplementation Improves Patient Outcomes*



*These results are based on studies evaluating cryo AHF. Results with IFC may vary.

MTPs Lack Critical Components from the Start

Cryoprecipitated AHF Inventory Challenges

LONG WAIT TIMES
15 min – 2.8 hours[4,5]
Stored frozen and typically thawed in round 2 or 3 of MTP[30]

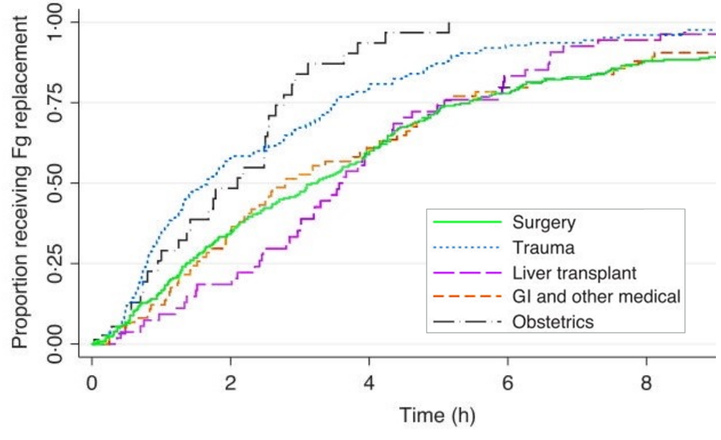
SHORT SHELF LIFE
4 – 6 hours[31]
Post thaw due in part to infectious risk

HIGH WASTAGE RATES
7 – 33%[30]
Thawed cryo AHF is wasted

In >75% of U.S. exsanguination cases, cryo AHF arrives too late to be medically efficacious[29]

Delays Impact Cryoprecipitated AHF Utility

Time to issue cryoprecipitated AHF by patient type[32]



- **2.5 hours:** Median time to receipt of cryo AHF after initiation of an MTP[32]
  - **Trauma and OB earliest: median of 1.7 hours**[32]
- **1.6 hours**: Median time to death from exsanguination[17]

Intended Use

• Treatment and control of bleeding, including massive hemorrhage, associated with fibrinogen deficiency. • Control of bleeding when recombinant and/or specific virally inactivated preparations of factor XIII or von Willebrand factor (vWF) are not available. • Second-line therapy for von Willebrand disease (vWD). • Control of uremic bleeding after other treatment modalities have failed.
Limitations of Use: Pathogen Reduced Cryoprecipitated Fibrinogen Complex should not be used for replacement of factor VIII.

Contraindications

Contraindicated for preparation of blood components intended for patients with a history of hypersensitivity reaction to amotosalen or other psoralens.

Contraindicated for preparation of blood components intended for neonatal patients treated with phototherapy devices that emit a peak energy wavelength less than 425 nm, or have a lower bound of the emission bandwidth <375 nm, due to the potential for erythema resulting from interaction between ultraviolet light and amotosalen.

Warnings and Precautions

Only the INTERCEPT Blood System for Cryoprecipitation is approved for use to produce Pathogen Reduced Cryoprecipitated Fibrinogen Complex.

For management of patients with vWD or factor XIII deficiency, Pathogen Reduced Cryoprecipitated Fibrinogen Complex should not be used if recombinant or specific virally-inactivated factor preparations are available. In emergent situations, if recombinant or specific virally-inactivated factor preparations are not available, Pathogen Reduced Cryoprecipitated Fibrinogen Complex may be administered.

References

1. Levy JH, Welsby I, et al. Fibrinogen as a therapeutic target for bleeding: a review of critical levels and replacement therapy. Transfusion 2014;54(5):1389-1405; quiz 1388.
2. Schroeder V, Kohler HP. Factor XIII: Structure and Function. Semin Thromb Hemost 2016;42(4):422-428.
3. Peyvandi, F. Diagnosis and management of patients with von Willebrand's disease in Italy: an Expert Meeting Report. Blood Transfus 2018;16(4):326-328.
4. Holcomb JB, Fox EE, Zhang X, et al. Cryoprecipitate Use in the Prospective Observational Multicenter Major Trauma Transfusion study (PROMMTT). The journal of trauma and acute care surgery 2013;75:S31-S39.
5. AABB. Circular of Information for the Use of Human Blood and Blood Components. Bethesda, MD: AABB; 2021.
6. INTERCEPT Blood System for Plasma Package Insert.
7. INTERCEPT Blood System for Cryoprecipitation for the manufacturing of Pathogen Reduced Cryoprecipitated Fibrinogen Complex Package Insert.
8. Case Study: Assessing Impact of INTERCEPT Fibrinogen Complex (IFC) on Wastage and Massive Transfusion Protocols (MTPs). Cerus Corporation 2022.
9. Stanworth SJ, Davenport R, Curry N, et al. Mortality from trauma haemorrhage and opportunities for improvement in transfusion practice. The British journal of surgery 2016;103:357-65.
10. Rourke C, Curry N, Khan S, et al. Fibrinogen levels during trauma hemorrhage, response to replacement therapy, and association with patient outcomes. Journal of thrombosis and haemostasis:JTH 2012;10:1342-51.
11. Butwick AJ, Goodnough LT. Transfusion and coagulation management in major obstetric hemorrhage. Current opinion in anaesthesiology 2015;28:275-84.Stanworth SJ, Davenport R, Curry N, et al. Mortality from trauma haemorrhage and opportunities for improvement in transfusion practice. The British journal of surgery 2016;103:357-65.
12. Görlinger K, Shore-Lesserson L, Dirkmann D, Hanke AA, Rahe-Meyer N, Tanaka KA. Management of hemorrhage in cardiothoracic surgery. J Cardiothorac Vasc Anesth 2013;27:S20-34.
13. Stinger HK, Spinella PC, Perkins JG, et al. J Trauma. 2008;64:S79-S85.
14. Joint Trauma System, Damage Control Resuscitation Clinical Practice Guideline, 12 July 2019. https://jts.amedd.army.mil/assets/docs/cpgs/JTS_Clinical_Practice_Guidelines_(CPGs)/Damage_Control_Resuscitation_12_Jul_2019_ID18.pdf. Accessed Jul 2020.
15. Drake SA, Holcomb JB, Yang Y, et al. Establishing a Regional Trauma Preventable/Potentially Preventable Death Rate. Annals of surgery 2018.
16. Callcut RA, Kornblith LZ, Conroy AS, et al. The why and how our trauma patients die: A prospective Multicenter Western Trauma Association study. The journal of trauma and acute care surgery 2019;86:864-70.
17. Cripps MW, Kutcher ME, Daley A, et al. Cause and timing of death in massively transfused trauma patients. The journal of trauma and acute care surgery 2013;75:S255-62.
18. Meyer DE, Vincent LE, Fox EE, et al. Every minute counts: Time to delivery of initial massive transfusion cooler and its impact on mortality. The journal of trauma and acute care surgery 2017;83:19-24.
19. Burggraf M, Payas A, Kauther MD, Schoeneberg C, Lendemans S. Evaluation of clotting factor activities early after severe multiple trauma and their correlation with coagulation tests and clinical data. World J Emerg Surg. 2015 Sep 22;10:43.
20. McQuilten ZK, Wood EM, Bailey M, Cameron PA, Cooper DJ. Fibrinogen is an independent predictor of mortality in major trauma patients: A five-year statewide cohort study. Injury 2017;48:1074-81.
21. Ranucci M, Pistuddi V, Baryshnikova E, Colella D, Bianchi P. Fibrinogen Levels After Cardiac Surgical Procedures: Association With Postoperative Bleeding, Trigger Values, and Target Values. The Annals of Thoracic Surgery 2016;102:78-85.
22. Charbit B, Mandelbrot L, Samain E, et al. The decrease of fibrinogen is an early predictor of the severity of postpartum hemorrhage. Journal of thrombosis and haemostasis: JTH 2007;5:266-73.
23. Levy JH, Szlam F, Tanaka KA, Sniecienski RM. Fibrinogen and hemostasis: a primary hemostatic target for the management of acquired bleeding. Anesthesia and analgesia 2012;114:261-74.
24. Chapin JC, Hajjar KA. Fibrinolysis and the control of blood coagulation. Blood reviews 2015;29:17-24.
25. Ditillo M, et al. The role of cryoprecipitate in massively transfused patients: Results from the Trauma Quality Improvement Program database may change your mind. J Trauma Acute Care Surg, 2020. 89(2): p. 336-343.
26. Pearse BL, et al. Protocol guided bleeding management improves cardiac surgery patient outcomes. Vox Sang, 2015. 109(3): p. 267-79.
27. Green L, et al. Early cryoprecipitate transfusion versus standard care in severe postpartum haemorrhage: a pilot cluster-randomised trial. Anaesthesia, 2022. 77(2): p. 175-184.
28. Curry N, et al. Early cryoprecipitate for major haemorrhage in trauma: a randomised controlled feasibility trial. Br J Anaesth, 2015. 115(1): p. 76-83.
29. Data on file. Calculation based on references: (17) Cripps et al. 2013 and (4) Holcomb et al. 2013.
30. Dunbar NM, Olson NJ, Szczepiorkowski ZM, et al. Blood component transfusion and wastage rates in the setting of massive transfusion in three regional trauma centers. Transfusion 2017;57:45-52.
31. Wagner SJ, Hapip CA, Abel L. Bacterial safety of extended room temperature storage of thawed crwyoprecipitate. Transfusion 2019;59:3549-50.
32. McQuilten ZK, Bailey M, Cameron PA, Stanworth SJ, Venardos K, Wood EM, Cooper DJ. Fibrinogen concentration and use of fibrinogen supplementation with cryoprecipitate in patients with critical bleeding receiving massive transfusion: a bi-national cohort study. Br J Haematol. 2017 Oct;179(1):131-141.

Rx only.

cerus

Global Headquarters | 1220 Concord Avenue | Concord, CA US 94520 | 855.835.3523

www.cerus.com | www.INTERCEPTFibrinogenComplex.com

© 2023 Cerus Corporation. Cerus, INTERCEPT Blood System and INTERCEPT are registered trademarks of Cerus Corporation. MKT-EN 00474-02 v3.0