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INTERCEPT® Blood System for Platelets
Pathogen Reduction System
Proven Safe and Effective

ROBUST, BROAD SPECTRUM INACTIVATION

Transfusion-transmitted infections (TTI) persist despite interventions used to reduce risk. Bacterial contamination of platelets presents the most significant infectious risk,[1,2] followed by emerging pathogens.[3,4] The INTERCEPT process provides robust inactivation and can be used as an alternative to gamma irradiation for prevention of transfusion associated graft versus host disease (TA-GVHD).[5]

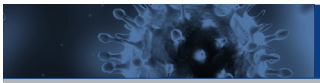
This includes:

- Bacteria frequently implicated in septic transfusion reactions[5]
- Certain emerging pathogens, including those that cause chikungunya, dengue, and malaria for which there are currently no commercially available tests[5]
- Established threats such as HIV, HBV, and HCV[5]
- T-cells which are reduced to a level to reduce the risk of TA-GVHD[5]

Table 1. *Broad spectrum reduction, with ≥4 logs for most pathogens tested.*

Bacteria (gram-negative, gram-positive, spirochetes)	Log Reduction (cfu/mL)[a]	
	Platelets in 65% PAS-3/ 35% plasma	*Platelets in 100% plasma*
Escherichia coli	≥6.3	>5.9
Yersinia enterocolitica	≥5.9	>6.3
Klebsiella pneumoniae	>6.2	>6.2
Serratia marcescens	≥6.7[b]	>7.1
Staphylococcus epidermidis	≥6.4	>6.5
Staphylococcus aureus	≥6.6	≥6.5
Streptococcus pyogenes	≥6.8[b]	>6.1
Bacillus cereus (vegetative)	≥5.5	≥5.6
Clostridium perfringens (vegetative)	≥6.5	>6.0
Propionibacterium acnes	≥6.5	>6.7
Treponema pallidum (Syphilis)	≥6.4	>6.3
Borrelia burgdorferi (Lyme disease)	≥6.8	>4.1

Protozoan Parasite	Log Reduction (pfu or cfu/mL)[a]	
Plasmodium falciparum	≥6.6	>6.5
Babesia microti	≥4.9	>4.5
Trypanosoma cruzi	≥7.8	>8.4



Virus (enveloped and non-enveloped)	Log Reduction (pfu/mL)[a]	
	Platelets in 65% PAS-3/ 35% plasma	*Platelets in 100% plasma*
HIV-1, cell-associated	≥5.4	≥4.7
DHBV (model virus for HBV)	≥4.8	≥4.3
BVDV (model virus for HCV)	≥4.1	>3.5
HTLV-I	4.7	[c]
HTLV-II	≥5.1	[c]
West Nile virus (WNV)	≥6.3	>6.3
Chikungunya virus (CHIKV)	≥5.7	>6.5
Dengue virus	≥4.3	3.6
Cytomegalovirus (CMV)	≥4.9	[c]
Pseudorabies virus (model for CMV)	[c]	≥4.2
Influenza A virus	≥5.9	[c]
Bluetongue virus (model non-enveloped virus)	5.2	4.4

Leukocyte	Log Reduction	
Human T-cells	4.0	4.0

a. Based on input titer and post-treatment titer in 1 mL.
b. Based on culture of full platelet unit (300 mL).
c. Not tested

For a full list of pathogens, see package insert.
There is no pathogen inactivation process that has been shown to eliminate all pathogens. Certain non-enveloped viruses (e.g., HAV, HEV, B19 and poliovirus) and Bacillus cereus spores have demonstrated resistance to the INTERCEPT process.

For CONTRAINDICATIONS, WARNINGS, and REFERENCES, see back cover. See package insert for full prescribing information.

INTERCEPT Blood System for Platelets, *Pathogen Reduction System*

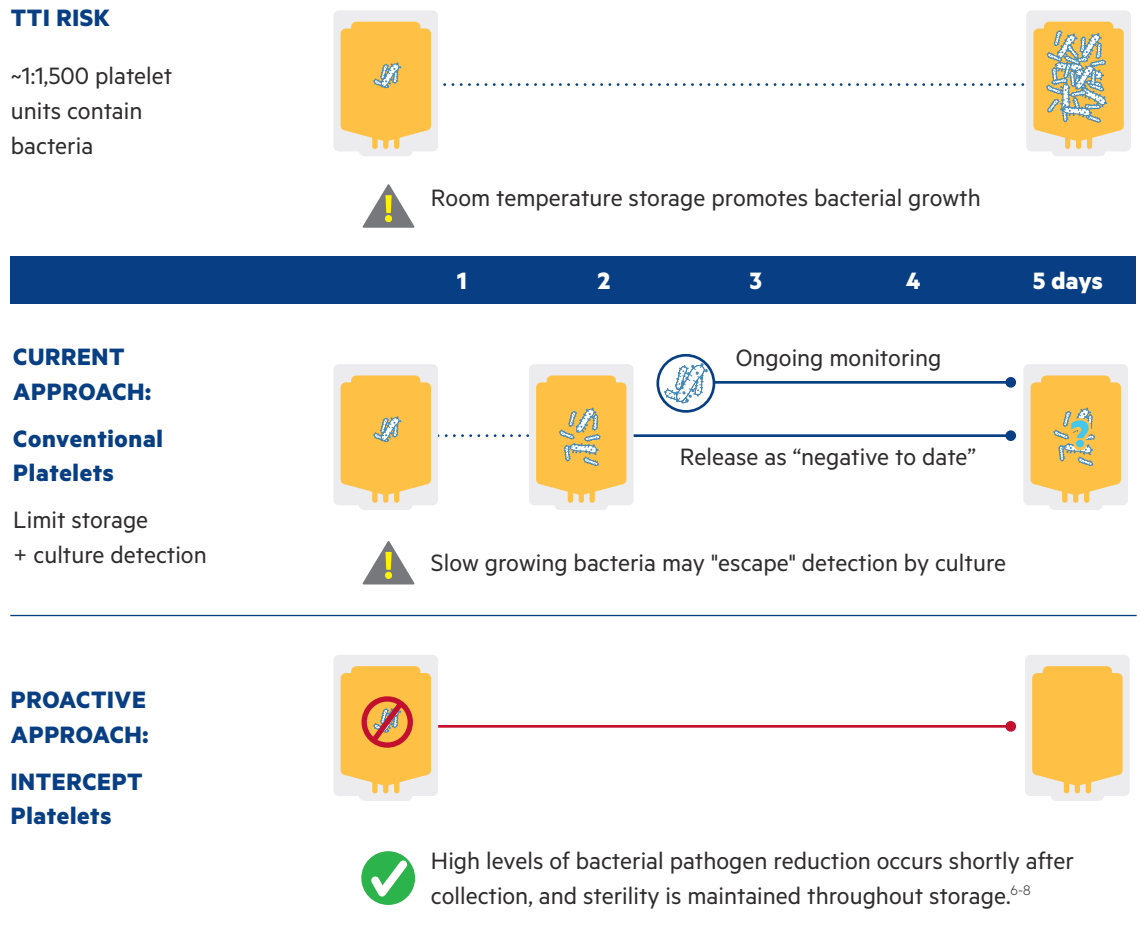
ADDRESSING BACTERIAL CONTAMINATION OF PLATELET PRODUCTS

Bacterial contamination of platelet products is the most significant infectious risk in transfusion today. About 1 in 1,500 platelet units is estimated to contain bacteria, even after culture detection, translating to a 1 in 250 per patient risk.[1] Early culture has improved blood safety, yet can miss >50% of contaminated components due to slow growing bacteria.[2]

The INTERCEPT Blood System for Platelets achieves effective inactivation for a breadth of bacteria with varying growth rates, including:

- Organisms with a prolonged lag phase or slow growth that may otherwise escape culture detection, such as *S. epidermidis* and *S. aureus*.[6-8] Unlike culture methods, pathogen inactivation is applied to the entire platelet unit, thus effectively neutralizing low titers of bacteria.
- Fast-growing bacteria that may rapidly reach high concentrations in platelets, including *E. coli*, *K. pneumonia*, and *S. marscecens*.[6-8] Robust inactivation neutralizes bacteria that may proliferate in platelets between collection and the pathogen inactivation process.

Figure 1. *The INTERCEPT process proactively addresses bacterial contamination through pathogen reduction of slow and fast growing bacteria.*



INTERCEPT Blood System for Platelets, *Pathogen Reduction System*

ROUTINE USE OF THE INTERCEPT PROCESS DEMONSTRATES PREVENTION OF SEPTIC TRANSFUSION REACTIONS

Hemovigilance (HV) programs provide a comprehensive view of transfusions and potential adverse events via the surveillance of blood donations in routine use settings. Over 700,000 INTERCEPT Blood System processed platelet ("INTERCEPT Platelets") units have been transfused in French, Swiss and Belgium national HV programs, with no reported TTI or sepsis-related fatalities to-date.[9-12,20]

Table 2. *Demonstrated prevention of septic transfusion reactions in routine settings.*

	Conventional Platelets		INTERCEPT Platelets	
HV Program	*Platelet Units Transfused*	*TTI (Fatalities)*	*Platelet Units Transfused*	*TTI (Fatalities)*
France:[9,10] 2006-2016	2,860,529	51 (9)	236,099	0 (0)
Switzerland:[11] 2010-2014	156,719	16 (3)	243,100	0 (0)
Belgium:[12] 2009-2015	294,477	9 (0)	226,378	0 (0)
Total	**3,311,725**	**76 (12)**	**705,577**	**0 (0)**

EVALUATED IN NUMEROUS CLINICAL TRIALS

The INTERCEPT Blood System for Platelets has been evaluated in numerous clinical trials comprised of nearly 1000 subjects that received INTERCEPT Platelets. Primary endpoints were met in the controlled, randomized clinical trials, including corrected count increments (CCI) and bleeding criteria, both of which are measures of hemostatic efficacy. The frequency of acute transfusion reactions (ATRs) was assessed in three observational studies.

Table 3. *INTERCEPT Platelets clinical trials*

Study Description	*Patients*	*Design*	*Primary Endpoint*	*Primary Endpoint Met?*
Viability of INTERCEPT Platelets, clearance of amotosalen, healthy patients[13,14]	65	Randomized, single-blind, cross-over	Recovery/survival, clearance of amotosalen	✓
Safety/efficacy of INTERCEPT Platelets, thrombocytopenic patients[15]	645	Randomized, double-blind, parallel	WHO Grade 2 bleeding	✓
Safety/efficacy of INTERCEPT Platelets, thrombocytopenic patients[16]	43	Randomized, double-blind, parallel	1 hour CCI	✓
Safety/efficacy of INTERCEPT Platelets, thrombocytopenic patients[17]	32	Randomized, double-blind, cross-over	Bleeding time	✓
Safety of INTERCEPT, Routine setting[18]	51	Single-arm, open label	Frequency of acute transfusion reactions was 1.6%	
Safety of INTERCEPT, Routine setting[19]	46	Single-arm, open label	Frequency of acute transfusion reactions was 2%	
Safety of INTERCEPT, Routine Setting[3]	169	Single-arm, open label	Frequency of acute transfusion reactions was 2.4%	

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CONTRAINDICATIONS

Contraindicated for preparation of platelet components intended for patients with a history of hypersensitivity reaction to amotosalen or other psoralens. Contraindicated for preparation of platelet 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 INTERCEPT Processing Sets for platelets are approved for use with the INTERCEPT Blood System. Use only the INTERCEPT INT100 Illuminator for UVA illumination of amotosalen-treated platelet components. No other source of UVA light may be used. Please refer to the Operator's Manual for the INT100 Illuminator. Discard any platelet components not exposed to the complete INT100 illumination process. Tubing components and container ports of the INTERCEPT Blood System contain polyvinyl chloride (PVC). Di(2-ethylhexyl)phthalate (DEHP) is known to be released from PVC medical devices, and increased leaching can occur with extended storage or increased surface area contact. Blood components will be in contact with PVC for a brief period of time (approx. 15 minutes) during processing. The risks associated with DEHP released into the blood components must be weighed against the benefits of therapeutic transfusion.

REFERENCES

1. Kleinman S et al. Transfusion 2013;53:1603-1618. 2. Benjamin RJ. ISBT Science Series 2014;9:124-130. 3. Stramer SL, Hollinger FB, et al. Transfusion 2009;49(Suppl 2):1S-29S. 4. Dodd RY. Practical Transfusion Medicine. 4th ed. Chichester: Wiley; 2013;161-7. 5.The INTERCEPT Blood System for Platelets Package Insert, Cerus Corporation; September 6, 2022. 6. Lin L et al. Transfusion 2004;44:1496-1504. 7. Nussbaumer W et al. Transfusion 2007;1125-1133. 8. Schmidt M et al. Vox Sang 2011;101(S1):226 9. Sweeney J, Lozano M. Platelet Transfusion Therapy. Bethesda: AABB Press, 2013. 10. French National Agency for Medicine and Health Product Safety/ANSM, Hemovigilance Activity Reports, 2012–2019. 11. SwissMedic Haemovigilance Annual Reports, 2010 - 2019. 12. Benjamin et al. Transfusion 2017;57:2946-57. 13. Snyder E et al. Transfusion 2004;44:1732-1740. 14. Corash L et al. Transfusion 2000;40(S10):137. 15. McCullough et al. Blood 2004;104(5):1534-1541. 16. Janetzko et al. Transfusion 2005;45:1443-1452. 17. Slichter SJ et al. Transfusion 2006;46:731-740. 18. Schlenke P et al. Ann Hematol 2011;90(12):1457-1465. 19. Infanti L et al. Transfus Apher Sci 2011;45(2):175-181. 20. Jutzi M. et al. Transfus Med Hemother 2018;45:151-6.

Reduce TTI While Providing Therapeutically Effective Platelets to Patients.

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Rx only. There is no pathogen inactivation process that has been shown to eliminate all pathogens. Certain non-enveloped viruses (e.g., HAV, HEV, B19 and poliovirus) and *Bacillus cereus* spores have demonstrated resistance to the INTERCEPT process. See package insert for full prescribing information.