











The Fritsma Factor, Your Interactive Hemostasis Resource<sup>sM</sup> Fritsma & Fritsma, LLC; www.fritsmafactor.com





lomostacic	Reason for Plasma	n=4635
source	Non-cardiac surgery	21%
	Liver disease	19%
	GI, ICH, childbirth, sepsis, renal failure	18%
	Coumadin reversal	14%
	Massive hemorrhage	13%
	Cardiac surgery	13%
	Cancer	10%
	Trauma	3%
	DIC	3%
	Trauma DIC Stanworth SJ, Grant-Casey J, Lowe D, et al. The use of fr high levels of inappropriate use in adults and children. Tra	3% 3% esh-frozen pla nsfusion 2011

THE FRITSMA FACTOR	Plasma Efficacy in Adults						
Interactive Hemostasis	INR	Median FFP n=2543	Median Change		PTT	Median FFP n=2543	Median Change
Resource	All	11.4 mg/kg	-0.2	1	All	11.4 mg/kg	–2.6 s
	≤1.5	10.9 mg/kg	0.0	1	<30 s	11.0 mg/kg	+2.8 s
	1.6–1.7	10.9 mg/kg	-0.2		30–39 s	10.8 mg/kg	–1.3 s
	1.8–1.9	12.1 mg/kg	-0.3		40–49 s	11.7 mg/kg	–5.8 s
	2.0-2.1	11.4 mg/kg	-0.4		≥50 s	12.6 mg/kg	–19 s
	2.2-2.5	11.6 mg/kg	-0.6		• "The m	edian reductions	in INR
	2.6-2.9	12.3 mg/kg	-0.9		were gr	eater when the	ore-plasma
	3.0-4.9	11.5 mg/kg	-1.8		Tx INR:	s were higher."	
	≥5.0	10.5 mg/kg	-2.0		<ul> <li>The material</li> </ul>	edian reduction	in PTT wa:
SINGE	Do	n't treat th	10		PTTs w	ere higher."	
	The Fritsma Factor	ab result!	Stanworth fresh-froze use in adul	SJ n p ts	l, Grant-Case plasma in Eng and children.	y J, Lowe D, et al. T land: high levels of Transfusion 2011; 5	he use of inappropriate 1: 62–70.

teractive	Outcome	Transfusion	No Transfusion
source	Sepsis	16.4%	9.81%
	Pulmonary complication	12.6%	6.03%
	Wound complications	9.17%	4.65%
	Mortality	6.44%	4.26%
	Thromboembolic disease	4.07%	1.89%
	Renal complications	2.69%	1.85%
	Cardiac complications	2.08%	1.40%
	30-day mortality and complic	ations, all are signi	ficant at p <0.05
	Glance LG, Dick AW, Mukamel DB, transfusions and mortality and morbin Anesthesiology 2011;114:283–92.	et al. Association betwe dity in patients undergo	en intraoperative blood ing noncardiac surgery.



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THE FRITSMA FACTOR Your Interactive Hemostasis	Medical Condition with Acquired Cc	Medical Conditions Associated with Acquired Coagulopathies		
Resource	Malnutrition	Vitamin K deficiency		
	Renal disease	Platelet dysfunction		
	End-stage liver disease	Chronic DIC Thrombocytopenia Vitamin K deficiency Increased fibrinolysis		
	Myeloproliferative neoplasms	Platelet dysfunction		
Re l	Acute promyelocytic or monocytic leukemia (M3, M5)	DIC		
	The Fritsma Factor			









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THE FRITSMA			
Your Interactive	Factor	Half-life	Plasma level
Resource	Fibrinogen	100–150 h	300 mg/dL
	Prothrombin	60 h	100 μg/mL
	V	24 h	7 μg/mL
	VII	6 h	0.5 μg/mL
	VIII	12 h	0.1 μg/mL
	IX	24 h	5 μg/mL
	Х	48–52 h	10 μg/mL
	XI	48–84 h	6 μg/mL
ABC	XIII	150 h	290 μg/mL
are -	VWF	12 h	40 μg/mL
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9.8 g/dL

HGB

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RI

12.4-14.4 s

25-35 s

12.0-14.5 g/dL





THE FRITSMA FACTOR Your Interactive Hemostasis Resource	28-YO Wom PTT	an 2 Mixin	M Post-partum g Study
	Assay	Result	Comment
	Thrombin time	17 s	RI 17–20 s, r/o heparin
	PTT patient (as before)	49 s	RI 25–35 s
	PTT normal plasma control	27 s	Commercial PPP
	Immediate 1:1 mix	29 s	Correction ≤10%, r/o LA
	37°C 2 h mix	31 s	Correction ≤10%, r/o inhibitor
SHAK	37°C 2 h normal control	30.5 s	Incubate with mix
	The Fritsma Factor		39



<b>RI</b>	
-249%	
, 2-10/0	
)—166%	
-186%	
6–157%	
7–235%	
50–150%	
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) 0% De	



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