

**TABLE I. Products Licensed in the U.S. to Treat HEMOPHILIA**

**A. Recombinant FACTOR VIII Concentrates**

The table includes bioengineered recombinant factor concentrates with altered properties with clinical implications such as extended half-life. Please refer to the individual prescribing information and review scientific publications that summarize properties for each product.

<b>Product Name</b>	<b>Manufacturer /distributor</b>	<b>Bioengi - neering</b>	<b>Cell Type Used in Culture</b>	<b>Genera- tion/ Human or Animal Protein in Culture</b>	<b>Method of Viral Inactivation or Depletion</b>	<b>Stabilizer in Final Vial</b>	<b>Doses for Routine Prophylaxis Per Manufacturer's Prescribing Information</b>
Advate	SHIRE (Baxalta, Baxter)	None	Chinese Hamster Ovary (CHO)	Third/ None	1. Immunoaffinity chromatography 2. Solvent/detergent	1. Mannitol, 3.2-8% w/v 2. Trehalose, 0.8-2% w/v	1) 25-40IU/kg 3-4 times/wk or every three days to maintain trough level >1% 2) Adjust dose based on clinical response
ADYNOVATE Approved 2015	SHIRE (Baxalta, Baxter)	PEGyla tion	Chinese Hamster Ovary (CHO)	Third/ None	1. Immunoaffinity chromatography 2. Solvent/detergent (Tris/polysorbate 80)	1. Mannitol 2. Trehalose	1) Adults, adolescents $\geq$ 12 yo 40-50 IU/kg 2 times a week. 2) Children <12 yo 55-70 IU/kg 2 times a week 3) Adjust dose based on clinical response.
AFSTYLA Approved 2016	CSL Behring	Single chain rFVIII	Chinese Hamster Ovary (CHO)	Third/ None	1. Solvent/detergent 2. Nanofiltration, 20nm	Sucrose, 6mg/mL	1) Adults, adoles >12yo: 20-50 IU/kg 2-3 times/wk. 2) Children <12yo: 30-50 IU/kg 2-3 times/wk. 3) More frequent or higher doses may be required to account for the higher clearance in young children.

<b>Product Name</b>	<b>Manufacturer /distributor</b>	<b>Bioengi - neering</b>	<b>Cell Type Used in Culture</b>	<b>Genera- tion/ Human or Animal Protein in Culture</b>	<b>Method of Viral Inactivation or Depletion</b>	<b>Stabilizer in Final Vial</b>	<b>Doses for Routine Prophylaxis Per Manufacturer's Prescribing Information</b>
ELOCTATE Approved 2014, revised 2016	BIOVERATIV (Biogen Idec)	B- Domain Deleted , IgG-1 Fc- domain Fusion Protein	Human Embryonic Kidney (HEK)	Third/ None	1. Detergent (Polysorbate 20) 2. Nanofiltration, 15 nm	Sucrose	1) 50 IU/kg every 4 days. Adjust to 25-65 IU/kg every 3-5 days based on clinical response. 2) Children <6 yo: 50 IU/kg 2X/wk. Adjust dose to 25- 65 IU/kg every 3-5 days. 3) Children may require up to 80 IU/kg given more frequently.
Kogenate FS Helixate FS	Bayer (Helixate FS* * distributed by CSL Behring)	None	Baby Hamster Kidney (BHK)	Second/ Human Plasma Protein Solution	1. Immunoaffinity chromatography 2. Solvent/detergent	Sucrose, 0.9-1.3%/vial	1) Adults: 25 IU/kg 3X per week. 2) Children: 25 IU/kg every other day.
Kovaltry Approved 2016	Bayer	None	Baby Hamster Kidney (BHK)	Third/ None	1. Detergent 2. Nanofiltration, 20nm	Sucrose, 1%	1) Adults, adolescents: 20-40 IU/kg 2-3 X/wk 2) Children <u>&lt;12 Years: 25-50 IU/kg 2-3 X/wk or QOD</u> 3) <u>Adjust dose based on clinical response</u>
NovoEight	Novo Nordisk (Bagsvaerd, Denmark)	B- domain truncate d	Chinese Hamster Ovary (CHO)	Third/None	1. Immunoaffinity chromatography 2. Solvent/detergent 3. Nanofilter, 20nm	Sucrose, 3 mg/mL	1) Adults, adolescents: 20-50 IU/kg 3X/wk or 20-40 IU/kg QOD 2) Children <12 yrs: 25-60 IU/kg 3X/wk or 25- 50 IU/kg QOD

<b>Product Name</b>	<b>Manufacturer /distributor</b>	<b>Bioengi - neering</b>	<b>Cell Type Used in Culture</b>	<b>Genera- tion/ Human or Animal Protein in Culture</b>	<b>Method of Viral Inactivation or Depletion</b>	<b>Stabilizer in Final Vial</b>	<b>Doses for Routine Prophylaxis Per Manufacturer's Prescribing Information</b>
Nuwiq	Octapharma	B- domain deleted	Human Embryonic Kidney (HEK)	Third/ None	1. Solvent/detergent 2. Nanofilter, 20 nm	Sucrose, 5.4 mg/mL	1) Adults, adolescents 12+ yrs: 30-40 IU/kg every other day 2) Children 2-11 yrs: 30-50 IU/kg 3 X/wk or every other day
Recombinate	SHIRE (Baxalta, Bayer)	None	Chinese Hamster Ovary (CHO)	First/ Bovine Serum Albumin	1. Immunoaffinity chromatography 2. Solvent/detergent	Human albumin, 25mg/mL	Not provided
Xyntha	Pfizer	B- domain deleted	Chinese Hamster Ovary (CHO)	Third/ None	1. Affinity chromatography 2. Solvent/detergent 3. Nanofiltration, 35 nm	Sucrose	Not provided

- \*\*As of 12/31/2017, Bayer is no longer producing Helixate FS. Given a 2-year expiration date for all product already produced, there should be no Helixate FS available after 12/31/2019.

TABLE I.

**Products Licensed in the U.S. to Treat HEMOPHILIA A (Continued)****B. Human Plasma-derived Immunoaffinity-purified FACTOR VIII Concentrates**

<b>Product Name</b>	<b>Manufacturer</b>	<b>Method of Viral Inactivation or Depletion</b>	<b>Heparin in Final Vial</b>	<b>Specific Activity of Final Product (IU factor VIII/mg total protein after addition of stabilizer)</b>
Hemofil M	SHIRE (Baxalta, Baxter)	1. Immunoaffinity chromatography 2. Solvent/detergent (TNBP/Octoxynol 9) 3. Nanofiltration, 20 nm	None	2-20
Monoclate-P**	CSL Behring	1. Immunoaffinity chromatography 2. Pasteurization (60°C, 10h)	None	5-10

- \*\*CSL-Behring has announced that they are no longer producing MonoclateP as of March 2018. They anticipate that supplies of this product will be depleted by December 31, 2018.

**TABLE I. Products Licensed in the U.S. to Treat HEMOPHILIA A (Continued)**

**C. Human Plasma-derived Concentrates that Contain FACTOR VIII and VON WILLEBRAND FACTOR**

<b>Product Name</b>	<b>Manufacturer/ Distributor</b>	<b>Method of Viral Inactivation or Depletion</b>	<b>Heparin in Final Vial (units/ml)</b>	<b>Specific Activity of Final Product (IU FVIII /mg total protein after addition of stabilizer)</b>
Alphanate	Grifols	1. Affinity chromatography 2. Solvent/detergent (TNBP/polysorbate 80) 3. Dry heat (80°C, 72h)	<1.0	7.5-21
Humate-P	CSL Behring GmbH (Marberg, Germany)	1. Pasteurization(wet heat) (60°C, 10 hrs)	None	1-2
Koate-DVI	Grifols, distributed by Kedrion Biopharma	1. Solvent/detergent (TNBP/polysorbate 80) 2. Dry heat (80°C, 72h)	None	9-22

**TABLE I. Products Licensed in the U.S. to Treat HEMOPHILIA A (continued)**

**D. Desmopressin Formulations to Treat MILD HEMOPHILIA A**

<b>Product Name</b>	<b>Manufacturer</b>	<b>U.S. Distributor</b>	<b>Formulation</b>	<b>Recommended Dosage and Administration</b>
DDAVP Injection	Ferring AB (Malmo, Sweden)	Aventis Pharma	For parenteral use (IV or SQ), 4 mcg/ml in a 10-ml vial	<ol style="list-style-type: none"> <li>1) 0.3 mcg/kg, mixed in 30 ml normal saline solution, infused I.V. slowly over 30 minutes. Maximum dose 24 mcg. May be repeated after 24 hours.</li> <li>2) 0.3 mcg/kg by subcutaneous injection. Maximum dose 24 mcg. May be repeated after 24 hours.</li> <li>3) DO NOT USE IN CHILDREN UNDER THE AGE OF 2 YEARS.</li> <li>4) USE WITH CAUTION IN PREGNANT WOMEN DURING LABOR AND DELIVERY (15)</li> </ol>
Stimate Nasal Spray for Bleeding	Ferring AB (Malmo, Sweden)	CSL Behring	Nasal spray, 1.5 mg/ml. The metered dose pump delivers 0.1 ml (150 mcg) per actuation. The bottle contains 2.5 ml with spray pump capable of delivering 25 150-mcg doses or 12 300-mcg doses.	<ol style="list-style-type: none"> <li>1) In patients weighing &lt;50 kg, give one spray in <u>one</u> nostril (dose = 150 mcg). May be repeated after 24 hours.</li> <li>2) In patients weighing &gt;50 kg, give one spray in <u>each</u> nostril (dose = 300 mcg). May be repeated after 24 hours.</li> <li>3) DO NOT USE IN CHILDREN UNDER THE AGE OF 2 YEARS.</li> <li>4) USE WITH CAUTION IN PREGNANT WOMEN DURING LABOR AND DELIVERY. (15)</li> </ol>

**TABLE II. Products Licensed in the U.S. to Treat HEMOPHILIA B**

**A. Recombinant FACTOR IX Concentrates**

The table includes bioengineered recombinant factor concentrates with altered properties such as extended half-life with clinical implications. Please refer to the individual prescribing information and review scientific publications that summarize properties for each product.

<b>Product Name</b>	<b>Manufacturer</b>	<b>Bioengineering</b>	<b>Cell type used in Culture</b>	<b>Generation/ Human or Animal Protein Used in Culture Medium</b>	<b>Method of Viral Inactivation or Depletion</b>	<b>Stabilizer in Final Vial</b>	<b>Doses for Routine Prophylaxis Per Manufacturer's Prescribing Information</b>
ALPROLIX Approved 2014	BIOVERATIV (Biogen Idec)	IgG-1 Fc Domain Fusion Protein	Human Embryonic Kidney (HEK)	Third/ None	1. Affinity chromatography 2. Nanofiltration, 35nm	1. Sucrose 2. Mannitol	1) 50 IU/kg every 7 days OR 100 IU/kg every 10 days. 2) Adjust dosing based on individual response.
BeneFix	Pfizer	None	Chinese Hamster Ovary (CHO)	Third/ None	1. Affinity chromatography 2. Nanofiltration, 35 nm	Sucrose	Not provided

<b>Product Name</b>	<b>Manufacturer</b>	<b>Bioengineering</b>	<b>Cell type used in Culture</b>	<b>Generation/ Human or Animal Protein Used in Culture Medium</b>	<b>Method of Viral Inactivation or Depletion</b>	<b>Stabilizer in Final Vial</b>	<b>Doses for Routine Prophylaxis Per Manufacturer's Prescribing Information</b>
IDELVION Approved 2016	CSL Behring	Albumin-Fusion Protein	Chinese Hamster Ovary (CHO)	Third/ None	1. Solvent/detergent (polysorbate 80) 2. Nanofiltration	1. Sucrose 2. Mannitol	1) For patients > 12 yrs, 25-40 IU/kg every 7 days. 2) Patients well controlled on above may be switched to 50-75 IU/kg every 14d. 3) For patients <12 yrs, 40-55 IU/kg every 7 days. 4) Adjust dosing based on individual response.
Ixinity Approved 2015	APTEVO Therapeutics	None	Chinese Hamster Ovary (CHO)	Third/ None	1. Solvent detergent 2. Ion exchange chromatography 3. Nanofiltration, 20 nm	1. Mannitol 2. Trehalose	Not provided
Rebinyn Approved 2017	NOVO NORDISK	PEGylation	Chinese Hamster Ovary (CHO)	Third/ None	1. Solvent detergent 2. Nanofiltration, 20 nm	1. Sucrose, 10 mg 2. Mannitol, 25 mg	Not approved for prophylaxis
Rixubis Approved 2013	SHIRE Baxter/Baxalta	None	Chinese Hamster Ovary (CHO)	Third / None	1. Solvent-detergent 2. Nanofiltration, 15 nm	1. Mannitol 2. Sucrose	1) PUPS, 40-60 IU/kg 2X/wk. 2) Titrate dose depending on clinical response.



**TABLE II. Products Licensed in the U.S. to Treat HEMOPHILIA B (Continued)**

**B. Human Plasma-derived Coagulation FACTOR IX Concentrates**

<b>Product Name</b>	<b>Manufacturer</b>	<b>Method of Viral Inactivation or Depletion</b>	<b>Heparin in Final Vial (Units/IU Factor IX)</b>	<b>Specific Activity (IU factor IX/mg total protein after addition of stabilizer)</b>
AlphaNine SD	Grifols	<ol style="list-style-type: none"> <li>1. Dual affinity chromatography</li> <li>2. Solvent/detergent (TNBP/polysorbate 80)</li> <li>3. Nanofiltration</li> </ol>	0.04	>150
Mononine	CSL Behring	<ol style="list-style-type: none"> <li>1. Immunoaffinity chromatography</li> <li>2. Sodium thiocyanate</li> <li>3. Nanofiltration</li> </ol>	None	>190

**TABLE III. Products Licensed in the U.S. to Treat VON WILLEBRAND DISEASE**

**A. Desmopressin Formulations to Treat TYPE 1 and Some TYPE 2 VWD**

<b>Product Name</b>	<b>Manufacturer</b>	<b>U.S. Distributor</b>	<b>Formulation</b>	<b>Recommended Dosage and Administration</b>
DDAVP Injection	Ferring AB (Malmo, Sweden)	Aventis Pharma	For parenteral use (IV or SQ), 4 mcg/ml in a 10-ml vial	<p>1) 0.3 mcg/kg, mixed in 30 ml normal saline solution, infused I.V. slowly over 30 minutes. Maximum dose is 24 mcg. May be repeated after 24 hours.</p> <p>2) 0.3 mcg/kg by subcutaneous injection. Maximum dose is 24 mcg. May be repeated after 24 hours.</p> <p>DO NOT USE IN CHILDREN UNDER THE AGE OF 2 YEARS.</p> <p>USE WITH CAUTION IN PREGNANT WOMEN DURING LABOR AND DELIVERY. (15)</p>
Stimate Nasal Spray for Bleeding	Ferring AB (Malmo, Sweden)	CSL Behring	Nasal spray, 1.5 mg/ml. The metered dose pump delivers 0.1 ml (150 mcg) per actuation. The bottle contains 2.5 ml with spray pump capable of delivering 25 150-mcg doses or 12 300-mcg doses.	<p>1) In patients weighing &lt;50 kg, give one spray in <u>one</u> nostril (dose = 150 mcg). May be repeated after 24 hours.</p> <p>2) In patients weighing &gt;50 kg, give one spray in <u>each nostril</u> (dose = 300 mcg). May be repeated after 24 hours.</p> <p>DO NOT USE IN CHILDREN UNDER THE AGE OF 2 YEARS.</p> <p>USE WITH CAUTION IN PREGNANT WOMEN DURING LABOR AND DELIVERY. (15)</p>

**TABLE III. Products Licensed in the U.S. to Treat VON WILLEBRAND DISEASE (Continued)**

**B. Recombinant VON WILLEBRAND FACTOR Concentrate**

<b>Product Name</b>	<b>Manufacturer</b>	<b>Cell Type used in Culture</b>	<b>Generation/ Human or Animal Protein Used in Culture Medium</b>	<b>Method of Viral Inactivation or Depletion</b>	<b>Stabilizer In Final Vial</b>	<b>Specific Activity (VWF units/ mg protein)</b>
VONVENDI	SHIRE (Baxter, Baxalta)	Chinese Hamster Ovary (CHO)	Third/ None	1. Affinity chromatography 2. Solvent/ detergent (Tris/Polysorbate 80)	1. Mannitol, 20mg/mL 2. Trehalose, 10mg/mL	99-147

**TABLE III. Products Licensed in the U.S. to Treat VON WILLEBRAND DISEASE (Continued)**

**C. Human Plasma-derived Concentrates that Contain FACTOR VIII and VON WILLEBRAND FACTOR**

<b>Product Name</b>	<b>Manufacturer</b>	<b>Method of Viral Inactivation or Depletion</b>	<b>Heparin in Final Vial (units/ml)</b>	<b>Specific Activity**** (IU VWF/mg total protein after addition of stabilizer)</b>	<b>Ratio of VWF: FVIII</b>	<b>FDA Approved for von Willebrand Disease?</b>
Alphanate	Grifols	1. Affinity chromatography 2. Solvent/detergent (TNBP/polysorbate 80) 3. Dry heat (80°C, 72h)	<1.0	9-28	1.3:1	Yes
Humate-P	CSL Behring GmbH (Marberg, Germany)	1. Pasteurization (60°C, 10 hrs)	None	3.6-11.2	1.8-2.4:1	Yes
Wilate	Octapharma (Vienna, Austria)	1. Solvent/detergent (TNBP/Octoxynol-9) 2. Dry heat (100°C, 2 hr)	None	>60	1:1	Yes

**\*\* The higher the specific activity, the greater the purity is considered to be.**

**TABLE IV. BYPASSING AGENTS (BPA) Licensed in the U.S. to Treat PATIENTS WITH INHERITED HEMOPHILIA A or B and INHIBITORS**

**A. Human Plasma-derived Activated Prothrombin Complex Concentrate for Use in Patients with INHERITED Hemophilia A or B and INHIBITORS to FACTOR VIII or IX**

<b>Product Name</b>	<b>Manufacturer</b>	<b>Method of Viral Inactivation or Depletion</b>	<b>Heparin in Final Vial (units/ml)</b>	<b>Specific Activity (IU factor/mg total protein after addition of stabilizer)</b>
FEIBA	SHIRE (Baxter/Baxalta) (Vienna, Austria)	1. Vapor heat (10h, 60°C, 190 mbar plus 1h, 80°C, 375 mbar) 2. Nanofiltration, 35nm	None	0.8

**TABLE IV. BYPASSING AGENTS (BPA) Licensed in the U.S. to Treat PATIENTS WITH INHERITED HEMOPHILIA A or B and INHIBITORS (Continued)**

**B. Recombinant FACTOR VIIa Concentrate For Use in Patients with INHERITED Hemophilia A or B and INHIBITORS to FACTOR VIII or IX**

<b>Product Name</b>	<b>Manufacturer</b>		<b>Cell type used in Culture</b>	<b>Generation/ Human or Animal Protein Used in Culture Medium</b>	<b>Method of Viral Inactivation or Depletion</b>	<b>Stabilizer In Final Vial</b>
NovoSeven RT	Novo Nordisk (Bagsvaerd, Denmark)		Baby Hamster Kidney (BHK)	Second/Newborn Calf Serum	1. Affinity chromatography 2. Solvent/detergent (TNPB/polysorbate 80)	1. Mannitol, 25 mg/ml 2. Sucrose, 10 mg/ml

**TABLE IV. PRODUCTS licensed in the U.S. to Treat PATIENTS WITH INHERITED HEMOPHILIA A and INHIBITORS (Continued)**

**C. Recombinant HUMANIZED BISPECIFIC FIXa- and FX- directed monoclonal antibody for Use in Patients with INHERITED Hemophilia A and INHIBITORS to FACTOR VIII**

<b>Product Name</b>	<b>Manufacturer/ distributor</b>	<b>Bioengineering</b>	<b>Cell type used in Culture</b>	<b>Generation/ Human or Animal Protein Used in Culture Medium</b>	<b>Method of Viral Inactivation or Depletion</b>	<b>Stabilizer in Final Vial</b>	<b>Doses for Routine Prophylaxis Per FDA- approved Manufacturer's Prescribing Information</b>
HEMLIBRA (emicuzimab- KXWH) Approved 2017	Genentech/Roche	Recombinant humanized monoclonal antibody	Chinese Hamster Ovary (CHO)			L-arginine L-histidine Poloxamer 188 L-aspartic acid	1) 3mcg/kg SQ weekly for 4 weeks 2) Then 1.5 mg/kg SQ once every week 3) Discontinue BPA prophylaxis while on HEMLIBRA

**TABLE V. Products Licensed in the U.S. to Treat Non-congenital Hemophilia Patients with ACQUIRED HEMOPHILIA A**

**A. Recombinant Factor Concentrates for Use in Patients with ACQUIRED INHIBITORS to FACTOR VIII**

<b>Product Name</b>	<b>Manufacturer</b>	<b>Cell type Used in Culture</b>	<b>Generation/ Human or Animal Protein Used in Culture Medium</b>	<b>Method of Viral Inactivation or Depletion</b>	<b>Stabilizer In Final Vial</b>	<b>Heparin in Final Vial (units/ml)</b>
NovoSeven RT (rhFVIIa)	Novo Nordisk (Bagsvaerd, Denmark)	Baby Hamster Kidney (BHK)	Second/ Newborn Calf Serum	1. Affinity chromatography 2. Solvent/detergent (TNPB/polysorbate 80)	1. Mannitol, 25 mg/ml 2. Sucrose, 10 mg/ml	None
OBIZUR (porcine rpFVIII)	SHIRE (Baxter, Baxalta)	Baby Hamster Kidney (BHK)	Second/ Fetal Bovine Serum	1. Solvent/detergent (polysorbate 80) 2. Nanofiltration, 15 nm	1. Sucrose, 1.9 mg/ml	None



**TABLE VI. Products Licensed in the U.S. to Treat RARE BLEEDING DISORDERS**

**A. Human Plasma-derived Concentrate to Treat AFIBRINOGENEMIA and HYPOFIBRINOGENEMIA (FACTOR I deficiency)**

<b>Product Name</b>	<b>Manufacturer</b>	<b>Method of Viral Inactivation or Depletion</b>	<b>Stabilizer in final vial</b>	<b>Heparin in Final Vial (units/unit factor I)</b>	<b>Specific Activity (mg factor I/mg total protein after addition of stabilizer)</b>
RiaSTAP	CSL Behring	1. Pasteurization (60°, 20 hours)	Human albumin	None	20

**TABLE VI. Products Licensed in the U.S. to Treat RARE BLEEDING DISORDERS (Continued)**

**B. Recombinant Factor VIIa Concentrate for Treatment of FACTOR VII DEFICIENCY**

<b>Product Name</b>	<b>Manufacturer</b>	<b>Cell type used in Culture</b>	<b>Generation/ Human or Animal Protein Used in Culture Medium</b>	<b>Method of Viral Inactivation or Depletion</b>	<b>Stabilizers In Final Vial</b>
NovoSeven RT	Novo Nordisk (Bagsvaerd, Denmark)	Baby Hamster Kidney (BHK)	Second/ Newborn Calf Serum	1. Affinity chromatography 2. Solvent/detergent (TNPB/polysorbate 80)	1. Mannitol, 25mg/ml 2. Sucrose, 10 mg/ml

**TABLE VI. Products Licensed in the U.S. to Treat RARE BLEEDING DISORDERS (continued)**

**C. Human Plasma-derived Concentrate to Treat FACTOR X DEFICIENCY**

<b>Product Name</b>	<b>Manufacturer</b>	<b>Method of Viral Inactivation or Depletion</b>	<b>Stabilizer in final vial</b>	<b>Heparin in Final Vial (units/unit factor X)</b>	<b>Specific Activity (units factor X/mg total protein after addition of stabilizer)</b>
Coagadex	BioProducts Laboratory (BPL)	1. Solvent/detergent 2. Nanofiltration, 15nm 3. Dry heat, 80°C, 72hr	1. Sucrose	None	80-137

**TABLE VI. Products Licensed in the U.S. to Treat RARE BLEEDING DISORDERS (continued)**

**D. Human Plasma-derived Concentrate to Treat FACTOR XIII DEFICIENCY**

<b>Product Name</b>	<b>Manufacturer</b>	<b>Method of Viral Inactivation or Depletion</b>	<b>Stabilizer in final vial</b>	<b>Heparin in Final Vial (units/unit factor XIII)</b>	<b>Specific Activity (units factor XIII/mg total protein after addition of stabilizer)</b>
Corifact	CSL Behring	1. Pasteurization (60°, 10 hours) 2. Ion exchange chromatography	1. Human albumin 2. Glucose	None	3.1-13.3

**TABLE VI. Products Licensed in the U.S. to Treat RARE BLEEDING DISORDERS (continued)**

**E. Recombinant Factor XIII Concentrate for Treatment of FACTOR XIII-A SUBUNIT DEFICIENCY**

<b>Product Name</b>	<b>Manufacturer</b>	<b>Method of Viral Inactivation or Depletion</b>	<b>Cell type used in Culture</b>	<b>Generation/ Human or Animal Protein Used in Culture Medium</b>	<b>Stabilizer In Final Vial</b>	<b>Specific Activity (IU factor XIII/mg total protein)</b>
TRETTEN	NovoNordisk (Bagsvaerd, Denmark)	1. Affinity chromatography 2. Nanofiltration, 35 nm	Yeast (Saccharomyces cerevisiae)	Third/ None	Sucrose	200-360

**TABLE VI. Products Licensed in the U.S to Treat RARE BLEEDING DISORDERS (Continued)**

**F. Human Plasma-derived Prothrombin Complex Concentrates for Use in Patients with FACTOR II or FACTOR X DEFICIENCY.**

(NOTE THAT CONTENT OF THESE FACTORS VARIES FROM LOT TO LOT AND PRODUCT TO PRODUCT)

<b>Product Name</b>	<b>Manufacturer</b>	<b>Method of Viral Inactivation or Depletion</b>	<b>Heparin in Final Vial (units/unit factor IX)</b>	<b>Specific Activity (IU factor IX/mg total protein after addition of stabilizer)</b>	<b>Relative Content of Factors (FIX = 100)</b>
Bebulin	SHIRE (Baxter/Baxalta) (Vienna, Austria)	1. Vapor heat (10h, 60°C, 190 mbar pressure plus 1h, 80°C, 375 mbar) 2. Nanofiltration, 35 nm	<0.15	2.0	X> II> IX>VII
Profilnine	Grifols	1. Solvent/detergent (TNBP/ polysorbate 80)	None	4.5	II> IX= X>VII

**TABLE VII. Factor Products Licensed in the U.S. for Use in INDIVIDUALS WITH THROMBOSIS RISK**

**A. Products to Treat ANTITHROMBIN DEFICIENCY**

<b>Product Name</b>	<b>Generic name</b>	<b>Manufacturer</b>	<b>Human or Animal Protein Used in Culture Medium</b>	<b>Method of Viral Inactivation or Depletion</b>	<b>Stabilizer In Final Vial</b>	<b>Heparin in Final Vial, IU/IU AT</b>	<b>Specific Activity (IU AT/mg total protein after addition of stabilizer)</b>
ATryn	Antithrombin, recombinant human	Revo Biologics (formerly GTCBiotherapeutics)	Goat milk	1. Dry heat 2. Nanofiltration 3. Ion exchange chromatography	Glycine	None	7 IU AT activity/mg For use only to prevent peri-operative and peri-natal thrombi, Not approved to treat PE.
Thrombate	Antithrombin, plasma-derived	Grifols	Human plasma	1. Pasteurization (60°, 10hrs) 2. Nanofiltration	Alanine (0.075 to 0.125 M)	<0.1 IU	Minimum 6.4 IU AT activity/mg

**TABLE VII. Factor Products Licensed in the U.S. for Use in INDIVIDUALS WITH THROMBOSIS RISK**  
**(continued)**

**B. Human Plasma-derived Protein C Concentrate to Treat PROTEIN C DEFICIENCY**

<b>Product Name</b>	<b>Generic Name</b>	<b>Manufacturer</b>	<b>Method of Viral Inactivation or Depletion</b>	<b>Stabilizer In Final Vial</b>	<b>Heparin in Final Vial</b>	<b>Specific Activity (IU PC/mg total protein after addition of stabilizer)</b>
Ceprocin	Protein C, plasma-derived	SHIRE (Baxter/Baxalta)	<ol style="list-style-type: none"> <li>1. Detergent (Polysorbate 80)</li> <li>2. Immuno-affinity chromatography</li> <li>3. Vapor heating 10hr,60°,190±25mbar 1hr,80°,340-410mbar</li> </ol>	Albumin (8mg/mL)	Trace amount	8-17



**TABLE VIII. Blood Bank Components Licensed in the U.S. to Treat RARE BLEEDING DISORDERS**

**A. Fresh Frozen Plasma Products to Treat Patients with FACTOR V or FACTOR XI DEFICIENCY**

<b>Product Name</b>	<b>Manufacturer</b>	<b>Distributor</b>	<b>Method of Viral Inactivation or Depletion</b>	<b>Pool Size, Number of Donors per Unit</b>	<b>Volume per unit, ml</b>
Donor Retested Fresh Frozen Plasma	Some community blood centers	Some community blood centers	1. Donors must test negative on second donation in order for first donation to be released.	1	250-500 ml
OCTAPLAS, frozen pooled plasma, blood group specific	Octapharma	Octapharma	1. TNBP/Octoxynol-9 2. Immune neutralization 3. Affinity ligand chromatography removal (prions only)	630-1520	200 ml

**TABLE VIII. Blood Bank Components Licensed in the U.S. to Treat RARE BLEEDING DISORDERS (Continued)**

**B. Cryoprecipitate to Treat Patients with DYSFIBRINOGENEMIA**

<b>Product Name</b>	<b>Manufacturer</b>	<b>Distributor</b>	<b>Method of Viral Inactivation or Depletion</b>	<b>Pool Size, Number of Donors per Dispensed Unit</b>	<b>Volume per unit, ml</b>
Cryoprecipitate	Some community blood centers	Some community blood centers	None	1	15-25
Cryoprecipitate, pooled	Some community blood centers	Some community blood centers	None	5 6	60-100 90-150

**TABLE IX. ANTIFIBRINOLYTIC AGENTS****A. Aminocaproic Acid**

<b>Product Generic Name</b>	<b>Brand Name</b>	<b>Manufacturer</b>	<b>Form</b>	<b>Dosing</b>	<b>Comments</b>
Aminocaproic Acid	Amicar	Xanodyne Clover (generic) Mikart (generic)	Oral suspension, 250 mg/ml	50-100 mg/kg po q 6 hr	Do not use in presence of hematuria
Aminocaproic Acid	Amicar	Xanodyne Clover (generic) Mikart (generic)	Tablet, 500 mg 1 gm	50-100 mg/kg po q 6 hr	Do not use in presence of hematuria
Aminocaproic Acid	Amicar	American Regent Hospira	IV, 250 mg/ml	1 gm/hr IV as continuous infusion	Do not use in presence of hematuria

**B. Tranexamic Acid**

<b>Product Brand Name</b>	<b>Manufacturer</b>	<b>Form</b>	<b>Dosing</b>	<b>Comments</b>
Cyklokapron	Pfizer	IV, 100 mg/ml	10 mg/kg IV q 6-8 hr	Do not use in presence of hematuria
Lysteda	Xanodyne	PO, 650 mg tablets	Adult dose: 1300 mg q 8 hr X 5 days during menses Pediatric dose: 15-20 mg/kg q 8 hr X 5 days	Patients should not take Prothrombin Concentrate Concentrates (PCCs) while on Lysteda