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Special Resource

Drugs to be Used with a Filter for Preparation and/or Administration

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Drugs that Require a Filter

Drug	Class	Filter Size[a]	Comments
Abatacept (*Orencia*)	Immunomodulator	0.2 to 1.2 micron	Administer with an infusion set and a sterile nonpyrogenic, low-protein-binding filter.
Abciximab (*ReoPro*)	Glycoprotein IIb/IIIa inhibitor	0.2 or 0.22 micron	For a bolus injection, filter prior to administration; for continuous infusion, filter either upon admixture (using a sterile, nonpyrogenic, low-protein-binding filter) or upon administration (using an inline, sterile, nonpyrogenic, low-protein-binding filter).
Agalsidase beta (*Fabrazyme*)	Enzyme	0.2 micron	Do not use filter needles during the preparation of the infusion; diluted solution should be filtered through an inline low-protein-binding filter during administration.
Alglucosidase alfa (*Myozyme*)	Enzyme	0.2 micron	Do not use filter needles during the preparation of the infusion; diluted solution should be filtered through an inline low-protein-binding filter during administration.
Alpha-1 proteinase inhibitor (eg, *Prolastin, Aralast, Zemaira*)	Respiratory enzyme	See individual package inserts	
Amiodarone (*Cordarone*)	Antiarrhythmic agent	Not specified	Use a 0.2 micron inline filter during administration; recommended by manufacturer. Another source suggests no significant loss of drug potency with the use of a 0.22 micron cellulose ester membrane filter.[1,2]
Amphotericin B desoxycholate (*Amphocin, Fungizone*)	Antifungal agent	1 micron or larger mean pore diameter (inline membrane filter)	Filter may be used during administration.
Antihemophilic factor (eg, *Adurate, Kogenate*)	Antihemophilic agent	Not specified	Use filtered needle provided by manufacturer.
Antihemophilic factor/von Willebrand Factor Complex (*Humate P*)	Antihemophilic factor combination	Not specified	Use filter for withdrawal from the vial.

(continued)

Drugs that Require a Filter

Drug	Class	Filter Size[a]	Comments
Antithymocyte globulin (*Thymoglobulin*)	Immune globulin	0.22 micron inline filter	
Antithrombin III (*Thrombate III*)	Antithrombin agent	Not specified	Use filter needle provided by manufacturer.
Asparaginase (*Elspar*)	Antineoplastic agent	5 micron	Filter during intravenous (IV) administration.
Botulism immune globulin IV (*BabyBIG*)	Immune globulin	18 micron	Use inline or syringe-tip sterile, disposable filter.
Busulfan (*Busulfex*)	Antineoplastic agent	5 micron	Do not use polycarbonate syringes or polycarbonate filter needles with busulfan; only use the 5 micron nylon[1] filter needle provided; use one filter per ampule.
Cetuximab (*Erbitux*)	Monoclonal antibody	0.22 micron inline filter	
Citric acid, gluconodelta-lactone, and magnesium carbonate (*Renacidin*)	Urinary irrigant	Not specified	After thorough mixing, filter the solution through a coarse filter.
Cladribine (*Leustatin*)	Antineoplastic agent	0.22 micron	When preparing the 7-day infusion solution, both cladribine and the diluent should be passed through a sterile disposable hydrophilic syringe filter as each solution is being introduced into the infusion reservoir.
Clofarabine (*Clolar*)	Antineoplastic agent	0.2 micron	Filter prior to dilution.
Cytomegalovirus immune globulin IV, human (*CytoGam*)	Immune globulin	15 micron inline filter	A 0.2 micron filter is also acceptable.
Digoxin immune Fab (*Digibind*)	Detoxification agent	0.22 micron membrane filter	
Epoprostenol sodium (*Flolan*)	Vasodilator	0.22 micron	An inline filter was used during clinical trials.
Ferumoxides (*Feridex IV*)	Diagnostic agents	5 micron	
Galsulfase (*Naglazyme*)	Enzyme	0.2 micron	Do not use a filter during preparation of the solution; administer with a polyvinyl chloride (PVC) infusion set equipped with an inline, low-protein-binding filter.
Gemtuzumab ozogamicin (*Mylotarg*)	Monoclonal antibody	1.2 micron terminal filter	Can be given through central or peripheral line; administer through a separate line equipped with a low-protein-binding, 0.2 to 1.2 micron terminal filter; manufacturer states: The following filter membranes are qualified: 0.22 or 1.2 micron polyether sulfone (PES) *Supor*; 1.2 micron acrylic copolymer hydrophilic filter (*Versapor*); 0.8 micron cellulose mixed ester (acetate and nitrate) membrane; 0.2 micron cellulose acetate membrane.[1]
Hemin (*Panhematin*)	Hemin agent	0.45 micron or smaller terminal filter	

(continued)

Drugs that Require a Filter

Drug	Class	Filter Size[a]	Comments
Hyaluronidase powder for injection (*Vitrase*)	Enzyme	5 micron	Use a filter needle when withdrawing the reconstituted solution from the vial.
Idursulfase (*Elaprase*)	Enzyme	0.2 micron	Filter to be used with an infusion set.
Imiglucerase (*Cerezyme*)	Enzyme	0.2 micron	Diluted solution may be filtered through an inline, low-protein-binding filter during administration.
Immune globulin IV (eg, *Gammagard, Flebogamma*)	Immune globulin	See individual package inserts	
In-111 ibritumomab tiuxetan and Y-90 ibritumomab tiuxetan (*Zevalin*)	Radioimmunotherapeutic monoclonal antibody	0.22 micron	A low-protein-binding filter should be inline between the syringe and infusion port prior to injection of each component.
Infliximab (*Remicade*)	Monoclonal antibody	1.2 micron or smaller inline filter	
Inulin	Diagnostic agent	Not specified	Administer through a filter.
Itraconazole (*Sporanox*)	Antifungal agent	Not specified	Use infusion set with filter provided by the manufacturer.
Lansoprazole (*Prevacid IV*)	Proton pump inhibitor	1.2 micron	Administer using inline filter provided.
Laronidase (*Aldurazyme*)	Enzyme	0.2 micron	Do not use a filter during preparation of the solution; administer with a PVC infusion set equipped with an inline, low-protein-binding filter.
Lymphocyte immune globulin, antithymocyte globulin (*Atgam*)	Immune globulin	0.2 to 1 micron	
Mafenide (*Sulfamylon*)	Topical burn preparation	0.22 micron	Filter reconstituted solution prior to use; topical use only.
Mannitol	Osmotic diuretic	5 micron inline filter	To be used when infusing concentrated mannitol (20% or more).
Methacholine (*Provocholine*)	Diagnostic agent	0.22 micron	A sterile, bacterial-retentive filter should be used when transferring a solution from each vial (at least 2 mL) to a nebulizer; initial use only.
Morphine sulfate soluble tablets for injection	Opioid	0.22 micron	Prepare soluble tablets in sterile water and filter prior to administration.
Morphine sulfate for intrathecal administration (*Infumorph*)	Opioid	5 micron or smaller	Filter through a microfilter before injecting into the microinfusion device; intrathecal use only.
Muromonab-CD3 (*Orthoclone OKT3*)	Monoclonal antibody	0.2 or 0.22 micron	Draw solution into a syringe through a low-protein-binding filter.
Paclitaxel (*Taxol, Onxol*)	Antineoplastic agent	0.22 micron or smaller	Administer through an inline filter; use of a filter is not recommended for *Abraxane*.
Panitumumab (*Vectibix*)	Monoclonal antibody	0.2 or 0.22 micron	Administer by an IV infusion pump using a low-protein-binding inline filter.

(continued)

Drugs that Require a Filter

Drug	Class	Filter Size[a]	Comments
Pentetate calcium trisodium	Detoxification agent	Not specified	May be filtered using a sterile filter if particles are seen subsequent to opening of the ampule.
Phenytoin sodium, parenteral	Anticonvulsant	Not specified (inline filter)	Although not recommended, some studies ndicate that an IV infusion of phenytoin may be feasible if proper precautions are observed, such as a suitable vehicle (eg, 0.9% sodium chloride or Ringer's lactated injection), appropriate concentration, preparing the infusion shortly before administration, and using an inline filter; according to most studies, a 0.22 micron inline filter is required[1,3]; phenytoin sodium (250 mg/5mL in a 5 mL syringe) was filtered at a rate of 1 mL/min through a 5 micron stainless steel depth filter without significant reduction in potency.[2]
Ranibizumab (*Lucentis*)	Vascular endothelial growth factor antagonist	5 micron	Withdraw the solution from the vial through a 5-micron, 19-gauge filter needle attached to a 1 mL tuberculin syringe; for intravitreal injection only.
Respiratory syncytial virus immune globulin, IV (RSV-IVIG) (*RespiGam*)	Immune globulin	Larger than 15 micron	An inline filter may be used for RSV-IGIV infusions.
Streptokinase (*Streptase*)	Thrombolytic enzyme	0.8 micron or larger	
Thiotepa (*Thioplex*)	Antineoplastic agent	0.22 micron	Filter prior to administration; polysulfone membrane (*Gelman's Sterile Acrodisc*, Single Use) or triton-free mixed ester of cellulose/PVC (*Millipore's MILLEX*-GS Filter Unit) are recommended by the manufacturer.
Tositumomab and iodine ^{131} I-tositumomab (*Bexxar*)	Radioimmunotherapeutic monoclonal antibody	0.22 micron	Administer via IV tubing set with an inline filter. The same IV tubing set and filter must be used throughout the entire dosimetric or therapeutic step; a change in filter can result in loss of drug.
Vaccinia immune globulin IV (*VIGIV*)	Immune globulin	0.22 micron	Administer VIGIV via an IV catheter with an administration set that contains an inline filter.
Verteporfin (*Visudyne*)	Ophthalmic phototherapy agent	1.2 micron	Administer using a syringe pump and inline filter; use of an inline filter (pore size 0.22 to 1.2 microns) is required for administration.[1]

[a]Note: For consistency, the term "micron" is used to encompass all terms meaning the same (eg, micrometer, mcm, mm)

References

1. Gahart BL, Nazareno AR. *Intravenous Medications: A Handbook for Nurses and Health Professionals.* 23rd ed. St. Louis, MO: Mosby Elsevier; 2006.

2. Trissel LA. *Handbook on Injectable Drugs.* 4th ed. Bethesda, Maryland: American Society of Health-System Pharmacists; 2007.

3. *Drug Facts and Comparisons.* Drug Facts and Comparisons 4.0 [online]. 2007. Available from Wolters Kluwer Health, Inc. Accessed March 9, 2007.

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