

Medications Requiring Filters

Visual inspection of injectable medications for any particulate matter is a key safety step in both preparation and administration. However, some medications or routes of administration require additional measures to ensure patient safety. For example, when a **glass ampule** of any medication is used to prepare a dose, a 5 micron filter needle should be used to prevent contamination of the dose with glass particles.¹ Keep in mind that when a filter needle is used to withdraw contents from an ampule, the filter needle should be removed and replaced with a standard needle prior to administration or transfer to an IV bag. **Intrathecal medication** administration should always include a 0.22 micron filter.² This is added to ensure potential contaminants are not able to reach the cerebral spinal fluid. **Parenteral nutrition without lipids** should be infused through a 0.22 micron filter.³ At least a 1.2 micron filter is necessary if **parenteral nutrition contains lipids**, as smaller filters may disrupt the stability of the lipids and clog the line.³ The chart below provides guidance on the use of filters with specific medications during preparation and administration.

Medication	Type of Filter ^{a,b}	
	Preparation	Administration
Abatacept (Orencia)	Not required.	Use an infusion set with a 0.2 to 1.2 micron filter.
Abciximab (ReoPro)	Draw up bolus doses through a 0.2 micron syringe filter or 5 micron filter needle.	For an infusion, use a 0.2 or 0.22 inline filter.
Agalsidase Beta (Fabrazyme)	Not required.	Use a 0.2 micron inline filter.
Albumin 5% and 25% (Buminate, Flexbumin) Product information does not indicate a filter is required for <i>Albuked</i> , <i>Albuminar</i> , <i>AlbuRx</i> , <i>Kedbumin</i> , or <i>Plasbumin</i> . ^a	Not required.	Use a 0.15 micron or smaller administration set.
Alglucosidase alpha (Myozyme)	Not required.	Use a 0.2 micron inline filter.
Amiodarone (Nexterone)	Not required.	Use a 0.22 micron inline filter.

More . . .

Medication	Type of Filter ^{a,b}	
	Preparation	Administration
Amphotericin B	Not required.	May be administered without loss of potency through a 1 micron or greater inline filter.
Amphotericin B lipid complex (<i>Abelcet</i>)	Do not use a filter needle to remove from the vial. Use the 5 micron filter needle supplied with the vial to transfer withdrawn contents to an IV bag. Each filter needle may be used for up to four 100 mL vials.	Do NOT use an inline filter.
Amphotericin B Liposome (<i>AmBisome</i>)	Do not use a filter needle to withdraw reconstituted <i>AmBisome</i> from the vial. Use the 5 micron filter needle supplied with the vial to transfer withdrawn contents to IV bag. Use one filter needle per vial.	Use a 1 micron or greater inline filter.
Antihemophilic Factor/Von Willebrand Factor Complex (<i>Alphanate</i>)	Use the <i>Mix2Vial</i> [®] adapter for reconstitution. If more than one vial is required, use a new <i>Mix2Vial</i> adapter for each vial.	Not required.
Anti-Inhibitor Coagulant Complex (<i>Feiba NF</i>)	Use the <i>BAXJECT II</i> [®] Hi-Flow needleless transfer device during preparation.	Not required.
Anti-thymocyte globulin, equine (<i>Atgam</i>)	Not required.	Use a 0.2 to 1 micron inline filter.
Anti-thymocyte globulin, rabbit (<i>Thymoglobulin</i>)	Not required.	Use a 0.22 micron inline filter.
Cabazitaxel (<i>Jevtana</i>)	Not required.	Use a 0.22 micron inline filter.
Cetuximab (<i>Erbix</i>)	Not required.	Use a 0.22 micron inline filter.
Cladribine	Cladribine and bacteriostatic 0.9% sodium chloride should both be filtered through a 0.22 micron syringe filter when preparing 7-day infusions. Filters are not required for preparation of single daily doses.	Not required.

Medication	Type of Filter ^{a,b}	
	Preparation	Administration
Clofarabine (Clolar)	Use a 0.2 micron syringe filter.	Not required.
Cytomegalovirus immune globulin IV, human (CytoGam)	Not required.	Use a 0.2 to 15 micron inline filter.
Epoprostenol (Flolan)	Not required.	Use a 0.22 micron inline filter.
Etoposide (Toposar)	Not required.	May be administered without loss of potency through a 0.22 micron inline filter.
Factor VIIa, recombinant (NovoSeven RT)	Use the 25 micron filter provided with the prefilled diluent syringe.	Not required.
Factor VIII product, human (Humate-P)	Use the <i>Mix2Vial</i> ^c filter transfer set provided with <i>Humate-P</i> or a double-ended needle and vented filter spike.	Not required.
Factor VIII product, human (Korate-DVI)	After reconstituting, use the filter needle provided to draw into a syringe.	Not required.
Factor VIII product, human (Monoclalte-P)	Use the 5 micron vented filter spike for reconstitution or the 5 micron filter needle to withdraw the reconstituted solution.	Not required.
Factor VIII product, recombinant (Helixate-FS)	Use the <i>Mix2Vial</i> ^c adapter for reconstitution. If more than one vial is required, use a new <i>Mix2Vial</i> adapter for each vial.	Not required.
Factor VIII product, recombinant (Recombinate)	Use the <i>BAXJECT II</i> ^c Hi-Flow needleless transfer device during preparation.	Not required.
Factor IX, human (AlphaNine SD)	Use the <i>Mix2Vial</i> ^c adapter for reconstitution. If more than one vial is required, use a new <i>Mix2Vial</i> adapter for each vial.	Not required.

Medication	Type of Filter ^{a,b}	
	Preparation	Administration
Factor IX complex, human (<i>Profilnine</i>)	Use the filter provided by the manufacturer.	Not required.
Factor IX complex, recombinant (<i>BeneFIX</i>)	Use the vial adapter reconstitution device (with built-in filter) provided by the manufacturer.	Not required.
Factor IX, recombinant, Albumin fusion protein (rIX-FP), (<i>Idelvion</i>)	Use the <i>Mix2Vial</i> [®] adapter for reconstitution. If more than one vial is required, use a new <i>Mix2Vial</i> adapter for each vial.	Not required.
Ibritumomab tiuxetan (<i>Zevalin</i>)	Not required.	Use a 0.22 micron inline filter.
Infliximab (<i>Remicade</i>)	Not required.	Use up to a 1.2 micron inline filter.
Ipilimumab (<i>Yervoy</i>)	Not required.	Use a 0.2 to 1.2 micron inline filter. ⁴
Ixebepilone (<i>Ixempra Kit</i>)	Not required.	Use a 0.2 to 1.2 micron inline filter.
Mannitol	Filters are not required during preparation. If crystals are present, consider warming mannitol up to 158°F to redissolve crystals, with agitation. Ensure solution cools to room temperature prior to administration. ⁵	Use a 0.2 micron inline filter, especially for infusions of 15% or more. Filter sizes may vary among institutions (e.g., 0.2 micron, 5 micron). Consult institution-specific recommendations. ⁵
Ofatumumab (<i>Arzerra</i>)	Not required.	Use the administration set, including an inline filter, provided by the manufacturer. ⁶
Paclitaxel (<i>Taxol</i>)	Not required.	Use an inline filter not greater than 0.22 microns.
Panitumumab (<i>Vectibix</i>)	Not required.	Use a 0.2 or 0.22 micron inline filter.
Pembrolizumab (<i>Keytruda</i>)	Not required.	Use a 0.2 to 5 micron inline or add-on filter.

Medication	Type of Filter ^{a,b}	
	Preparation	Administration
Phenytoin sodium (<i>Dilantin</i>)	Not required.	Use a 0.22 to 0.55 micron inline filter.
Prothrombin Complex Concentrate, human (<i>Kcentra</i>)	Use the <i>Mix2Vial</i> ^c adapter for reconstitution. If more than one vial is required, use a new <i>Mix2Vial</i> adapter for each vial.	Not required.
Ranibizumab (<i>Lucentis</i>)	Use a 5 micron filter needle to draw up contents of vial.	Do not use filter needle for administration.
Temsirolimus (<i>Torisel</i>)	Not required.	Use an inline filter not greater than 5 microns. Alternatively, a 0.2 to 5 micron add-on filter can be used. Do not use an inline and add-on filter together.
Thiotepa (<i>Thioplex</i>)	In order to eliminate haze, filter through a 0.22 micron filter prior to administration.	Not required.
Ziv-Afibercept (<i>Zaltrap</i>)	Not required.	Use a 0.2 micron polyethersulfone filter. Do not use nylon or polyvinylidene filters.

- a. **The following U.S. prescribing information was used for the above chart:** *Arzerra* (January 2016); *Orencia* (June 2015); *ReoPro* (November 2013); *Fabrazyme* (July 2010); *Buminate 5% and 25%* (August 2013); *Flexbumin 25%* (August 2013); *Albuked 5% and 25%* (June 2011); *Albuminar* (June 2013); *AlbuRx* (September 2014); *Kedbumin* (August 2013); *Plasbumin* (July 2012); *Myozyme* (May 2014); *Nexterone* (March 2015); *Abelcet* (March 2013); *Ambisome* (May 2012); *Alphanate* (March 2015); *Feiba NF* (February 2011); *ATGAM* (March 2015); *Thymoglobulin* (September 2015); *Jevtana* (June 2015); *Erbix* (October 2015); *Clolar* (December 2015); *Cytogam* (August 2012); *Flolan* (April 2015); *Humate-P* (June 2014); *Koate-DVI* (June 2011); *Helixate FS* (August 2015); *Recombinate* (December 2010); *AlphaNine SD* (January 2013); *Profilnine* (September 2014); *BeneFIX* (August 2015); *Idelvion* (March 2016); *Zevalin* (August 2013); *Remicade* (October 2015); *Yervoy* (October 2015); *Ixempra* (October 2011); Mannitol (Hospira, December 2015); *Taxol* (April 2011); *Vectibix* (March 2015); *Keytruda* (December 2015); *Dilantin* (October 2011); *Kcentra* (September 2014); *Lucentis* (February 2015); *Torisel* (February 2015); Thiotepa (Westward, February 2015); *Zaltrap* (March 2016); Cladribine (APP Pharm., January 2008); *NovoSeven RT* (March 2016); *Monoclate-P* (February 2014); Amphotericin B (X-Gen Pharm., April 2010); *Toposar* (December 2015).
- b. Snow EK, McEvoy GK, Eds. Handbook on Injectable Drugs - 18th Ed. Bethesda, MD. American Society of Health-System Pharmacists, 2015.
- c. *Mix2Vial* and *BAXJECT II* are needleless transfer sets with built-in filters.

Users of this PL Detail-Document are cautioned to use their own professional judgment and consult any other necessary or appropriate sources prior to making clinical judgments based on the content of this document. Our editors have researched the information with input from experts, government agencies, and national organizations. Information and internet links in this article were current as of the date of publication.

Project Leader in preparation of this PL Detail-Document: Beth Bryant, PharmD, BCPS, Assistant Editor

References

1. American Society of Health System Pharmacists. ASHP guidelines on compounding sterile preparations. *Am J Health Syst Pharm* 2014;71:145-66.
2. Dodou K. Intrathecal route of drug delivery can save lives or improve quality of life. October 31, 2012. *The Pharmaceutical Journal*.
<http://www.pharmaceutical-journal.com/research/perspective-article/intrathecal-route-of-drug-delivery-can-save-lives-or-improve-quality-of-life/11110496.article>. (Accessed May 13, 2016).
3. Ayers P, Adams S, Boullata J, et al. A.S.P.E.N. Parenteral nutrition safety consensus recommendations. *JPEN J Parenter Enteral Nutr* 2014;38:296-333.
4. Personal communication (verbal). Dana. Medical Information. Bristol-Myers Squibb. Princeton, NJ 08543. May 25, 2016.
5. Clinical Pharmacology. Mannitol. March 3, 2016. <http://clinicalpharmacology.com>. (Accessed May 24, 2016).
6. McEvoy GK, Ed. AHFS Drug Information. 58th Ed. American Society of Health-System Pharmacists. Bethesda, MD. 2016. <http://www.ahfsdruginformation.com>. (Accessed May 25, 2016).

Cite this document as follows: *PL Detail-Document, Medications Requiring Filters. Pharmacist's Letter/Prescriber's Letter. June 2016.*



Evidence and Recommendations You Can Trust...



3120 West March Lane, Stockton, CA 95219 ~ TEL (209) 472-2240 ~ FAX (209) 472-2249
Copyright © 2016 by Therapeutic Research Center

Subscribers to the *Letter* can get *PL Detail-Documents*, like this one, on any topic covered in any issue by going to www.PharmacistsLetter.com, www.PrescribersLetter.com, or www.PharmacyTechniciansLetter.com