Special Feature

Light-Sensitive Injectable Prescription Drugs

University of Illinois at Chicago College of Pharmacy, Drug Information Group*

Exposure to light is a concern with numerous medications due to the potential for photodegradation or other chemical reactions that affect drug stability. In 2009, *Hospital Pharmacy* published a list of oral medications that require protection from light.¹ This reference does not provide information on injectable drugs and, to our knowledge, there is no comprehensive list of injectable medications that require protection from light published in the United States.² Therefore, the purpose of this table is to supplement the previously published list of oral medications by identifying injectable drugs that require protection from light.

A list of injectable medications that require light protection was generated utilizing *Facts & Comparisons*.³ A comprehensive list of monographs that contained the words “protect” and “light” was created in December 2012. Additional searches were performed using similar phrases such as “exposure to light.” For drug classes that appeared to have several medications requiring light protection, monographs for the whole class were checked. A supplementary search was performed in May 2013 to ensure inclusion of new injectable medications approved through April 2013.

The prescribing information (PI) was used as the primary reference for each injectable medication. Additional resources were used to confirm this information.^{4–7} For medications with numerous manufacturers, multiple PIs were checked for accu-

racy. When it was found that not all manufacturers specified the need for light protection, this was noted in the additional comments field and only the brand names of products requiring light protection were listed in the table. When information was not available or consistent among these references, additional sources were checked, a literature search was performed, and/or the manufacturer was contacted. These data are noted in the additional comments field and are referenced accordingly. Despite efforts to confirm the information in at least 2 additional sources, some medications have the PI as the only source with instructions for light protection including those approved between December 2012 and April 2013. When stability depends on light protection during storage, reconstitution, dilution, and/or administration, the reader should consult the references listed in the additional comments field for further details. Additional storage requirements (eg, temperature, humidity) are not included in this table.

Although every effort has been made to ensure the accuracy and completeness of the information presented in this chart, the reader is advised that the authors, *Hospital Pharmacy*, or Thomas Land Publishers cannot be held responsible for the currency of the information, for any errors or omissions, or for any consequences that may arise. The reader should consult the product prescribing information for the most current information.

*The following individuals are acknowledged for their contribution to this document: Shadi Ghaibi, PharmD, BCPS; Heather J. Ipema, PharmD, BCPS; Rita Soni, PharmD, BCPS; Richard J. DeBartolo, Jr, PharmD; and Carissa E. Mancuso, PharmD.

Drug	Storage	Reconstitution	Dilution	Administration	Additional comments
Abatacept <i>Orencia</i>	X				Protect from light by storing in the original package until time of use. ^{7,8}
Abobotulinumtoxin A <i>Dysport</i>	X	X			Protect from light. ⁹ Stability of reconstituted solutions is affected by light exposure; refer to prescribing information for details regarding storage after reconstitution.
Adalimumab <i>Humira</i>	X				Protect from exposure to light. ¹⁰ Do not use if left in direct sunlight. Store in original carton until time of administration. ^{5,10}
Aflibercept <i>Eylea</i>	X				Protect from light and store in the original carton until time of use. ^{5,11}
Aldesleukin <i>Proleukin</i>	X				Protect intact vials from light and store in carton until time of use. ^{6,12}
Alemtuzumab <i>Campath</i>	X		X		Protect from light and direct sunlight. ^{7,13} Stability of diluted solutions is affected by light exposure; refer to prescribing information for details regarding storage after dilution. ¹³
Alefacept <i>Amevive</i>	X				Protect from light and retain in drug/diluent pack until time of use. ^{5,14}
Alfentanil <i>Alfenta</i>	X				Protect from light. ^{6,7,15}
Alglucosidase Alfa <i>Lumizyme</i> <i>Myozyme</i>	X	X	X		Protect from light. ^{16,17} The reconstituted and diluted solution should be protected from light. ^{5,16,17}
Alteplase, Recombinant <i>Activase</i> <i>Cathflo Activase</i>	X				Protect from excessive exposure to light during extended storage. ^{7,18,19} <i>Activase</i> : Protect from light in cartons. ⁷ Exposure to light does not affect the potency of either reconstituted solutions or dilutions in compatible infusion solutions. ^{6,18}
Amino Acid Preparations	X				Tertiary sources state that amino acid products should be protected from light until time of use. ^{6,7} Check the individual prescribing information for the specific product for further information.
Aminophylline	X				Protect from light and keep vials in carton until time of use. ^{6,7,20}
Aminophylline Dihydrate	X				Protect from light and store in carton until time of use. ^{6,7,21}
Amiodarone <i>Nexterone</i>	X				Use carton to protect contents from light until used. ^{7,22} Does not need to be protected from light during administration but exposure to direct sunlight should be avoided. ^{6,22}
Amphotericin B Desoxycholate	X	X		X	Protect against exposure to light prior to reconstitution. ^{6,7,23} Stability of reconstituted solutions is affected by light exposure; refer to prescribing information and tertiary source for details regarding storage after reconstitution. ^{6,23} Solutions should be protected from light during administration. ²³ Several reports indicate that for short-term exposure, little difference in potency is observed between light-protected and light-exposed solutions. ⁶
Amphotericin B Lipid Complex <i>Abelcet</i>	X				Protect from exposure to light and retain in carton until time of use. ^{6,7,24}
Anakinra <i>Kineret</i>	X				Protect from light. ^{6,25}

Light-Sensitive Injectable Drugs

Drug	Storage	Reconstitution	Dilution	Administration	Additional comments
Antihemophilic Factor, Recombinant <i>Advate</i> <i>Helixate FS</i> <i>Kogenate FS</i> <i>Recombinate</i> <i>Xyntha</i>	X				<i>Advate, Helixate FS, Kogenate FS, Recombinate</i> : Protect from extreme exposure to light and store in carton prior to use. ²⁶⁻²⁹ <i>Xyntha</i> : Protect from light during storage. ^{7,30}
Anti-inhibitor Coagulant Complex <i>Feiba NF</i>	X				Store in the original package to protect from light. ³¹
Antithymocyte Globulin (Rabbit) <i>Thymoglobulin</i>	X				Protect intact vials from light. ^{6,7,32}
Argatroban	X		X		Retain in the original carton to protect from light. ^{6,7,33} Prepared solutions should not be exposed to direct sunlight. Stability of diluted solutions is affected by light exposure; refer to prescribing information for details regarding storage after dilution. ³³
Aripiprazole <i>Abilify</i>	X				Protect from light and store in original container until time of use. ^{5,6,34}
Articaine and Epinephrine <i>Septocaine</i>	X				Protect from light. ^{5,35}
Ascorbic Acid	X				Protect intact containers from light by keeping them in the carton until ready for use. ^{6,36}
Atropine <i>AtroPen</i>	X				Protect from light. ³⁷
Atropine and Pralidoxime <i>DuoDote</i>	X				Protect from light. ³⁸ Each <i>DuoDote</i> is supplied in a pouch that provides protection from light.
Azathioprine	X				Protect from light and retain in carton until time of use. ^{6,7,39}
Bacillus Calmette-Guerin (BCG) <i>TICE BCG</i> <i>BCG vaccine</i>	X	X			Protect from direct sunlight. ^{40,41} Reconstituted product should be protected from exposure to direct sunlight. Stability of reconstituted solutions is affected by light exposure; refer to prescribing information for details regarding storage after reconstitution.
Belatacept <i>Nulojix</i>	X		X		Protect from light by storing in the original package until time of use. ^{7,42} Stability of diluted solutions is affected by light exposure; refer to prescribing information for details regarding storage after dilution. ⁴²
Bendamustine <i>Treanda</i>	X		X		Retain in original package until time of use to protect from light. ^{7,43} Stability of diluted solutions is affected by light exposure; refer to prescribing information for details regarding storage after dilution. ⁴³
Betamethasone Acetate and Betamethasone Sodium Phosphate <i>Celestone Soluspan</i>	X				Protect from light. ^{5,44}

(continued)

Drug	Storage	Reconstitution	Dilution	Administration	Additional comments
Bevacizumab <i>Avastin</i>	X				Protect vials from light by storing in the original carton until time of use. ^{7,45}
Bicisate <i>Neurolite</i>	X				Protect vial A from light. ^{5,46}
Bortezomib <i>Velcade</i>	X	X			Retain in the original container to protect from light. ^{5,6,47} Stability of reconstituted solutions is affected by light exposure; refer to prescribing information and tertiary source for details regarding storage after reconstitution. ^{6,47}
Brentuximab Vedotin <i>Adcetris</i>	X				Store in the original carton to protect from light. ^{7,48}
Bumetanide	X				Protect from light. ^{6,49}
Bupivacaine and Epinephrine <i>Marcaine</i> <i>Vivacaine</i> <i>Sensorcaine</i> <i>Sensorcaine MPF</i>	X				Solutions containing epinephrine should be protected from light. ⁵⁰⁻⁵³
Buprenorphine <i>Buprenex</i>	X				Should be protected from prolonged exposure to light. ^{6,7,54}
Butorphanol	X				Protect from light. ^{6,7,55}
C1 Esterase Inhibitor (Human) <i>Berinert</i> <i>Cinryze</i>	X				Store the vial in the original carton to protect from light. ^{7,56,57}
Calcitriol <i>Calcijex</i>	X				Keep ampules in package until time of use. ⁵⁸ Drug can be stored in a syringe for up to 8 hours prior to administration but must be protected from direct sunlight. ^{6,7,58}
Canakinumab <i>Ilaris</i>	X	X			Store in the original carton to protect from light. ^{5,59} Stability of reconstituted solutions is affected by light exposure; refer to prescribing information for details regarding storage after reconstitution. ⁵⁹
Carboplatin	X				Protect intact vials from light. ^{6,7,60}
Carfilzomib <i>Kyprolis</i>	X				Retain in original package to protect from light. ^{5,61}
Carmustine <i>BiCNU</i>	X	X	X		All forms should be protected from light. ⁷ Stability of reconstituted and diluted solutions is affected by light exposure; refer to prescribing information for details regarding storage after reconstitution and dilution. ⁶² Refer to tertiary source for details regarding light effects. ⁶
Cefazolin	X	X			The manufacturer and some tertiary sources recommend to protect from light before reconstitution. ^{5,7,63} One tertiary source recommends protection from light for both the powder and its solutions. ⁶
Cefepime <i>Maxipime</i>	X				Protect from light. ^{6,7,64}
Cefotaxime <i>Claforan</i>	X	X			Both the dry material and solutions should be protected from excessive light. ^{6,7,65}

Light-Sensitive Injectable Drugs

Drug	Storage	Reconstitution	Dilution	Administration	Additional comments
Cefotetan	X				Intact vials should be protected from light. ^{5,6,66}
Ceftazidime <i>Fortaz</i> <i>Tazicef</i>	X				Intact vials should be stored in carton and protected from light. ^{6,7,67,68}
Ceftriaxone <i>Rocephin</i>	X				Intact vial should be protected from light. ^{6,7,69} After reconstitution, protection from normal light is not necessary. ^{6,69}
Cefuroxime <i>Zinacef</i>	X				Intact vials should be protected from light. ^{6,7,70}
Cephalosporin-Dextrose Dual Chamber Products	X				All available injectable cephalosporin-dextrose dual chamber products have foil on the product designed to protect the powder from light; if the foil is removed before reconstitution/dilution with dextrose, the powder would still need protection from light. ⁷¹⁻⁷⁷ Once diluted, light protection is not necessary.
Certolizumab Pegol <i>Cimzia</i>	X	X			Protect solution from light and store in the carton. ⁷⁸
Cetorelix <i>Cetrotide</i>	X				Keep the packaged tray in the outer carton to protect it from light. ^{5,79}
Chloroprocaine <i>Nesacaine</i> <i>Nesacaine-MPF</i>	X				It is recommended that these vials be stored in the original outer containers, protected from direct sunlight. ⁸⁰
Chlorpromazine	X				Protect from light. ^{7,81}
Choriogonadotropin Alfa <i>Ovidrel</i>	X				Store in original package and protect from light. ^{5,82}
Ciprofloxacin	X				Protect from light. ^{6,7,83} Refer to tertiary source for details regarding light effects. ⁶
Cisatracurium <i>Nimbex</i>	X				Protect from light. ^{6,7,84}
Cisplatin	X		X		Protect unopened container from light. ^{6,85} Stability of diluted solutions is affected by light exposure; refer to prescribing information or tertiary source for details regarding storage after dilution. Refer to tertiary sources for details regarding light effects and exposure to ultraviolet light. ^{6,7,85}
Cladribine <i>Leustatin</i>	X				When stored properly and protected from light, unopened vials are stable until the expiration date indicated on the package. ^{6,7,86}
Clevidipine <i>Cleviprex</i>	X				Protect from light. ⁷ Storage in cartons protects against photodegradation. ⁸⁷ Protection from light during administration is not required.
Conivaptan <i>Vaprisol</i>	X				Do not remove container from overwrap until ready for use. ^{7,88} The overwrap is a moisture and light barrier.
Corticotropin Ovine Triflutate <i>Acthrel</i>	X				Stable in the lyophilized form when stored properly and protected from light. ⁸⁹
Cosyntropin	X				Protect from light. ^{7,90} The manufacturers of products available in powder form provide no recommendations regarding light protection. ⁹¹⁻⁹⁴

(continued)

Drug	Storage	Reconstitution	Dilution	Administration	Additional comments
Cyanocobalamin	X				The vitamin B12 coenzymes are unstable in light and require protection from light. ^{6,95}
Cyclosporine <i>SandIMMUNE</i>	X				Protect from light. ^{6,7,96} Light protection is not required for IV admixtures. ⁶
Cytarabine	X				Protect from light and retain in carton until time of use. ⁹⁷⁻⁹⁹ Not all manufacturers provide recommendations regarding light protection. ^{*98-100} *Multiple products from the same manufacturer provide different recommendations regarding light protection.
Dacarbazine	X				Protect from light. ^{6,101} Refer to tertiary source for details regarding light effects on reconstituted and diluted solutions. ⁶
Dactinomycin <i>Cosmegen</i>	X				Protect from light. ^{6,7,102}
Dantrolene <i>Dantrium</i> <i>Revonto</i>	X	X			The contents of the vial must be protected from direct light and used within 6 hours after reconstitution. ^{7,103,104} Protect reconstituted solution from direct light. ⁷
Darbepoetin Alfa <i>Aranesp</i>	X				Protect vials and prefilled syringes from light during storage. ^{7,105}
Daunorubicin Liposome <i>DaunoXome</i>	X				Protect from light. ^{7,106}
Daunorubicin <i>Cerubidine</i>	X	X			Protect from light and retain in carton until time of use. ^{6,7,107} Stability of reconstituted solutions is affected by light exposure; refer to tertiary source for details regarding storage after reconstitution. ⁶
Denosumab <i>Prolia</i> <i>Xgeva</i>	X				Protect from direct light and store in original carton. ^{5,108,109}
Desirudin <i>Iprivask</i>	X				Protect from light. ^{5,110}
Dexamethasone Sodium Phosphate	X				Protect from light and store in container until time of use. ^{5,6,111}
Dexrazoxane <i>Totect</i>	X				Protect from light and keep vials in carton until ready for use. ^{7,112} The manufacturers of other products provide no recommendations regarding light protection. ¹¹³⁻¹¹⁵
Diatrizoate Meglumine/Sodium <i>Cystografin</i> <i>MD-76R</i>	X				<i>Cystografin</i> should be protected from light. ¹¹⁶ <i>MD-76R</i> must be protected from strong daylight or direct exposure to the sun. ¹¹⁷
Iodipamide Meglumine and Diatrizoate Meglumine <i>Sinografin</i>	X				Protect from light. ¹¹⁸
Diazepam	X				Protect from light. ^{6,7,119}
Digoxin <i>Lanoxin</i>	X				Protect from light. ^{6,7,120}

Light-Sensitive Injectable Drugs

Drug	Storage	Reconstitution	Dilution	Administration	Additional comments
Dihydroergotamine <i>D.H.E. 45</i>	X				Store in light-resistant containers and protect from light. ^{7,121}
Dimenhydrinate	X				Protect from light. ^{5,122}
Diphenhydramine	X				Protect from light and store in light-resistant containers. ^{6,7,123}
Dipyridamole <i>Persantine</i>	X				Protect from direct light and keep covered in carton until time of use. ^{7,124}
Docetaxel <i>Docefrez</i> <i>Taxotere</i>	X				Retain in the original package to protect from bright light. ^{6,7,125,126}
Dolasetron <i>Anzemet</i>	X				Protect intact containers from light. ^{6,7,127} Stability of diluted solutions is affected by light exposure; refer to prescribing information for details regarding storage after dilution. ¹²⁷
Dopamine	X				Protect from light and retain in carton until time of use. ¹²⁸ Refer to tertiary source for details regarding effects of fluorescent and blue phototherapy light. ⁶
Doxercalciferol <i>Hectorol</i>	X				Protect from light. ^{7,129}
Doxorubicin <i>Adriamycin</i>	X	X			Protect from light and retain in carton until time of use. ^{6,7,130} Stability of reconstituted solutions is affected by light exposure; refer to prescribing information and tertiary source for details regarding storage after reconstitution. ^{6,130}
Doxycycline	X	X	X	X	Protect from light and retain in carton until time of use. ^{6,7,131} Stability is affected by light exposure; refer to prescribing information for details regarding storage and light after reconstitution, dilution, and during administration. ¹³¹
Droperidol	X				Protect from light and retain in carton until time of use. ^{6,7,132}
Ecallantide <i>Kalbitor</i>	X				Protect vials from light until use. ^{5,133}
Eculizumab <i>Soliris</i>	X				Store in the original carton until time of use and protect from light. ^{7,134}
Ephedrine	X				Protect from light. ^{6,135}
Epinephrine <i>Adrenalin</i> <i>EpiPen</i> <i>EpiPen Jr</i>	X				<i>Adrenalin</i> : Protect from exposure to light. ^{6,7,136} <i>EpiPen and EpiPen Jr</i> : Protect from light. ^{6,137} Store auto-injectors in the provided carrier tube. ¹³⁷
Epirubicin <i>Ellence</i>	X	X			Protect from light. ^{7,138} Protect intact vials from exposure to light. ⁶ Stability of reconstituted solutions is affected by light exposure; refer to tertiary source for details regarding storage after reconstitution.
Epoetin Alfa <i>Epogen</i> <i>Procrit</i>	X				Protect from light and store in original containers until time of use. ^{7,139,140}

(continued)

Drug	Storage	Reconstitution	Dilution	Administration	Additional comments
Epoprostenol <i>Flolan</i> <i>Velettri</i>	X	X		X	<i>Flolan</i> : Unopened vials should be protected from light in the carton. ^{6,7,141} Prior to use, reconstituted solutions must be protected from light if not used immediately. Do not expose to direct sunlight during storage or in use. <i>Velettri</i> : Unopened vials should be protected from light in the carton. ^{7,142} Prior to use, solutions reconstituted with 5 mL diluent must be protected from light. ¹⁴² Do not expose solution to direct sunlight.
Eptifibatide <i>Integrilin</i>	X				Protect from light until administration. ^{6,7,143}
Esomeprazole <i>Nexium I.V.</i>	X				Protect from light and store in carton until time of use. ^{6,7,144}
Etanercept <i>Enbrel</i>	X				Keep the product in the original carton to protect from light until the time of use. ^{5,145}
Ethanolamine <i>Ethamolin</i>	X				Protect from light. ^{5,146}
Etoposide Phosphate <i>Etopophos</i>	X				Retain in original package to protect from light. ^{6,147}
Exenatide <i>Bydureon</i> <i>Byetta</i>	X				<i>Bydureon</i> : Protect from light until ready to prepare and use dose. ^{5,148} <i>Byetta</i> : Protect from light. ^{5,149}
Factor VIIa (Recombinant) <i>NovoSeven RT</i>	X	X			Protect from light prior to reconstitution. ¹⁵⁰ Keep mixed solution out of direct light. ^{5,150}
Factor XIII Concentrate (Human) <i>Corifact</i>	X				Keep in original carton to protect from light. ^{7,151}
Fentanyl <i>Sublimaze</i>	X				Protect from light. ^{6,7,152}
Fibrinogen Concentrate (Human) <i>RiaSTAP</i>	X				Protect from light and keep in original carton until ready to use. ^{7,153}
Fluorouracil <i>Adrucil</i>	X				Protect from light and retain in carton until time of use. ^{6,7,154} Exposure to sunlight or intense incandescent light has caused degradation. ⁶
Fluphenazine Decanoate	X				Protect from light and retain vial in carton until ready for use. ^{5,155}
Fluphenazine Hydrochloride	X				Solutions should be protected from light. ^{5,6,156}
Folic Acid	X				Protect from light and retain vial in carton until contents are used. ^{6,7,157}
Follitropin Alfa <i>Gonal-f</i> <i>Gonal-f RFF</i> <i>Gonal-f RFF Pen</i>	X	X			Protect from light. ^{5,158-160} The single use vial and pen should be protected from light during storage. ^{159,160} The multidose vial only requires protection from light after reconstitution. ¹⁵⁸
Follitropin Beta <i>Follistim</i> <i>Follistim AQ</i>	X				Protect from light. ^{5,161,162} Keep container in carton. ¹⁶²

Light-Sensitive Injectable Drugs

Drug	Storage	Reconstitution	Dilution	Administration	Additional comments
Fulvestrant <i>Faslodex</i>	X				Protect from light and store in the original carton until time of use. ^{5,163}
Furosemide	X				Protect from light. ^{6,7,164} Refer to tertiary source for details regarding specific mechanisms of photodegradation. ⁶
Gadodiamide <i>Omniscan</i>	X				Protect from strong daylight and direct exposure to sunlight. ¹⁶⁵
Gadofosveset <i>Ablavar</i> <i>Vasovist</i>	X				Protect from light. ^{5,166,167}
Gadopentetate Dimeglumine <i>Magnevist</i>	X				Injection should be protected from light. ^{5,168}
Gadoteridol <i>ProHance</i>	X				Protect from light. ¹⁶⁹
Gadoversetamide <i>optiMARK</i>	X				Protect from light. ^{5,170}
Galsulfase <i>Naglazyme</i>	X				Protect from light. ¹⁷¹
Ganirelix	X				Protect from light. ¹⁷²
Glatiramer <i>Copaxone</i>	X				Protect from light when not injecting. ¹⁷³ Exposure to intense light should be avoided. ^{5,173}
Glucagon (rDNA origin) <i>GlucaGen Hypokit</i>	X				Keep in original package to protect from light. ^{7,174}
Gold Sodium Thiomalate <i>Myochrysine</i>	X				Protect from light and store in carton until contents have been used. ^{5,175}
Golimumab <i>Simponi</i>	X				Keep the product in the original carton until the time of use to protect from light. ^{5,176}
Granisetron	X				Protect from light and retain in carton until time of use. ^{6,7,177}
Haemophilus Influenza Type B Conjugate Vaccine <i>Hiberix</i>	X				Vials should be protected from light. ¹⁷⁸ The manufacturers of <i>PedvaxHIB</i> and <i>ActHIB</i> provide no recommendations regarding light protection. ¹⁷⁹⁻¹⁸⁰
Haloperidol Decanoate <i>Haldol Decanoate</i>	X				Protect from light and keep in carton until empty. ^{5,181}
Haloperidol Lactate	X				Protect from light. ^{6,182}
Human Papillomavirus Vaccine <i>Gardasil</i>	X				Protect from light. ¹⁸³ The manufacturer of <i>Cervarix</i> provides no recommendation regarding light protection. ¹⁸⁴
Hyaluronic Acid Derivatives <i>Euflexxa</i> <i>Hyalgan</i> <i>Synvisc</i> <i>Synvisc-One</i>	X				Store in the original packaging and protect from light. ^{3,5,185-188} The manufacturers of <i>Supartz</i> and <i>Orthovisc</i> provide no recommendations regarding light protection. ^{189,190}
Hyaluronidase <i>Vitrase</i>	X				Protect from light. ^{5,191}

(continued)

Drug	Storage	Reconstitution	Dilution	Administration	Additional comments
Hydrocortisone Sodium Succinate <i>Solu-cortef</i>		X			Protect reconstituted solution from light. ^{6,7,192}
Hydromorphone <i>Dilaudid</i> <i>Dilaudid-HP</i>	X		X		Protect from light and keep covered in carton until time of use. ^{6,7,193} Stability of diluted solutions is affected by light exposure; refer to prescribing information for details regarding storage after dilution. ¹⁹³
Hydroxocobalamin	X				Protect from light. ¹⁹⁴
Hydroxyprogesterone <i>Makena</i>	X				Protect vial from light and store vial in original box. ^{5,195}
Hydroxyzine	X				Protect from light. ¹⁹⁶
Ibuprofen Lysine <i>NeoProfen</i>	X				Protect from light and store vials in carton until contents have been used. ^{6,7,197}
Idarubicin <i>Idamycin PFS</i>	X				Protect from light and retain in carton until time of use. ^{6,198}
Idursulfase <i>Elaprase</i>	X				Protect from light. ^{5,199}
Immune Globulin (Human) <i>Flebogamma DIF</i> <i>Gammagard Liquid</i> <i>Gammalex</i> <i>Hizentra</i> <i>Privigen</i>	X				Recommended storage conditions vary among immune globulin products. ^{6,7} Check the individual prescribing information for the specific product for further information. In general, the listed brand products require light protection by storing in the original container. ²⁰⁰⁻²⁰⁴ The manufacturers of other products provide no recommendations regarding light protection. ²⁰⁵⁻²⁰⁹
Indigotindisulfonate <i>Indigo Carmine</i>	X				Store in the dark, away from direct light, preferably in the original package. ^{5,210}
Indomethacin <i>Indocin</i>	X				Protect from light and store in carton until contents have been used. ^{6,7,211}
Influenza (Inactivated) Vaccine <i>Afluria</i> <i>Fluarix</i> <i>Flublok</i> <i>Flucelvax</i> <i>FluLaval</i> <i>Fluvirin</i>	X				Protect from light. ²¹²⁻²¹⁷ Store in the original package. ^{213,216,217}
Insulin Aspart Insulin Aspart/Protamine <i>Novolog</i> <i>Novolog 70/30</i>	X				Keep unopened product in the carton to protect from light. ^{218,219} Do not expose opened or unopened product to excessive/direct heat and sunlight. ^{7,218,219}
Insulin Detemir <i>Levemir</i>	X				Keep unopened product in the carton to protect from light. ²²⁰ Do not expose opened or unopened product to direct heat or sunlight. ^{5,220}
Insulin Glulisine <i>Apidra</i> <i>Apidra Solostar</i>	X				Protect from light. ²²¹ Keep opened and unopened product away from direct heat and sunlight. ^{7,221}

Light-Sensitive Injectable Drugs

Drug	Storage	Reconstitution	Dilution	Administration	Additional comments
Insulin Glargine <i>Lantus</i>	X				Keep opened and unopened product away from direct heat and light. ^{5,222}
Insulin Lispro Insulin Lispro/Protamine <i>Humalog</i> <i>Humalog Mix 50/50</i> <i>Humalog Mix 75/25</i>	X				Keep unopened product in its original carton to protect from light. ²²³ Protect opened and unopened product from direct heat and light. ^{5,6,223-225}
Insulin Isophane (NPH) Insulin Isophane (NPH)/Regular <i>Novolin N</i> <i>Humulin N</i>	X				<i>Novolin N</i> : Keep unopened products in the carton to protect from light. ²²⁶ Keep opened products away from direct heat and light. <i>Humulin N</i> : Keep opened products away from direct heat and light. ²²⁷
Insulin Regular <i>Novolin R</i> <i>Humulin R</i>	X				<i>Novolin R</i> : Store unopened vials in original carton to protect from light. ²²⁸ Keep opened vials away from heat and light. <i>Humulin R</i> : Keep opened vials away from heat and light. ^{6,7,229}
Interferon Beta-1a <i>Avonex</i> <i>Rebif</i>	X				Protect from light. ^{5,230,231}
Iodipamide Meglumine <i>Cholografin</i>	X				Protect from light. ^{6,232}
Iodixanol <i>Visipaque</i>	X				Protect polymer bottles from strong daylight and direct exposure to sunlight. ^{6,233} Do not remove foil overwrap until immediately before use. ⁶
Iohexol <i>Omnipaque</i>	X				Protect polymer bottles from strong daylight and direct exposure to sunlight. ^{6,234} Protect solution from exposure to light. ²³⁴ Do not remove containers from light-protective foil overwrap until immediately before use. ⁶
Iopamidol <i>Isovue</i> <i>Isovue-M</i>	X				Protect from light. ^{6,235,236}
Iopromide <i>Ultravist</i>	X				Protect from light. ^{5,237}
Iothalamate Meglumine <i>Conray</i>	X				Protect from strong daylight or direct exposure to the sun. ^{5,6,238}
Ioversol <i>Optiray</i>	X				Protect from strong daylight or direct exposure to the sun. ²³⁹
Ioxaglate Meglumine and Ioxaglate Sodium <i>Hexabrix</i>	X				Protect from strong daylight or direct exposure to the sun. ^{5,6,240}
Ipilimumab <i>Yervoy</i>	X				Protect vials from light. ^{7,241}
Irinotecan <i>Camptosar</i>	X		X		Protect from light and keep the vial in the carton until the time of use. ^{6,7,242} Stability of diluted solutions is affected by light exposure; refer to prescribing information and tertiary sources for details regarding storage after dilution.

(continued)

Drug	Storage	Reconstitution	Dilution	Administration	Additional comments
Isoniazid	X				Protect from light. ²⁴³
Isoproterenol <i>Isuprel</i>	X				Protect from light and keep in opaque container until used. ^{6,244}
Ixabepilone <i>Ixempra</i>	X				Retain in original package until time of use to protect from light. ^{7,245}
Japanese Encephalitis Virus Vaccine <i>Ixiaro</i>	X				Store in the original package to protect from light. ^{5,246}
Ketamine <i>Ketalar</i>	X				Protect from light. ^{6,247} May darken upon prolonged exposure to light, but this darkening does not affect concentration. ⁶
Ketorolac Tromethamine	X				Protect from light and retain in carton until time of use. ^{6,7,248} Prolonged exposure to light may result in discoloration of the solution and precipitation. ⁶
Labetalol	X				Protect from light. ^{6,7,249}
Lanreotide <i>Somatuline Depot</i>	X				Protect from light in its original package and keep pouch sealed until injection. ^{5,250}
Laronidase <i>Aldurazyme</i>	X				Protect from light. ²⁵¹
Leucovorin	X				Protect from light and retain in carton until time of use. ^{5,6,252}
Leuprolide	X				Protect from light and store vial in carton until contents are used. ^{5,253}
Levocarnitine	X				All generic manufacturers recommend to store in carton until time of use to protect from light. ²⁵⁴⁻²⁵⁶ The manufacturer of <i>Carnitor</i> provides no recommendation regarding light protection. ²⁵⁷
Levofloxacin <i>Levaquin</i>	X				Vials and pre-mixed solutions should be protected from light. ^{6,7,258}
Levoleucovorin <i>Fusilev</i>	X				Store vials of both lyophilized powder and ready-to-use solution in carton until contents are used. ^{7,259}
Levothyroxine	X				Protect from light. ^{6,260}
Lidocaine Lidocaine /Epinephrine <i>Xylocaine MPF</i>	X				Vials and premixed solutions should be protected from light. ^{6,261}
Liraglutide <i>Victoza</i>	X				Protect from excessive sunlight. ^{5,262}
Linezolid <i>Zyvox</i>	X				Protect from light. ^{6,7,263} Infusion bags should be kept in the overwrap until ready to use. ^{5,6,7,263}
Lorazepam <i>Ativan</i>	X				Use carton to protect contents from light. ^{6,7,264}
Measles, Mumps, and Rubella Virus Vaccine <i>M-M-R II</i>	X	X			Protect the vaccine from light at all times, since such exposure may inactivate the viruses. ^{5,265} Stability of reconstituted vaccine is affected by light exposure; refer to prescribing information for details regarding storage after reconstitution. ²⁶⁵

Light-Sensitive Injectable Drugs

Drug	Storage	Reconstitution	Dilution	Administration	Additional comments
Measles, Mumps, Rubella, and Varicella Virus Vaccine <i>ProQuad</i>	X	X			Protect the vaccine from light at all times since such exposure may inactivate the vaccine viruses. ^{5,266} If not used immediately, reconstituted vaccine may be stored for up to 30 minutes if protected from light.
Mecasermin <i>Increlex</i>	X				Protect unopened and opened vials from direct light. ^{5,267}
Mechlorethamine <i>Mustargen</i>	X				Protect from light. ^{5,268}
Melphalan <i>Alkeran</i>	X				Protect from light. ^{6,7,269}
Meningococcal Conjugate Vaccine <i>Menveo</i>	X				Protect from light. ²⁷⁰ The manufacturer of <i>Menactra</i> provides no recommendation regarding light protection. ²⁷¹
Menotropins <i>Repronex</i>	X				Protect from light. ^{5,272}
Mepivacaine and Mepivacaine/Levonordefrin <i>Scandonest Plain, Scandonest L</i>	X				For protection from light, retain in box until time of use. ²⁷³ Once opened, the box should be reclosed.
Methadone	X				Protect from light and store in carton until contents have been used. ^{6,7,274}
Methotrexate	X		X		Protect from light. ^{6,7,275} Stability of diluted solutions is affected by light exposure; refer to tertiary source for details regarding storage after dilution. ⁶
Methylgonovine <i>Methergine</i>	X				Protect from light. ^{6,7,276}
Methylnaltrexone <i>Relistor</i>	X				Protect from light. ^{5,277} Refer to prescribing information for details regarding storage and light after the solution is drawn into syringe. ²⁷⁷
Methylprednisolone Sodium Succinate <i>A-Methapred</i>	X				Protect from light. ^{6,7,278}
Metoclopramide <i>Reglan</i>	X		X		Protect from light and store vials in carton until used. ^{6,7,279} Stability of diluted solutions is affected by light exposure; refer to prescribing information for details regarding storage after dilution. ²⁷⁹
Metoprolol Tartrate <i>Lopressor</i>	X				Protect from light. ^{6,7,280}
Metronidazole <i>Flagyl</i>	X				Protect from light during storage. ^{6,7,281} Refer to tertiary source for details regarding light effects. ⁶
Micafungin <i>Mycamine</i>	X		X	X	Vials are coated with a light protective film. ²⁸² The diluted solution should be protected from light. ^{6,7,282} It is not necessary to cover the infusion drip chamber or the tubing. ²⁸²
Mipomersen <i>Kynamro</i>	X				Protect from light and keep in the original carton until time of use. ^{5,283}
Mitomycin	X	X			Intact vials and reconstituted solutions should be protected from light. ^{5,6,284}

(continued)

Drug	Storage	Reconstitution	Dilution	Administration	Additional comments
Morphine <i>Astramorph PF</i> <i>Duramorph</i>	X				Protect from light and store in carton until ready to use. ^{6,7,285,286}
Nalbuphine	X				Protect from light and store in carton until contents have been used. ^{6,7,287}
Naloxone	X				Protect from light. ^{6,7,288}
Natalizumab <i>Tysabri</i>	X				Protect from light. ^{7,289}
Neostigmine	X				Protect from light and store in shelf pack until time of use. ^{6,7,290} Refer to tertiary source for details regarding storage and light after the solution is drawn into syringe. ⁶
Nesiritide <i>Natrecor</i>	X				Keep the vial in the outer carton in order to protect from light. ^{6,291}
Nicardipine <i>Cardene I.V.</i>	X		X*		Store in carton protected from light. ^{6,7,292} *Stability of diluted solutions is affected by exposure to daylight; one tertiary source states that protection from light may be considered for diluted solutions. ⁶
Nitroglycerin	X				Protect vials from light and retain vials in carton until time of use. ^{5,7,293,294} Diluted solutions do not require protection from light. ^{6,295}
Nitroprusside <i>Nitropress</i>	X	X	X	X	Store vials in carton in order to protect from light. ^{5,296} Stability is affected by light exposure; refer to prescribing information and tertiary source for details regarding storage and light after reconstitution, dilution, and during administration. ^{7,296}
Norepinephrine <i>Levophed</i>	X				Protect from light. ^{6,7,297}
Ocriplasmin <i>Jetrea</i>	X				Protect the vials from light by storing in the original package until time of use. ^{5,298}
Octreotide <i>Sandostatin</i>	X				Store in outer carton to protect from light. ^{6,7,299}
Ofatumumab <i>Arzerra</i>	X				Vials should be protected from light. ^{7,300}
Olanzapine <i>Zyprexa</i>	X				Protect from light. ^{5,301}
Omalizumab <i>Xolair</i>		X			Reconstituted vials should be protected from direct sunlight. ³⁰²
Omacetaxine <i>Synribo</i>	X	X			Until use, keep product in carton to protect from light. ^{5,303} Protect reconstituted solution from light. ³⁰³
Ondansetron <i>Zofran</i>	X				Protect vials from light. ^{6,7,304}
Oprelvekin <i>Neumega</i>	X	X			Lyophilized powder and diluents should be protected from light. ^{5,305}

Light-Sensitive Injectable Drugs

Drug	Storage	Reconstitution	Dilution	Administration	Additional comments
Orphenadrine	X				All generic manufacturers recommend to protect from light. ³⁰⁶⁻³⁰⁹ One generic manufacturer states to retain in carton until time of use. ³⁰⁹ The manufacturer of <i>Norflex</i> provides no recommendation regarding light protection. ³¹⁰
Oxaliplatin <i>Eloxatin</i>	X				Vials with concentrate for solution should be protected from light by keeping in the outer carton. ^{6,7,311} Store unopened vials containing powder for solution under normal lighting conditions.
Oxymorphone <i>Opana</i>	X				Protect from light. ^{7,312}
Paclitaxel <i>Abraxane</i>	X				Protect intact vials from light. ^{6,7,313} Retain in the original package to protect from bright light. ³¹⁴
Palifermin <i>Kepivance</i>	X	X			Protect from light and keep vials in carton until time of use. ^{7,315} Stability of reconstituted solutions is affected by light exposure; refer to prescribing information for details regarding storage after reconstitution. ³¹⁵
Palonosetron <i>Aloxi</i>	X				Protect from light. ^{6,7,316}
Panitumumab <i>Vectibix</i>	X				Protect from direct sunlight and store vials in original carton until time of use. ^{7,317}
Pantoprazole Sodium <i>Protonix I.V.</i>	X				Protect from light. ^{6,7,318}
Papaverine	X				Protect from light and retain in carton until time of use. ^{6,319}
Pasireotide <i>Signifor</i>	X				Protect from light and store in original carton. ^{5,320}
Pegfilgrastim <i>Neulasta</i>	X				Store in the carton to protect from light. ^{5,321}
Peginesatide <i>Omontys</i>	X				Protect from light and store in carton until time of use. ³²²
Peginterferon Alfa-2a <i>Pegasys</i>	X				Protect from light. ^{5,323}
Pegloticase <i>Krystexxa</i>	X		X		Protect from light and store in the carton. ^{5,7,324} Stability of diluted solutions is affected by light exposure; refer to prescribing information for details regarding storage after dilution. ³²⁴
Pentamidine <i>Pentam 300</i>	X	X			Protect dry product and reconstituted solution from light. ^{6,7,325} Stability of reconstituted solutions is affected by light exposure; refer to prescribing information for details regarding storage after reconstitution. ³²⁵
Pertuzumab <i>Perjeta</i>	X				Keep vial in the outer carton in order to protect from light. ^{5,326}
Phenylephrine	X				Protect from light and keep covered in carton until time of use. ^{6,7,327}

(continued)

Drug	Storage	Reconstitution	Dilution	Administration	Additional comments
Phytonadione <i>Vitamin K1</i>	X		X	X	Protect from light at all times. ^{6,328} One source states to protect from light before use and during all dilutions. ⁷ Keep ampuls in tray until time of use. ³²⁸ Refer to tertiary source for details regarding photostability. ⁶
Poliovirus Vaccine (Inactivated) <i>IPOl</i>	X				Protect from light. ³²⁹
Polymyxin B	X				Protect from light and retain in carton until time of use. ^{6,330}
Porfimer <i>Photofrin</i>	X	X			Store unopened vials in carton to protect from light. ⁷ The reconstituted product should be protected from bright light and used immediately. ³³¹
Pralatrexate <i>Foloty</i>	X				Store in original carton to protect from light. ^{7,332}
Pramlintide <i>Sym</i>	X				Protect unopened vials and pen-injectors from light. ^{5,333}
Prilocaine and Epinephrine <i>Citanest Forte</i>	X				Solutions containing epinephrine should be protected from light. ³³⁴
Procaine <i>Novocain</i>	X				Protect solutions from light. ³³⁵
Prochlorperazine	X				Protect from light and store in the box until ready to use. ^{7,336} Solutions should be protected from light. ^{6,336} Refer to tertiary source for details regarding light and stability. ⁶
Promethazine <i>Phener</i>	X				Protect from light and keep covered in carton until time of use. ^{6,7,337}
Propranolol	X				Protect from light and retain in carton until time of use. ^{5,6,338}
Protein C Concentrate (Human) <i>Ceprotin</i>	X				Store the vial in the original carton to protect it from light. ^{7,339}
Pyridostigmine <i>Regonol</i>	X				Protect from light. ³⁴⁰
Pyridoxine	X				Protect from light. ^{6,7,341}
Rabies Vaccine <i>RabAvert</i>	X				Lyophilized powder should be protected from light. ³⁴² The manufacturer of <i>Imovax Rabies</i> provides no recommendation regarding light protection. ³⁴³
Ranibizumab Intravitreal <i>Lucentis</i>	X				Protect vial from direct sunlight and store in the original carton until time of use. ³⁴⁴
Ranitidine <i>Zantac</i>	X				Protect from light and store vial in carton until time of use. ^{6,7,345}
Rasburicase <i>Elitek</i>	X				Protect from light. ^{7,346}
Raxibacumab	X				Keep vials in their cartons to protect from light prior to use. ³⁴⁷
Reteplase <i>Retavase</i>	X				The box should remain sealed until use to protect from exposure to light. ^{6,7,348}
Rho(D) Immune Globulin Intravenous <i>Rhophylac</i>	X				Keep in the original carton to protect from light. ^{7,349}

Light-Sensitive Injectable Drugs

Drug	Storage	Reconstitution	Dilution	Administration	Additional comments
Rifampin <i>Rifadin</i>	X				Protect from light. ^{6,7,350}
Rilonacept <i>Arcalyst</i>	X	X			Store inside the original carton to protect from light. ^{5,351} Stability of reconstituted solutions is affected by light exposure; refer to prescribing information for details regarding storage after reconstitution. ³⁵¹
Rimabotulinumtoxin B <i>Myobloc</i>	X				Protect from light. ³⁵²
Risperidone <i>Risperdal Consta</i>	X				The entire dose pack should be protected from light. ^{5,353}
Rituximab <i>Rituxan</i>	X				Vials should be protected from direct sunlight. ³⁵⁴ Protect from light. ⁷
Romiplostim <i>Nplate</i>	X	X			Store vials in their carton to protect from light until time of use. ^{5,355} Protect the reconstituted product from light.
Scopolamine	X				Protect from light. ^{6,356} Opaque covering needed until contents used. ³⁵⁶
Secretin Human <i>ChiRhoStim</i>	X				Protect from light. ^{5,357}
Sodium Nitrite	X				Protect from direct light. ³⁵⁸
Somatropin <i>Genotropin</i> <i>Norditropin</i> <i>Nutropin AQ</i> <i>Omnitrope</i> <i>Tev-Tropin</i>	X				<i>Genotropin, Tev-Tropin</i> : Protect from light. ^{359,360} <i>Norditropin</i> : Avoid direct light. ³⁶¹ <i>Nutropin AQ</i> : Store refrigerated in a dark place when not in use. ³⁶² <i>Omnitrope</i> : The product is light sensitive and should be stored in the carton. ³⁶³ The manufacturers of other products provide no recommendations regarding light protection. ³⁶⁴⁻³⁶⁸
Streptomycin	X	X			Protect from light. ^{6,369} Sterile reconstituted solutions should be protected from light. ³⁶⁹
Streptozocin <i>Zanosar</i>	X				Unopened vials should be protected from light and preferably stored in carton. ^{6,7,370}
Sufentanil <i>Sufenta</i>	X				Protect from light. ^{6,371}
Sumatriptan <i>Imitrex</i> <i>Alsuma</i>	X				Protect from light. ^{6,372,373}
Taliglucerase Alfa <i>Elelyso</i>	X	X	X		Protect from light. ^{5,374} Stability of reconstituted and diluted solutions is affected by light exposure; refer to prescribing information for details regarding storage after reconstitution and dilution. ³⁷⁴
Temsirolimus <i>Torisel</i>	X	X	X		Protect from light. ^{7,375} Protect from excessive room light and sunlight during handling and preparation.
Teniposide <i>Vumon</i>	X				Retain in original package to protect from light. ^{6,376}
Terbutaline	X				Protect from light. ^{6,377} Refer to tertiary source for details regarding storage and light after the solution is drawn into syringe. ⁶

(continued)

Drug	Storage	Reconstitution	Dilution	Administration	Additional comments
Teriparatide <i>Forteo</i>	X				Recap the delivery device when not in use to protect the cartridge from physical damage and light. ^{5,378}
Tesamorelin <i>Egrifta</i>	X				Vials should be protected from light and be kept in the original box until time of use. ³⁷⁹
Testosterone <i>Depo-Testosterone</i>	X				Protect from light. ³⁸⁰
Tetracaine	X				Protect ampules and vials from light. ^{6,381}
Thiamine	X				Protect from light. ^{6,7,382} Refer to tertiary source for details regarding storage and light after the solution is drawn into syringe. ⁶
Thiotepa	X	X	X	X	Protect from light at all times. ^{7,383} Reconstituted solutions should be protected from light until used. ⁶
Thyrotropin Alfa <i>Thyrogen</i>	X				Protect from light. ^{5,384}
Tirofiban <i>Aggrastat</i>	X				Protect from light during storage. ^{6,7,385}
Tocilizumab <i>Actemra</i>	X		X		Protect the vials from light by storage in the original package until time of use. ^{7,386} Stability of diluted solutions is affected by light exposure; refer to prescribing information for details regarding storage after dilution. ³⁸⁶
Topotecan <i>Hycamtin</i>	X	X			Store the vials protected from light in the original package. ^{6,7,387} Stability of reconstituted solutions is affected by light exposure; refer to tertiary source for details regarding storage after reconstitution. ⁶
Tositumomab <i>Bexxar</i>	X				Protect from strong light. ^{7,388} Instructions for I-131 tositumomab do not specify to protect from light. ³⁸⁸
Triamcinolone Acetonide <i>Kenalog-10</i>	X				Protect from light. ³⁸⁹
Triamcinolone Acetonide Intravitreal <i>Triesence</i>	X				Protect from light by storing in carton. ^{5,390}
Triamcinolone Hexacetonide Intra-Articular/Intralesional <i>Aristospan</i>	X				Protect from light. ³⁹¹
Tuberculin Skin Test <i>Aplisol</i>	X				Protect from light. ^{5,392}
Urofollitropin <i>Bravelle</i>	X				Protect from light. ^{5,393}
Ustekinumab <i>Stelara</i>	X				Keep the product in the original carton to protect from light until the time of use. ^{5,394}
Varicella Virus Vaccine Live <i>Varivax</i>	X				Protect from light before reconstitution. ^{5,395}

Light-Sensitive Injectable Drugs

Drug	Storage	Reconstitution	Dilution	Administration	Additional comments
Vecuronium	X				Protect from light and retain in carton until time of use. ^{6,396}
Velaglucerase Alfa <i>Vpriv</i>	X				Protect vial from light. ^{5,397}
Verapamil	X		X		Protect from light by retaining in package until ready to use. ^{6,7,398} Stability of diluted solutions is affected by light exposure; refer to prescribing information for details regarding storage after dilution. ³⁹⁸
Verteporfin <i>Visudyne</i>		X	X		Reconstituted product must be protected from light and used within 4 hours. ^{5,7,399} After dilution, protect from light and use within a maximum of 4 hours. ³⁹⁹
Vinblastine	X	X			Protect from light and retain vial in carton until time of use. ⁴⁰⁰ Although protection from light is not recommended by the manufacturer of the powder form, one tertiary source and another manufacturer's prescribing information states that both powder and solution forms should be protected. ^{6,401}
Vincristine <i>Vincasar PFS</i>	X				Protect from light and retain in carton until time of use. ^{6,402} The manufacturer of <i>Marqibo</i> provides no recommendation regarding light protection. ⁴⁰³
Vinorelbine <i>Navelbine</i>	X				Protect from light by storing in the carton. ^{6,7,404}
Vitamin A <i>Aquasol A</i>	X		X		Protect from light. ^{6,405} Stability of vitamin A in parenteral nutrition solutions is affected by light exposure; refer to tertiary source for details regarding storage after dilution in parenteral nutrition solutions. ⁶
Von Willebrand Factor/ Coagulation Factor VIII Complex <i>Wilate</i>	X				Store in the original container to protect from light. ^{7,406}
Warfarin <i>Coumadin</i>	X				Protect from light and keep vial in box until used. ^{6,7,407}
Ziconotide <i>Prialt</i>	X				Protect from light. ^{6,408}
Zidovudine <i>Retrovir</i>	X				Protect from light. ^{6,7,409}
Ziprasidone <i>Geodon</i>	X	X			Protect from light. ^{5,410} Stability of reconstituted solutions is affected by light exposure; refer to prescribing information for details regarding storage after reconstitution. ⁴¹⁰
ZIV-Aflibercept <i>Zaltrap</i>	X				Keep the vials in the original outer carton to protect from light. ^{5,411}
Zoster Vaccine, Live, Attenuated <i>Zostavax</i>	X				Protect from light prior to reconstitution. ^{5,412}

REFERENCES

- King AR. Light-sensitive oral prescription drugs. *Hosp Pharm*. 2009;44(12):1112-1114.
- Sánchez-Quiles I, Nájera-Pérez MD, Espuny-Miró A, Titos-Arcos JC. Review of the stability of photosensitive medications. *Farm Hosp*. 2011;35(4):204-215.
- Wickersham RM, ed. *Drug Facts and Comparisons*. St. Louis, MO: Wolters Kluwer Health; 2013. <http://online.factsandcomparisons.com>. Accessed December 2012 through April 2013.
- Clinical Pharmacology [database online]. Tampa, FL: Elsevier/Gold Standard Inc; 2013. <http://clinicalpharmacology-ip.com>. Accessed December 2012 through April 2013.
- Micromedex Healthcare Series [database online]. Greenwood Village, CO: Truven Health Analytics; 2013. <http://www.thomsonhc.com/micromedex2/librarian>. Accessed December 2012 through April 2013.
- Trissel LA. *Handbook on Injectable Drugs*. 17th ed. Bethesda, MD: American Society of Health-System Pharmacists; 2013.
- Gahart BL, Nazareno AR. *Intravenous Medications: A Handbook for Nurses and Health Professionals*. 29th ed. St. Louis, MO: Mosby Elsevier; 2013.
- Orencia* [package insert]. Princeton, NJ: Bristol-Myers Squibb; 2011.
- Dysport* [package insert]. Basking Ridge, NJ: Ipsen Biopharmaceuticals, Inc; 2012.
- Humira* [package insert]. North Chicago, IL: Abbott Laboratories; 2012.
- Eylea* [package insert]. Tarrytown, NY: Regeneron Pharmaceuticals, Inc; 2013.
- Proleukin* [package insert]. San Diego, CA: Prometheus Laboratories, Inc; 2012.
- Campath* [package insert]. Cambridge, MA: Genzyme Corporation; 2009.
- Amevive* [package insert]. Deerfield, IL: Astellas Pharma; 2011.
- Alfenta* [package insert]. Lake Forest, IL: Akorn, Inc; 2008.
- Lumizyme* [package insert]. Cambridge, MA: Genzyme Corp; 2012.
- Myozyme* [package insert]. Cambridge, MA: Genzyme Corp; 2012.
- Activase* [package insert]. San Francisco, CA: Genentech; 2011.
- Cathflo Activase* [package insert]. San Francisco, CA: Genentech; 2010.
- Aminophylline [package insert]. Shirley, NY: American Regent Laboratories, Inc; 1999.
- Aminophylline dihydrate [package insert]. Lake Forest, IL: Hospira, Inc; 2009.
- Nexterone* [package insert]. Deerfield, IL: Baxter Healthcare Corporation; 2011.
- Amphotericin B [package insert]. Big Flats, NY: X-gen Pharmaceuticals, Inc; 2009.
- Abelcet* [package insert]. Indianapolis, IN: Sigma-Tau PharmaSource, Inc; 2010.
- Kineret* [package insert]. Stockholm, Sweden: Swedish Orphan Biovitrum AB; 2012.
- Advate* [package insert]. Westlake Village, CA: Bayer Healthcare; 2012.
- Helixate FS* [package insert]. Kankakee, IL: CSL Behring LLC; 2013.
- Kogenate FS* [package insert]. Tarrytown, NY: Bayer Healthcare LLC; 2013.
- Recombinate* [package insert]. Westlake Village, CA: Bayer Healthcare; 2010.
- Xyntha* [package insert]. Philadelphia, PA: Wyeth Pharmaceuticals, Inc; 2012.
- Feiba NF* [package insert]. Westlake Village, CA: Baxter Healthcare Corporation; 2011.
- Thymoglobulin* [package insert]. Cambridge, MA: Genzyme Corp; 2008.
- Argatroban [package insert]. Research Triangle Park, NC: GlaxoSmithKline; 2012.
- Abilify* [package insert]. Princeton, NJ: Bristol-Myers Squibb Company/Otsuka America Pharmaceutical, Inc; 2012.
- Septocaine* [package insert]. Louisville, CO: Septodont; 2011.
- Ascorbic acid [package insert]. Forest Park, IL: Bioniche Pharma USA LLC; 2009.
- Atropen* [package insert]. Columbia, MD: Meridian Medical Technologies; 2005.
- DuoDote* [package insert]. Columbia, MD: Meridian Medical Technologies; 2009.
- Azathioprine [package insert]. Bedford, OH: Bedford Laboratories; 2011.
- TICE BCG* [package insert]. Durham, NC: Organon Teknika; 2009.
- BCG vaccine* [package insert]. Durham, NC: Organon Teknika; 2012.
- Nulojix* [package insert]. Princeton, NJ: Bristol-Myers Squibb Company; 2011.
- Treanda* [package insert]. Frazer, PA: Cephalon; 2012.
- Celestone Soluspan* [package insert]. Whitehouse Station NJ: Merck Sharp & Dohme Corp; 2012.

45. *Avastin* [package insert]. South San Francisco, CA: Genentech, Inc; 2013.
46. *Neurolite* [package insert]. N. Billerica, MA; Lantheus Medical Imaging, Inc; 2008.
47. *Velcade* [package insert]. Cambridge, MA: Millennium Pharmaceuticals, Inc; 2012.
48. *Adcetris* [package insert]. Bothell, WA: Seattle Genetics; 2012.
49. Bumetanide [package insert]. Eatontown, NJ: West-ward Pharmaceuticals; 2011.
50. Bupivacaine and epinephrine [package insert]. Lake Forest, IL: Hospira, Inc; 2010.
51. *Marcaine* [package insert]. Lake Forest, IL: Hospira, Inc; 2011.
52. *Vivacaine* [package insert]. Louisville, CO: Septodont; 2009.
53. *Sensorcaine and Sensorcaine-MPF* [package insert]. Schaumburg, IL: APP Pharmaceuticals LLC; 2010.
54. *Buprenex* [package insert]. Richmond, VA: Reckitt Benckiser; 2005.
55. Butorphanol [package insert]. Bedford, OH: Bedford Laboratories; 2007.
56. *Berinert* [package insert]. Kankakee, IL: CSL Behring LLC; 2012.
57. *Cinryze* [package insert]. Exton, PA: ViroPharma Biologics; 2012.
58. *Calcijex* [package insert]. Lake Forest, IL: Hospira, Inc; 2012.
59. *Ilaris* [package insert]. East Hanover, NJ: Novartis; 2012.
60. Carboplatin [package insert]. Schaumburg, IL: APP Pharmaceuticals; 2010.
61. *Kyprolis* [package insert]. San Francisco, CA: Onyx Pharmaceuticals, Inc; 2012.
62. *BiCNU* [package insert]. Princeton, NJ: Bristol-Myers Squibb; 2011.
63. Cefazolin [package insert]. Schaumburg, IL: APP Pharmaceuticals; 2010.
64. *Maxipime* [package insert]. Lake Forest, IL: Hospira, Inc; 2012.
65. *Claforan* [package insert]. Deerfield, IL: Baxter Healthcare Corp; 2009.
66. Cefotetan disodium [package insert]. Schaumburg, IL: APP Pharmaceuticals; 2011.
67. *Fortaz* [package insert]. Research Triangle Park, NC: GlaxoSmithKline; 2010.
68. *Tazicef* [package insert]. Lake Forest, IL: Hospira; 2007.
69. *Rocephin* [package insert]. South San Francisco, CA: Genentech USA, Inc; 2010.
70. *Zinacef* [package insert]. Research Triangle Park, NC: GlaxoSmithKline; 2010.
71. Cefazolin and dextrose [package insert]. Irvine, CA: B. Braun Medical, Inc; 2012.
72. Cefepime and dextrose [package insert]. Irvine, CA: B. Braun Medical, Inc; 2012.
73. Cefotetan and dextrose [package insert]. Irvine, CA: B. Braun Medical, Inc; 2012.
74. Cefoxitin and dextrose [package insert]. Irvine, CA: B. Braun Medical, Inc; 2010.
75. Ceftazidime and dextrose [package insert]. Irvine, CA: B. Braun Medical, Inc; 2012.
76. Ceftriaxone and dextrose [package insert]. Irvine, CA: B. Braun Medical, Inc; 2010.
77. Cefuroxime and dextrose [package insert]. Irvine, CA: B. Braun Medical, Inc; 2010.
78. *Cimzia* [package insert]. Smyrna, GA: UCB, Inc; 2012.
79. *Cetrotide* [package insert]. Rockland, MA: EMD Serono, Inc; 2008.
80. *Nesacaine and Nesacaine-MPF* [package insert]. Schaumburg, IL: APP Pharmaceuticals; 2010.
81. Chlorpromazine [package insert]. Eatontown, NJ: West-Ward Pharmaceuticals; 2012.
82. *Ovidrel* [package insert]. Rockland, MA: EMD Serono, Inc; 2010.
83. Ciprofloxacin injection [package insert]. Lake Forest, IL: Hospira, Inc; 2011.
84. *Nimbex* [package insert]. North Chicago, IL: Abbvie, Inc; 2013.
85. Cisplatin injection [package insert]. New York, NY: Pfizer Injectables; 2012.
86. *Leustatin* [package insert]. Raritan, NJ: Centocor Ortho Biotech Products; 2012.
87. *Cleviprex* [package insert]. Parsippany, NJ: The Medicines Company; 2012.
88. *Vaprisol* [package insert]. Deerfield, IL: Astellas Pharma; 2012.
89. *Acthrel* [package insert]. Parsippany, NJ: Ferring Pharmaceuticals, Inc; 2007.
90. Cosyntropin [package insert]. Princeton, NJ: Sandoz; 2009.
91. *Cortrosyn* [package insert]. Rancho Cucamonga, CA: Amphastar Pharmaceuticals, Inc; 2010.
92. Cosyntropin [package insert]. Rockford, IL: Mylan Institutional LLC; 2013.
93. Cosyntropin [package insert]. Liberty Corner, NJ: GeneraMedix; 2008.

94. Cosyntropin [package insert]. Princeton, NJ: Sandoz; 2012.
95. Cyanocobalamin [package insert]. Schaumburg, IL: APP Pharmaceuticals LLC; 2008.
96. *SandIMMUNE* [package insert]. East Hanover, NJ: Novartis; 2012.
97. Cytarabine [package insert]. Schaumburg, IL: APP Pharmaceuticals LLC; 2008.
98. Cytarabine [package insert]. New York, NY: Pfizer Inc; 2011.
99. Cytarabine [package insert]. Lake Forest, IL: Hospira, Inc; 2007.
100. Cytarabine [package insert]. Bedford, OH: Bedford Laboratories; 2008.
101. Dacarbazine [package insert]. Schaumburg, IL: APP Pharmaceuticals LLC; 2008.
102. *Cosmegen* [package insert]. Deerfield, IL: Lundbeck; 2012.
103. *Dantrium* [package insert]. Rochester, MI: JHP Pharmaceuticals LLC; 2008.
104. *Revonto* [package insert]. Louisville, KY: US WorldMeds LLC; 2011.
105. *Aranesp* [package insert]. Thousand Oaks, CA: Amgen, Inc; 2012.
106. *DaunoXome* [package insert]. Souderton, PA: Galen US, Inc; 2011.
107. *Cerubidine* [package insert]. Bedford, OH: Bedford Laboratories; 2008.
108. *Prolia* [package insert]. Thousand Oaks, CA: Amgen; 2012.
109. *Xgeva* [package insert]. Thousand Oaks, CA: Amgen; 2013.
110. *Iprivask* [package insert]. Hunt Valley, MD: Canyon Pharmaceuticals; 2010.
111. Dexamethasone sodium phosphate injection [package insert]. Schaumburg, IL: APP Pharmaceuticals LLC; 2008.
112. *Totect* [package insert]. Rockaway, NJ: Topotarget USA, Inc; 2012.
113. *Zinecard* [package insert]. New York, NY: Pharmacia and Upjohn Co; 2012.
114. Dexrazoxane [package insert]. Bedford, OH: Bedford Laboratories; 2005.
115. Dexrazoxane [package insert]. Rockford, IL: Mylan Institutional LLC; 2012.
116. *Cystograftin* [package insert]. Princeton, NJ: Bracco Diagnostics, Inc; 2006.
117. *MD-76R* [package insert]. St. Louis, MO: Mallinckrodt, Inc; 2006.
118. *Sinografin* [package insert]. Princeton, NJ: Bracco Diagnostics Inc; 2006.
119. Diazepam [package insert]. Lake Forest, IL: Hospira, Inc; 2008.
120. *Lanoxin* [package insert]. Research Triangle Park, NC: GlaxoSmithKline; 2011.
121. *D.H.E. 45* [package insert]. Costa Mesa, CA: Valeant Pharmaceuticals; 2002.
122. Dimenhydrinate [package insert]. Schaumburg, IL: APP Pharmaceuticals LLC; 2008.
123. Diphenhydramine [package insert]. Schaumburg, IL: APP Pharmaceuticals LLC; 2008.
124. Dipyrindamole [package insert]. Eatontown, NJ: Westward Pharmaceuticals; 2011.
125. *Docefrez* [package insert]. Detroit, MI: Caraco Pharmaceutical Laboratories, Ltd; 2012.
126. *Taxotere* [package insert]. Bridgewater, NJ: sanofi-aventis Pharmaceuticals; 2011.
127. *Anzemet* [package insert]. Bridgewater, NJ: sanofi-aventis Pharmaceuticals; 2011.
128. Dopamine [package insert]. Shirley, NY: American Regent; 2005.
129. *Hectorol* [package insert]. Cambridge, MA: Genzyme; 2010.
130. *Adriamycin* [package insert]. Bedford, OH: Bedford Laboratories; 2012.
131. Doxycycline [package insert]. New York, NY: Pfizer Injectables; 2011.
132. Droperidol [package insert]. Shirley, NY: American Regent; 2005.
133. *Kalbitor* [package insert]. Cambridge, MA: Dyax Corp; 2012.
134. *Soliris* [package insert]. Cheshire, CT: Alexion Pharmaceuticals, Inc; 2012.
135. Ephedrine [package insert]. Lake Forest, IL: Akorn, Inc; 2010.
136. *Adrenalin* [package insert]. Rochester, MI: JHP Pharmaceuticals LLC; 2011.
137. *EpiPen and EpiPen Jr* [package insert]. Napa, CA: Dey Pharma, LP; 2012.
138. *Ellence* [package insert]. New York, NY: Pfizer Injectables; 2012.
139. *Epogen* [package insert]. Thousand Oaks, CA: Amgen; 2012.
140. *Procrit* [package insert]. Horsham, PA: Janssen Products, LP; 2012.
141. *FloLAN* [package insert]. Research Triangle Park, NC: GlaxoSmithKline; 2011.

142. *Velettri* [package insert]. South San Francisco, CA: Actelion Pharmaceuticals; 2011.
143. *Integrilin* [package insert]. Whitehouse Station, NJ: Merck & Co; 2011.
144. *Nexium I.V.* [package insert]. Wilmington, DE: Astra-Zeneca; 2012.
145. *Enbrel* [package insert]. Thousand Oaks, CA: Immunex Corp; 2012.
146. *Ethamolin* [package insert]. Kirkland, WA: QOL Medical LLC; 2006.
147. *Etopophos* [package insert]. Princeton, NJ: Bristol-Myers Squibb, Co; 2011.
148. *Bydureon* [package insert]. San Diego, CA: Amylin Pharmaceuticals, Inc; 2012.
149. *Byetta* [package insert] (pen user manual). San Diego, CA: Amylin Pharmaceuticals, Inc; 2011.
150. *NovoSeven RT* [package insert]. Princeton, NJ: Novo Nordisk; 2012.
151. *Corifact* [package insert]. Kankakee, IL: CSL Behring LLC; 2012.
152. *Sublimaze* [package insert]. Lake Forest, IL: Akorn; 2012.
153. *RiaSTAP* [package insert]. Kankakee, IL: CSL Behring LLC; 2011.
154. *Adrucil* [package insert]. Irvine, CA: Teva Parenteral Medicines, Inc; 2007.
155. Fluphenazine decanoate [package insert]. Schaumburg, IL: APP Pharmaceuticals LLC; 2010.
156. Fluphenazine hydrochloride injection [package insert]. Schaumburg, IL: APP Pharmaceuticals LLC; 2010.
157. Folic acid injection [package insert]. Schaumburg, IL: APP Pharmaceuticals LLC; 2010.
158. *Gonal-f* [package insert]. Rockland, MA: EMD Serono, Inc; 2009.
159. *Gonal-F RFF* [package insert]. Rockland, MA: EMD Serono, Inc; 2011.
160. *Gonal-F RFF Pen* [package insert]. Rockland, MA: EMD Serono, Inc; 2009.
161. *Follistim* [package insert]. West Orange, NJ: Organon, Inc; 2008.
162. *Follistim AQ* [package insert]. Roseland, NJ: Organon, Inc; 2010.
163. *Faslodex* [package insert]. Wilmington, DE: Astra Zeneca; 2012.
164. Furosemide injection [package insert]. Schaumburg, IL: APP Pharmaceuticals LLC; 2011.
165. *Omniscan* [package insert]. Princeton, NJ: GE Healthcare, Inc; 2011.
166. *Ablavar* [package insert]. North Billerica, MA: Lantheus Medical Imaging, Inc; 2010.
167. *Vasovist* [package insert]. Wayne, NJ: Bayer Healthcare Pharmaceuticals, Inc; 2009.
168. *Magnevist* [package insert]. Wayne, NJ: Bayer Healthcare Pharmaceuticals, Inc; 2012.
169. *ProHance* [package insert]. Princeton, NJ: Bracco Diagnostics, Inc; 2011.
170. *OptiMARK* [package insert]. St. Louis, MO: Mallinckrodt, Inc; 2011.
171. *Naglazyme* [package insert]. Novato, CA: BioMarin Pharmaceutical, Inc; 2012.
172. Ganirelix [package insert]. Whitehouse Station, NJ: Merck Sharp & Dohme Corp; 2012.
173. *Copaxone* [package insert]. North Wales, PA: Teva Pharmaceuticals; 2012.
174. *GlucaGen Hypokit* [package insert]. Princeton, NJ: Novo Nordisk; 2012.
175. *Myochrysin* [package insert]. Lake Forest, IL: Akorn, Inc; 2008.
176. *Simponi* [package insert]. Horsham, PA: Janssen Biotech, Inc; 2012.
177. Granisetron [package insert]. Schaumburg, IL: APP Pharmaceuticals LLC; 2012.
178. *Hiberix* [package insert]. Research Triangle Park, NC: GlaxoSmithKline; 2012.
179. *PedvaxHIB* [package insert]. Whitehouse Station, NJ: Merck Sharp & Dohme Corp; 2010.
180. *ActHIB* [package insert]. Swiftwater, PA: Sanofi Pasteur, Inc; 2009.
181. *Haldol decanoate* [package insert]. Titusville, NJ: Ortho-McNeil-Janssen Pharmaceuticals, Inc; 2011.
182. Haloperidol lactate [package insert]. Schaumburg, IL: APP Pharmaceuticals LLC; 2011.
183. *Gardasil* [package insert]. Whitehouse Station, NJ: Merck & Co, Inc; 2011.
184. *Cervarix* [package insert]. Research Triangle Park, NC: GlaxoSmithKline; 2011.
185. *Euflexxa* [package insert]. Parsippany, NJ: Ferring Pharmaceuticals, Inc; 2011.
186. *Hyalgan* [package insert]. Parsippany, NJ: Fidia Pharma USA, Inc; 2011.
187. *Synvisc* [package insert]. Ridgefield, NJ: Genzyme Corp; 2010.
188. *Synvisc-One* [package insert]. Ridgefield, NJ: Genzyme Biosurgery; 2010.
189. *Orthovisc* [package insert]. Woburn, MA: Anika Therapeutics, Inc; 2005.

190. *Supartz* [package insert]. Durham, NC: Bioventus LLC; 2012.
191. *Vitrax* [package insert]. Irvine, CA: ISTA Pharmaceutical, Inc; 2012.
192. *Solu-CORTEF* [package insert]. New York, NY: Pfizer Injectables; 2012.
193. *Dilaudid and Dilaudid-HP* [package insert]. Stamford, CT: Purdue Pharma LP; 2011.
194. *Hydroxocobalamin* [package insert]. Corona, CA: Watson Pharm, Inc; 2010.
195. *Makena* [package insert]. St. Louis, MO: Ther-Rx Corporation; 2013.
196. *Hydroxyzine* [package insert]. Shirley, NY: American Regent, Inc; 2009.
197. *NeoProfen* [package insert]. Deerfield, IL: Lundbeck, Inc; 2010.
198. *Idamycin PFS* [package insert]. New York, NY: Pfizer; 2006.
199. *Elaprase* [package insert]. Cambridge, MA: Shire Human Genetic Therapies, Inc; 2011.
200. *Flebogamma DIF* [package insert]. Los Angeles, CA: Grifols Biologicals, Inc; 2011.
201. *Gammagard liquid* [package insert]. Westlake Village, CA: Baxter International, Inc; 2011.
202. *Gammaplex* [package insert]. Raleigh, NC: BPL, Inc; 2013.
203. *Hizentra* [package insert]. Kankakee, IL: CSL Behring AG; 2012.
204. *Privigen* [package insert]. Kankakee, IL: CSL Behring AG; 2013.
205. *Carimune NF* [package insert]. Kankakee, IL: CSL Behring LLC; 2012.
206. *Gamastan S/D* [package insert]. Research Triangle Park, NC: Grifols Therapeutics, Inc; 2012.
207. *Gammagard S/D* [package insert]. Westlake Village, CA: Baxter Healthcare Corporation; 2012.
208. *Gamunex-C* [package insert]. Research Triangle Park, NC: Grifols Therapeutics, Inc; 2012.
209. *Octagam* [package insert]. Hoboken, NJ: Octapharma USA, Inc; 2009.
210. *Indigo Carmine* [package insert]. Lake Forest, IL: Akorn, Inc; 2012.
211. *Indocin* [package insert]. Deerfield, IL: Lundbeck, Inc; 2010.
212. *Afluria* [package insert]. Whitehouse Station, NJ: Merck & Co, Inc; 2012.
213. *Fluarix* [package insert]. Research Triangle Park, NJ: GlaxoSmithKline; 2012.
214. *Flublok* [package insert]. Meridian, CT: Protein Sciences Corp; 2013.
215. *Flucelvax* [package insert]. Cambridge, MA: Novartis Vaccines and Diagnostics, Inc; 2012.
216. *FluLaval* [package insert]. Research Triangle Park, NJ: GlaxoSmithKline; 2012.
217. *Fluvirin* [package insert]. Cambridge, MA: Novartis Vaccines and Diagnostics, Inc; 2012.
218. *Novolog* [package insert]. Princeton, NJ: Novo Nordisk, Inc; 2012.
219. *Novolog 70/30* [package insert]. Princeton, NJ: Novo Nordisk, Inc; 2012.
220. *Levemir* [package insert]. Princeton, NJ: Novo Nordisk, Inc; 2012.
221. *Apidra and Apidra Solostar* [package insert]. Bridgewater, NJ: sanofi-aventis U.S. LLC; 2012.
222. *Lantus* [package insert]. Bridgewater, NJ: sanofi-aventis U.S. LLC; 2010.
223. *Humalog* [package insert]. Indianapolis, IN: Lilly USA LLC; 2013.
224. *Humalog Mix 50/50* [package insert]. Indianapolis, IN: Lilly USA LLC; 2009.
225. *Humalog Mix 75/25* [package insert]. Indianapolis, IN: Lilly USA LLC; 2013.
226. *Novolin N* [patient package insert]. Plainsboro, NJ: Novo Nordisk, Inc; 2013.
227. *Humulin N* [patient package insert]. Indianapolis, IN: Lilly USA LLC; 2013.
228. *Novolin R* [package insert]. Princeton, NJ: Novo Nordisk, Inc; 2012.
229. *Humulin R* [package insert]. Indianapolis, IN: Lilly USA LLC; 2011.
230. *Avonex* [package insert]. Cambridge, MA: Biogen, Inc; 2006.
231. *Rebif* [package insert]. New York, NY: Pfizer, Inc; 2013.
232. *Cholografyn Meglummine* [package insert]. Princeton, NJ: Bracco Diagnostics, Inc; 2006.
233. *Visipaque* [package insert]. Princeton, NJ: GE Healthcare, Inc; 2008.
234. *Omnipaque* [package insert]. Princeton, NJ: GE Healthcare, Inc; 2012.
235. *Isovue* [package insert]. Princeton, NJ: Bracco Diagnostics, Inc; 2012.
236. *Isovue-M* [package insert]. Princeton, NJ: Bracco Diagnostics, Inc; 2012.
237. *Ultravist* [package insert]. Wayne, NJ: Bayer HealthCare Pharmaceuticals, Inc; 2009.

238. *Comray* [package insert]. St. Louis, MO: Mallinckrodt, Inc; 2003.
239. *Optiray* [package insert]. Hazelwood, MO: Mallinckrodt, Inc; 2011.
240. *Hexabrix* [package insert]. St. Louis, MO: Mallinckrodt, Inc; 2005.
241. *Yervoy* [package insert]. Princeton, NJ: Bristol-Myers Squibb Company; 2012.
242. *Camptosar* [package insert]. New York, NY: Pfizer, Inc; 2012.
243. Isoniazid [package insert]. Princeton, NJ: Sandoz, Inc; 2009.
244. *Isuprel* [package insert]. Lake Forest, IL: Hospira, Inc; 2004.
245. *Ixempra* [package insert]. Princeton, NJ: Bristol-Myers Squibb Company; 2011.
246. *Ixiaro* [package insert]. Cambridge, MA: Novartis Vaccines and Diagnostics, Inc; 2012.
247. *Ketalar* [package insert]. Rochester, MI: JHP Pharmaceuticals LLC; 2012.
248. Ketorolac tromethamine [package insert]. Lake Forest, IL: Hospira, Inc; 2012.
249. Labetalol [package insert]. Lake Forest, IL: Hospira, Inc; 2011.
250. *Somatuline Depot* [package insert]. Basking Ridge, NJ: Ipsen Biopharmaceuticals, Inc; 2012.
251. *Aldurazyme* [package insert]. Novato, CA: BioMarin Pharmaceutical, Inc; 2011.
252. Leucovorin [package insert]. Bedford, OH: Bedford Laboratories; 2008.
253. Leuprolide [package insert]. Sellersville, PA: Teva Pharmaceuticals USA; 2011.
254. Levocarnitine [package insert]. Sellersville, PA: Teva Pharmaceuticals USA; 2011.
255. Levocarnitine [package insert]. Shirley, NY: American Regent, Inc; 2009.
256. Levocarnitine [package insert]. Bedford, OH: Bedford Laboratories; 2008.
257. *Carnitor* [package insert]. Gaithersburg, MD: Sigma-Tau Pharmaceuticals, Inc; 2012.
258. *Levaquin* [package insert]. Titusville, NJ: Janssen Pharmaceuticals, Inc; 2012.
259. *Fusilev* [package insert]. Irvine, CA: Spectrum Pharmaceuticals, Inc; 2011.
260. Levothyroxine [package insert]. Schaumburg, IL: APP Pharmaceuticals LLC; 2011.
261. *Xylocaine MPF* [package insert]. Schaumburg, IL: APP Pharmaceuticals LLC; 2011.
262. *Victoza* [package insert]. Princeton, NJ: Novo Nordisk, Inc; 2012.
263. *Zyvox* [package insert]. New York, NY: Pfizer, Inc; 2012.
264. *Ativan* [package insert]. Eatontown, NJ: West-Ward Pharmaceuticals; 2011.
265. *M-M-R II* [package insert]. Whitehouse Station, NJ: Merck & Co, Inc; 2010.
266. *ProQuad* [package insert]. Whitehouse Station, NJ: Merck & Co, Inc; 2011.
267. *Increlex* [package insert]. Basking Ridge, NJ: Ipsen Biopharmaceutical, Inc; 2012.
268. *Mustargen* [package insert]. Deerfield, IL: Lundbeck; 2012.
269. *Alkeran* [package insert]. Rockville, MD: ApoPharma USA, Inc; 2011.
270. *Menveo* [package insert]. Cambridge, MA: Novartis Vaccines and Diagnostics, Inc; 2011.
271. *Menactra* [package insert]. Swiftwater, PA: Sanofi Pasteur, Inc; 2011.
272. *Repronex* [package insert]. Parsippany, NJ: Ferring Pharmaceuticals, Inc; 2012.
273. *Scandonest Plain and Scandonest L* [package insert]. Louisville, CO: Septodont; 2009.
274. Methadone [package insert]. Rockford, IL: Mylan Institutional LLC; 2013.
275. Methotrexate [package insert]. Lake Forest, IL: Hospira, Inc; 2011.
276. *Methergine* [package insert]. East Hanover, NJ: Novartis Pharmaceuticals Corporation; 2012.
277. *Relistor* [package insert]. Raleigh, NC: Salix Pharmaceuticals; 2011.
278. *A-Methapred* [package insert]. Lake Forest, IL: Hospira, Inc; 2011.
279. *Reglan* [package insert]. Deerfield, IL: Baxter Healthcare Corporation; 2010.
280. *Lopressor* [package insert]. East Hanover, NJ: Novartis Pharmaceuticals Corporation; 2013.
281. *Flagyl* [package insert]. Deerfield, IL: Baxter Healthcare Corporation; 2011.
282. *Mycamine* [package insert]. Northbrook, IL: Astellas Pharma US, Inc; 2012.
283. *Kynamro* [package insert]. Cambridge, MA: Genzyme Corporation; 2013.
284. Mitomycin [package insert]. Bedford, OH: Bedford Laboratories; 2000.
285. *Astramorph PF* [package insert]. Wilmington, DE: Astra-Zeneca LP; 2005.

286. *Duramorph* [package insert]. Eatontown, NJ: West-Ward Pharmaceuticals; 2011.
287. Nalbuphine [package insert]. Lake Forest, IL: Hospira, Inc; 2007.
288. Naloxone [package insert]. Lake Forest, IL: Hospira, Inc; 2007.
289. *Tysabri* [package insert]. South San Francisco, CA: Elan Pharmaceuticals, Inc; 2012.
290. Neostigmine [package insert]. Eatontown, NJ: West-Ward Pharmaceuticals; 2012.
291. *Natrecor* [package insert]. Titusville, NJ: Scios, Inc; 2012.
292. *Cardene I.V.* [package insert]. Bedminster, NJ: EKR Therapeutics, Inc; 2010.
293. Nitroglycerin injection solution concentrate [package insert]. Lake Forest, IL: Hospira, Inc; 2004.
294. Nitroglycerin [package insert]. Shirley, NY: American Regent, Inc; 2005.
295. Nitroglycerin in dextrose [package insert]. Lake Forest, IL: Hospira, Inc; 2005.
296. *Nitropress* [package insert]. Lake Forest, IL: Hospira, Inc; 2007.
297. *Levophed* [package insert]. Lake Forest, IL: Hospira, Inc; 2007.
298. *Jetrea* [package insert]. Iselin, NJ: ThromboGenics, Inc; 2012.
299. *Sandostatin* [package insert]. East Hanover, NJ: Novartis Pharmaceuticals Corporation; 2012.
300. *Arzerra* [package insert]. Research Triangle Park, NC: GlaxoSmithKline; 2011.
301. *Zyprexa* [package insert]. Indianapolis, IN: Lilly USA LLC; 2011.
302. *Xolair* [package insert]. South San Francisco, CA: Genentech, Inc; 2010.
303. *Synribo* [package insert]. North Wales, PA: Teva Pharmaceuticals USA, Inc; 2012.
304. *Zofran* [package insert]. Research Triangle Park, NC: GlaxoSmithKline; 2012.
305. *Neumega* [package insert]. Philadelphia, PA: Wyeth Pharmaceuticals, Inc; 2011.
306. Orphenadrine [package insert]. Bedford, OH: Bedford Laboratories; 2008.
307. Orphenadrine [package insert]. Lake Forest, IL: Akorn, Inc; 2012.
308. Orphenadrine [package insert]. Corona, CA: Watson Pharm, Inc; 2010.
309. Orphenadrine [package insert]. Schaumburg, IL: Sagent Pharmaceuticals, Inc; 2009.
310. *Norflex* [package insert]. Shirley, NY: Graceway Pharmaceuticals, LLC; 2010.
311. *Eloxatin* [package insert]. Bridgewater, NJ: sanofi-aventis U.S. LLC; 2012.
312. *Opana* [package insert]. Malvern, PA: Endo Pharmaceuticals, Inc; 2013.
313. Paclitaxel [package insert]. Lake Forest, IL: Hospira, Inc; 2012.
314. *Abraxane* [package insert]. Summit, NJ: Celgene Corporation; 2012.
315. *Kepivance* [package insert]. Thousand Oaks, CA: Amgen, Inc; 2008.
316. *Aloxi* [package insert]. Woodcliff Lake, NJ: Eisai, Inc; 2008.
317. *Vectibix* [package insert]. Thousand Oaks, CA: Amgen, Inc; 2013.
318. *Protonix I.V.* [package insert]. Philadelphia, PA: Wyeth Pharmaceuticals, Inc; 2012.
319. Papaverine [package insert]. Shirley, NY: American Regent, Inc; 2009.
320. *Signifor* [package insert]. East Hanover, NJ: Novartis Pharmaceuticals Corporation; 2012.
321. *Neulasta* [package insert]. Thousand Oaks, CA: Amgen, Inc; 2011.
322. *Omontys* [package insert]. Palo Alto, CA: Affymax, Inc; 2012.
323. *Pegasys* [package insert]. South San Francisco, CA: Genentech USA, Inc; 2011.
324. *Krystexxa* [package insert]. Bridgewater, NJ: Savient Pharmaceuticals, Inc; 2012.
325. *Pentam 300* [package insert]. Schaumburg, IL: APP Pharmaceuticals LLC; 2008.
326. *Perjeta* [package insert]. South San Francisco, CA: Genentech, Inc; 2012.
327. Phenylephrine [package insert]. Deerfield, IL: Baxter Healthcare Corporation; 2005.
328. *Vitamin K1* [package insert]. Lake Forest, IL: Hospira, Inc; 2004.
329. *I POL* [package insert]. Swiftwater, PA: Sanofi Pasteur, Inc; 2012.
330. Polymyxin B [package insert]. Schaumburg, IL: APP Pharmaceuticals LLC; 2008.
331. *Photofrin* [package insert]. Bannockburn, IL: Pinnacle Biologics, Inc; 2011.
332. *Folotyn* [package insert]. Westminster, CO: Allos Therapeutics, Inc; 2012.
333. *Symlin* [package insert]. San Diego, CA: Amylin Pharmaceuticals, Inc; 2008.

334. *Citanest Forte* [package insert]. York, PA: DENTSPLY Pharmaceutical; 2010.
335. *Novocain* [package insert]. Lake Forest, IL: Hospira, Inc; 2004.
336. Prochlorperazine [package insert]. Deerfield, IL: Baxter Healthcare Corporation; 2010.
337. *Phenergan* [package insert]. Deerfield, IL: Baxter Healthcare Corporation; 2009.
338. Propranolol [package insert]. Bedford, OH: Bedford Laboratories; 2008.
339. *Ceprotin* [package insert]. Westlake Village, CA: Baxter Healthcare Corporation; 2007.
340. *Regonol* [package insert]. Princeton, NJ: Sandoz, Inc; 2009.
341. Pyridoxine [package insert]. Schaumburg, IL: APP Pharmaceuticals LLC; 2008.
342. *RabAvert* [package insert]. Cambridge, MA: Novartis Vaccines and Diagnostics, Inc; 2012.
343. *Imovax Rabies* [package insert]. Swiftwater, PA: Sanofi Pasteur Inc; 2012.
344. *Lucentis* [package insert]. South San Francisco, CA: Genentech, Inc; 2013.
345. *Zantac* [package insert]. Research Triangle Park, NC: GlaxoSmithKline; 2009.
346. *Elitek* [package insert]. Bridgewater, NJ: sanofi-aventis U.S. LLC; 2010.
347. Raxibacumab [package insert]. Rockville, MD: Human Genome Sciences, Inc; 2012.
348. *Retavase* [package insert]. Bedminster, NJ: EKR Therapeutics, Inc; 2009.
349. *Rhophylac* [package insert]. Kankakee, IL: CSL Behring LLC; 2012.
350. *Rifadin* [package insert]. New York, NY: Pfizer, Inc; 2011.
351. *Arcalyst* [package insert]. Tarrytown, NY: Regeneron Pharmaceuticals, Inc; 2010.
352. *Myobloc* [package insert]. South San Francisco, CA: Solstice Neurosciences, Inc; 2010.
353. *Risperdal Consta* [package insert]. Titusville, NJ: Janssen Pharmaceuticals, Inc; 2012.
354. *Rituxan* [package insert]. South San Francisco, CA: Genentech, Inc; 2012.
355. *Nplate* [package insert]. Thousand Oaks, CA: Amgen, Inc; 2012.
356. Scopolamine [package insert]. Schaumburg, IL: APP Pharmaceuticals LLC; 2008.
357. *ChiRhoStim* [package insert]. Burtonsville, MD: ChiRhoClin, Inc; 2007.
358. Sodium nitrite [package insert]. Scottsdale, AZ: Hope Pharmaceuticals; 2012.
359. *Genotropin* [package insert]. New York, NY: Pfizer, Inc; 2011.
360. *Tev-Tropin* [package insert]. Horsham, PA: Teva Biologicals and Specialty Products; 2012.
361. *Norditropin* [package insert]. Princeton, NJ: NovoNordisk, Inc; 2011.
362. *Nutropin AQ* [package insert]. South San Francisco, CA: Genentech, Inc; 2008.
363. *Omnitrope* [package insert]. Princeton, NJ: Sandoz, Inc; 2011.
364. *Humatrope* [package insert]. Indianapolis, IN: Eli Lilly and Company; 2012.
365. *Nutropin* [package insert]. South San Francisco, CA: Genentech, Inc; 2006.
366. *Saizen* [package insert]. Rockland, MA: EMD Serono, Inc; 2012.
367. *Serostim* [package insert]. Rockland, MA: EMD Serono, Inc; 2012.
368. *Zorbtive* [package insert]. Rockland, MA: EMD Serono, Inc; 2012.
369. Streptomycin [package insert]. Big Flats, NY: X-Gen Pharmaceuticals, Inc; 2012.
370. *Zanosar* [package insert]. Irvine, CA: Teva Parenteral Medicines, Inc; 2007.
371. *Sufenta* [package insert]. Lake Forest, IL: Akorn, Inc; 2008.
372. *Imitrex* [package insert]. Research Triangle Park, NC: GlaxoSmithKline; 2012.
373. *Alsuma* [package insert]. New York, NY: Pfizer, Inc; 2012.
374. *Elelyso* [package insert]. New York, NY: Pfizer, Inc; 2012.
375. *Torisel* [package insert]. Philadelphia, PA: Pfizer, Inc; 2012.
376. *Vumon* [package insert]. Princeton, NJ: Bristol-Myers Squibb Company; 2011.
377. Terbutaline [package insert]. Schaumburg, IL: APP Pharmaceuticals LLC; 2011.
378. *Forteo* [package insert]. Indianapolis, IN: Lilly USA LLC; 2012.
379. *Egrifta* [package insert]. Rockland, MA: EMD Serono, Inc; 2010.
380. *Depo-Testosterone* [package insert]. New York, NY: Pfizer, Inc; 2006.
381. Tetracaine [package insert]. Lake Forest, IL: Akorn, Inc; 2008.

382. Thiamine [package insert]. Schaumburg, IL: APP Pharmaceuticals LLC; 2006.
383. Thiotepa [package insert]. Bedford, OH: Bedford Laboratories; 2001.
384. *Thyrogen* [package insert]. Cambridge, MA: Genzyme Corporation; 2012.
385. *Aggrastat* [package insert]. Somerset, NJ: Medicure Pharma, Inc; 2012.
386. *Actemra* [package insert]. South San Francisco, CA: Genentech; 2012.
387. *Hycamtin* [package insert]. Research Triangle Park, NJ: GlaxoSmithKline; 2010.
388. *Bexxar* [package insert]. Research Triangle Park, NJ: GlaxoSmithKline; 2012.
389. *Kenalog-10* [package insert]. Princeton, NJ: Sandoz, Inc; 2011.
390. *Triesence* [package insert]. Fort Worth, TX: Alcon Laboratories, Inc; 2011.
391. *Aristospan* [package insert]. Princeton, NJ: Sandoz, Inc; 2008.
392. *Aplisol* [package insert]. Rochester, MI: JHP Pharmaceuticals LLC; 2008.
393. *Bravelle* [package insert]. Parsippany, NJ: Ferring Pharmaceuticals, Inc; 2012.
394. *Stelara* [package insert]. Horsham, PA: Janssen Biotech, Inc; 2012.
395. *Varivax* [package insert]. Whitehouse Station, NJ: Merck & Co, Inc; 2012.
396. Vecuronium [package insert]. New York, NY: Pfizer, Inc; 2011.
397. *Vpriv* [package insert]. Lexington, MA: Shire Human Genetic Therapies, Inc; 2013.
398. Verapamil [package insert]. Lake Forest, IL: Hospira, Inc; 2010.
399. *Visudyne* [package insert]. Menlo Park, CA: QLT Ophthalmics, Inc; 2010.
400. Vinblastine [package insert]. Schaumburg, IL: APP Pharmaceuticals LLC; 2011.
401. Vinblastine [package insert]. Bedford, OH: Bedford Laboratories; 2010.
402. *Vincasar PFS* [package insert]. Sellersville, PA: Teva Pharmaceuticals USA; 2012.
403. *Marqibo* [package insert]. South San Francisco, CA: Talon Therapeutics, Inc; 2012.
404. *Navelbine* [package insert]. New York, NY: Pfizer, Inc; 2012.
405. *Aquasol A* [package insert]. Lake Forest, IL: Hospira, Inc; 2007.
406. *Wilate* [package insert]. Hoboken, NJ: Octapharma USA, Inc; 2010.
407. *Coumadin* [package insert]. Princeton, NJ: Bristol-Myers Squibb Company; 2011.
408. *Prialt* [package insert]. South San Francisco, CA: Elan Pharmaceuticals, Inc; 2008.
409. *Retrovir* [package insert]. Research Triangle Park, NC: GlaxoSmithKline; 2009.
410. *Geodon* [package insert]. New York, NY: Pfizer, Inc; 2012.
411. *Zaltrap* [package insert]. Bridgewater, NJ: sanofi-aventis U.S. LLC; 2012.
412. *Zostavax* [package insert]. Whitehouse Station, NJ: Merck & Co, Inc; 2011. ■