Highlights of FDA Activities – 11/1/17 – 11/30/17

FDA Drug Safety Communications & Drug Information Updates:

Compounded Glutamine, Arginine, and Carnitine Product for Injection by United Pharmacy: Risk Alert - Two Adverse Events 11/8/17

FDA received an adverse event report stating that two patients developed tissue erosion at the injection site following the injection of glutamine, arginine, and carnitine (GAC) product compounded by United Pharmacy, LLC. A sample of the compounded injection solution was sent for testing and the pH was above 11. Samples were collected from two batches of GAC injectable product (lots GAC-12 and GAC-13A) during a for-cause inspection of United Pharmacy by the FDA. Analysis of these samples revealed a pH of 10.9 and no glutamine. United Pharmacy recalled lots GAC-12 and GAC-13 in September 2017. There is no FDA-approved injectable GAC product.

Injectable Silicone for Body Contouring and Enhancement: FDA Warns Against Use 11/14/17

The FDA alerted the public and health care providers that injectable silicone is not approved to enhance or augment the body. Such use can lead to ongoing pain, infections, and serious injuries, such as scarring and permanent disfigurement, embolism (blockage of a blood vessel), stroke, and death. The FDA is monitoring reports of adverse events associated with the use of injectable silicone and other unapproved materials and will update the public if significant new information becomes available.

Kratom: Public Health Advisory 11/14/17

The FDA warned consumers not to use *Mitragyna speciosa* (Kratom) due to concerns that the product, which affects opioid receptors, appears to share opioid-risks of addiction, abuse, and dependence. The FDA is aware of 36 deaths associated with the use of kratom-containing products, including some laced with other opioids. The FDA also encouraged additional research, continued evaluation of available safety information, and ongoing adverse event reporting.

FDA Works to Help Relieve the IV Fluid Shortages in Wake of Hurricane Maria 11/14/17

The FDA is actively working with drug manufacturers to address critical shortages of IV fluids aggravated by Hurricane Maria's impact on Puerto Rican drug manufacturing facilities. Because the hurricane disrupted Baxter International's IV fluid production facilities in Puerto Rico, the FDA is allowing temporary importation from Baxter facilities in Ireland, Australia, Mexico and Canada and from B. Braun in Germany. In addition the FDA continued expedited review of drug applications that may help relieve shortages.

FDA Supports ISMP Launch of First High-Alert Medication Safety Self-Assessment 11/15/17

With support from the U.S. FDA's Safe Use Initiative, the Institute for Safe Medication Practices (ISMP) introduced a new tool to help hospitals, long-term care facilities, and certain outpatient facilities evaluate their best practices related to high-alert medications, identify opportunities for improvement, and track their experiences over time. This self-assessment focuses on general high-alert medications and 11 specific medication categories--including opioids, insulin, neuromuscular blocking agents, chemotherapy, and moderate and minimal sedation.

FDA to Evaluate Increased Risk of Heart-Related Death with Febuxostat (Uloric) 11/15/17

Preliminary results from a safety clinical trial show an increased risk of heart-related death with febuxostat (Uloric) compared to allopurinol. FDA required the Uloric drug manufacturer, Takeda Pharmaceuticals, to conduct this safety study when the medicine was approved in 2009. Once the final results from the manufacturer are received, FDA will conduct a comprehensive review and will update the public with any new information.

Biotin May Interfere with Laboratory Tests 11/28/17
The FDA is alerting the public, health care providers, and laboratory personnel that biotin can interfere with certain lab tests and cause an incorrect result. Biotin is found in multivitamins, biotin supplements, and dietary supplements for hair, skin, and nail growth at levels that may interfere with lab tests. Biotin in patient samples can cause falsely high or falsely low results, depending on which test was conducted.

Major Drug-Related Product Recalls Announced Through MedWatch:

Ridge Properties DBA Pain Relief Naturally Products: Recall – Manufacturing Concerns at the Facility 11/3/17
Ridge Properties DBA Pain Relief Naturally recalled all lots of Naturally HL Bedsore Relief Cream, Extra Strength PreTAT by TAT Balm Carbomer Free Gel, and Extra Strength Naturally HL Hemorrhoid Numbing with Lidocaine manufactured by Ridge Properties dba Pain Relief Naturally, to the consumer level. FDA inspection found violations of current good manufacturing practice regulations.

Midazolam Injection by Fresenius Kabi USA: Recall – Incorrect Product Package 11/3/17
Fresenius Kabi USA recalled Lot 6400048 of Midazolam Injection, USP, 2 mg/2 mL packaged in a 2 mL prefilled single-use glass syringe to the hospital/user level. The package is mislabeled as Midazolam Injection, USP, 2 mg/2 mL but the package contains a syringe that is labeled and contains Ondansetron Injection, USP, 4 mg/2 mL.

Infant/Child Reduced Energy Defibrillation Electrodes by Cardinal Health: Voluntary Field Action – Insert Artwork Displays Incorrect Placement for Infant 11/3/17
The company is notifying customers of an issue with the artwork on the defibrillation electrodes, as manufactured by Cardinal Health, which shows incorrect electrode placement for an infant. There is no issue with the performance or function of the defibrillation electrodes; this is limited to incorrect artwork on the defibrillation electrodes within the packaging. If the user incorrectly places the defibrillation electrodes, it may result in ineffective energy delivery to the patient and serious injury or death. The defibrillation electrodes are used only with LIFEPAK EXPRESS® AED, LIFEPAK CR® Plus AED, LIFEPAK® 1000 defibrillator, or LIFEPAK 500 Biphasic AED with a pink connector.

Nexterone (amiodarone HCl) Premixed Injection: Recall – Presence of Particulate Matter 11/15/17
Baxter International recalled one lot of Nexterone (amiodarone HCl) 150 mg/100 mL Premixed Injection (lot number NC109925) distributed between 6/23/17 and 10/2/17 in the United States to wholesalers/distributors and healthcare facilities due to the potential presence of particulate matter. The particulate matter was identified by Baxter during a stability study, and was polyethylene, the primary constituent of the film and ports used to manufacture the bag.

Diphenoxylate Hydrochloride and Atropine Sulfate Tablets: Recall – Potency Concerns 11/16/17
Greenstone, a wholly owned subsidiary of Pfizer Inc., recalled multiple lots of diphenoxylate hydrochloride and atropine sulfate tablets, USP to the consumer level. Product from the recalled lots, which were distributed from November 2016 through June 2017, has the potential to be super potent or sub potent.

Limbrel Capsules by Primus Pharmaceuticals: FDA Advisory - Potentially Life-Threatening Problems 11/21/17
The FDA is investigating serious adverse events involving Limbrel, a product in capsule form being marketed as a medical food to manage the metabolic processes associated with osteoarthritis. While a range of adverse events have been reported, two serious and potentially life-threatening medical conditions (drug-induced liver injury and hypersensitivity pneumonitis) are among them. Health care providers who are aware that their patients are taking Limbrel should advise them to immediately stop taking the product.

Riomet (Metformin Hydrochloride Oral Solution): Recall - Microbial Contamination 11/27/17
Sun Pharmaceutical Industries, Inc. is voluntarily recalling two lots of Riomet 500 mg/5 ml to the retail level. It was found to be contaminated. The affected NDC's are as follows NDC: 10631-206-01 Lot A160031A, Exp.: 01/2018, and NDC: 10631-206-02 Lot: A160031B, Exp.: 01/2018

Dietary Supplement Recalls & Public Notifications

In November, the FDA issued notifications to the public regarding undeclared active ingredients in the following products. Patients are advised not to purchase or use these products.

Product	*Promoted Use*	*Hidden/Undeclared Drug Ingredient(s)*
Adipessum Miracle Slimming Capsules	Weight loss	Fluoxetine
Asia Slim Capsules	Weight loss	Sibutramine[1], diazepam, and bisacodyl
Blue Pearl All Natural Male Enhancement	Sexual enhancement	Sildenafil
Bull 1800 mg Capsules*	Sexual Enhancement	Sildenafil
Chao Jimengnan 150 mg Tablets*	Sexual Enhancement	Sildenafil
Fruta Planta Life (Garcinia Cambogia Premium)	Weight loss	Sibutramine[1]
Hard Times for Men	Sexual enhancement	Sildenafil

*Recalled

[1]Sibutramine has been associated with increased cardiovascular events; discontinued 2010[FDA]

New Product Shortages Reported by the FDA:	*Date Initially Posted*
Dobutamine Hydrochloride Injection	11/6/17
Dopamine Hydrochloride Injection	11/6/17

*Product Discontinuations/Withdrawals**	*Date Posted*
Folic Acid Tablets (Par/Qualitest): 1 mg	11/9/17
Lactulose Oral Solution (Par/Qualitest): 10 gm/15 mL	11/9/17
Methocarbamol Tablets (Par/Qualitest): 500 mg, 750 mg	11/9/17
Multi-Vit with Fluoride Drops (Par/Qualitest): 0.25 mg/50 mL	11/9/17
Primidone Tablets (Par/Qualitest): 50 mg, 250 mg	11/9/17
Testosterone Gel Sachets 1 % (Par/Qualitest): 25 mg in 2.5 g packet and 50 mg in 5 g packet	11/9/17
Tri-Vit with Fluoride and Iron Drops (Par/Qualitest): 0.25 mg/50 mL	11/9/17
Tri-Vit with Fluoride Drops (Par/Qualitest): 0.25 mg/50 mL and 0.5 mg/50 mL	11/9/17
Valproic Acid Syrup (Par/Qualitest): 250 mg 16 oz.	11/9/17
Terbinafine (Lamisil) 250 mg Tablet (Novartis): 30 count bottle; generic remains available	11/15/17
Linezolid (Zyvox) 2 mg/mL Injection (Hospira): 600 mg/300 mL VisIV™ Flexible Container	11/16/17
Enalapril Tablets (Mylan): 2.5 mg, 5 mg, 10 mg, 20 mg	11/17/17
Doxycycline Tablets (Mylan): 50 mg, 75 mg, 100 mg and 150 mg	11/21/17
Lamotrigine Tablets (Mylan): 25mg, 100mg, 150mg, 200mg	11/28/17
Lovastatin Tablets (Mylan): 10mg, 20mg, 40mg	11/28/17

*all listed products remain available from other manufacturers

New Drug Approvals:	*Description – See Attached Drug Summaries*	*Date Approved*
Latanoprostene bunod / Vyzulta / Bausch and Lomb Inc	Reduction of intraocular pressure in patients with open-angle glaucoma or ocular hypertension	11/2/17
Letermovir / Prevymis / Merck Sharp Dohme	Prophylaxis of cytomegalovirus (CMV) infection and disease in adult CMV-seropositive recipients of an allogeneic hematopoietic stem cell transplant	11/8/17
Hepatitis B Vaccine / Heplisav-B / Dynavax Technologies	Prevention of infection caused by all known subtypes of hepatitis B virus	11/9/17
Benralizumab / Fasenra / AstraZeneca Ab	Add-on maintenance treatment of patients with severe asthma with an eosinophilic phenotype	11/14/17
Vestronidase Alfa-vjbk / Mepsevii / Ultragenyx Pharm Inc	Treatment of Mucopolysaccharidosis type VII (MPS VII, Sly syndrome) in pediatric and adult patients	11/15/17
Emicizumab-kxwh / Hemlibra / Genentech Inc	Prevents or reduces frequency of bleeding episodes in patients with hemophilia A who have developed factor VIII inhibitors.	11/16/17

New Indications:	***Description***	***Date Approved***
Vemurafenib / Zelboraf / Hoffman-LaRoche, Inc.	Treatment of Erdheim-Chester Disease.	11/6/17
Ferric citate / Auryxia / Keryx Biopharmaceuticals	Iron deficiency anemia in chronic kidney disease patients who are not on dialysis	11/6/17
Alectinib / ALECENSA / Hoffman-LaRoche, Inc.	Anaplastic lymphoma kinase positive non-small cell lung cancer.	11/7/17
Brentuximab / Adcetris / Seattle Genetics, Inc.	Treatment of adult patients with primary cutaneous anaplastic large cell lymphoma or CD30-expressing mycosis fungoides who have received prior systemic therapy	
Dasatinib / Sprycel / Bristol-Myers Squibb	Treatment of pediatric patients with Philadelphia chromosome-positive chronic myeloid leukemia in chronic phase.	11/10/17
Sunitinib maleate/ Sutent / Pfizer Inc.	Treatment of adult patients at high risk of recurrent renal cell carcinoma following nephrectomy.	11/16/17
Raltegravir / Isentress / Merck	Treatment of HIV-1 exposed full-term newborns who weight at least 2 kg and are up to 4 weeks of age	11/22/17

New Dosage Forms:	***Description***	***Date Approved***
Aprepitant injection / Cinvanti / Heron Therapeutics	Injectable emulsion for IV infusion for the prevention of acute and delayed chemotherapy-induced nausea and vomiting associated with initial and repeat courses of moderately or highly emetogenic cancer chemotherapy	11/10/17
Aripiprazole tablets with sensor / Abilify MyCite / Otsuka	Tablet with a sensor that digitally tracks if patients have ingested their medication	11/13/17
Aliskiren Pellets / Tekturna / Noden Pharma	Treatment of hypertension in adults and children 6 years of age and older, to lower blood pressure	11/14/17
Dolutegravir and rilpivirine tablets / Juluca / ViiV Healthcare	Complete two-drug treatment regimen to treat certain adults with human immunodeficiency virus type 1 (HIV-1)	11/21/17
Sodium picosulfate, magnesium oxide, and anhydrous citric acid oral solution / Clenpiq / Ferring	Ready-to-drink cranberry-flavored colonoscopy prep solution	11/28/17
Buprenorphine injection / Sublocade / Indivior Pharmaceuticals, Inc	Once-monthly injection for the treatment of moderate-to-severe opioid use disorder in adult patients who have initiated treatment with a transmucosal buprenorphine-containing product and have been on a stable dose of buprenorphine treatment for a minimum of seven days.	11/30/17

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Latanoprostene bunod / Vyzulta / Bausch and Lomb Inc	
Generic Name / Brand Name / Company	Latanoprostene bunod / Vyzulta / Bausch and Lomb Inc
Date of approval	11/02/2017
Drug Class (Mechanism of Action if novel agent)	Prostaglandin analog
Indication	Reduction of intraocular pressure in patients with open-angle glaucoma or ocular hypertension
Comparative agent – Therapeutic interchange?	Bimatoprost 0.01%, 0.03%, Latanoprost 0.005%, Tafluprost 0.0015% - therapeutic interchange unknown
Dosage forms/strengths. Common Dose/sig	Topical ophthalmic solution 0.24 mg/mL (0.024%); Dosage: one drop in the affected eye(s) once daily in the evening
DEA Schedule	None
Date of market availability	December 2017
Similar Medications (Look-Alike Sound-Alike)	Latanoprost (Xalatan) 0.005%
Clinical Use Evaluation	
Common Adverse Effects	Conjunctival hyperemia, eye irritation, eye pain, instillation site pain
Severe Adverse Effects	- Pigmentation: Increased pigmentation of the iris and periorbital tissue (eyelid) can occur. Iris pigmentation is likely to be permanent. - Eyelash changes: Gradual changes to eyelashes including increased length, increased thickness and number of eyelashes. Usually reversible upon discontinuation of treatment.
Severe Drug-Drug Interactions	None reported
Severe Drug-Food Interactions	None reported
Important Labs Values to assess prior to order entry or at point of clinical follow up	None
Used in Pediatric Areas	Use in pediatric patients aged 16 years and younger is not recommended because of potential safety concerns related to increased pigmentation following long-term chronic use
Renal or Hepatic Dosing	None reported
Critical Issues (i.e., contraindications, warnings, etc) that should be emphasized	Warnings and Precautions: - Pigmentation - Eyelash changes - Intraocular inflammation - Macular edema - Bacterial keratitis - Use with contact lens
Special administration technique or considerations	- Do not administer more than once daily since it has been shown that more frequent administration of prostaglandin analogs may lessen the intraocular pressure lowering effect - If used concomitantly with other topical ophthalmic drug products to lower intraocular pressure, administer each drug product at least 5 minutes apart. - Contact lenses should be removed prior to administration because this product contains benzalkonium chloride. Lenses may be reinserted 15 minutes after administration.
Prepared by	Mira Kim, Pharm.D. Candidate 2018
Source	Vyzulta (latanoprostene bunod ophthalmic solution) [prescribing information]. Bridgewater, NJ: Bausch and Lomb Inc; November 2017.

Letermovir / Prevymis / Merck Sharp Dohme	
Generic Name / Brand Name / Company	Letermovir / Prevymis / Merck Sharp Dohme
Date of approval	11/08/2017
Drug Class (Mechanism of Action if novel agent)	Antiviral Agent-CMV terminase complex inhibitor
Indication	Prophylaxis of cytomegalovirus (CMV) infection and disease in adult CMV-seropositive recipients [R+] of an allogeneic hematopoietic stem cell transplant (HSCT).
Comparative agent – Therapeutic interchange?	None
Dosage forms/strengths. Common Dose/sig	Oral tablets: 240 mg and 480 mg Injection for IV dilution: 30 mL single dose vials with strengths of: 240 mg/12 mL or 480 mg/ 24 mL (20 mg/mL) Dose: 480 mg once daily through 100 days post-transplant
DEA Schedule	None
Date of market availability	December 2017
Similar Medications (Look-Alike Sound-Alike)	None
Clinical Use Evaluation	
Common Adverse Effects	Nausea, diarrhea, vomiting, peripheral edema, cough, headache, fatigue, abdominal pain
Severe Adverse Effects	Allergic reaction
Severe Drug-Drug Interactions	Concomitant administration with pimozide, or ergot alkaloids, and pitavastatin and simvastatin with cyclosporine are contraindicated. Letermovir is a CYP3A4 Inhibitor and substrate. It also inhibits OATP1B1 and 1B3. More frequent monitoring of the following agents is recommended when taken with letermovir: amiodarone, warfarin, phenytoin, glyburide, repaglinide, rosiglitazone, voriconazole, rifampin, sirolimus, tacrolimus, and Proton pump inhibitors.
Severe Drug-Food Interactions	None known
Important Labs Values to assess prior to order entry or at point of clinical follow up.	-Serum Creatinine/CrCl before and throughout therapy if CrCl less than 50 mL/min -Monitor for reactivation of CMV infection after therapy has been discontinued.
Used in Pediatric Areas	Safety and efficacy have not been established.
Renal or Hepatic Dosing	Renal Impairment: Closely monitor serum creatinine levels in patients with CrCl less than 50 mL/min. No dosage adjustment for patients with CrCl greater than 10 mL/min; safety not established in end-stage renal disease. Hepatic Impairment: not recommended for patients with severe (Child-Pugh C) hepatic impairment.
Critical Issues (i.e., contraindications, warnings, etc) that should be emphasized	Concomitant administration with pimozide or ergot alkaloids contraindicated. Concomitant pitavastatin or simvastatin with cyclosporine are contraindicated.
Special administration technique or considerations	-If letermovir is co-administered with cyclosporine, the letermovir dosage of should be decreased to 240 mg once daily. -Administer IV as an infusion over 1 hour. -Add single dose vials to 250 mL of 0.9% NaCl or D5W solutions. It must be diluted. It is stable for 24 hours at room temperature and 48 hours refrigerated.
Prepared by	Nichole P Alexander Pharm D Candidate for 2019
Source	Prevymis [Prescribing information]. White House Station, NJ: Merck and Company Inc; November 2017.

Hepatitis B Vaccine / Heplisav-B / Dynavax Technologies	
Generic Name / Brand Name / Company	Hepatitis B Vaccine / Heplisav-B / Dynavax Technologies
Date of approval	11/09/2017
Drug Class (Mechanism of Action if novel agent)	Hepatitis B Vaccine (Recombinant), Adjuvanted
Indication	Prevention of infection caused by all known subtypes of hepatitis B virus in adults 18 years of age and older
Comparative agent – Therapeutic interchange?	Engerix-B and Recombivax HB; not a therapeutic interchange, each medication is currently FDA approved for different age groups and different dosage regimens
Dosage forms/strengths. Common Dose/sig	Administer 2 doses (0.5 mL each) one month apart
DEA Schedule	None
Date of market availability	First quarter 2018
Similar Medications (Look-Alike Sound-Alike)	Hepatitis B vaccine, recombinant
Clinical Use Evaluation	
Common Adverse Effects	Injection site pain, fatigue, headache
Severe Adverse Effects	Anaphylaxis
Severe Drug-Drug Interactions	None known
Severe Drug-Food Interactions	None known
Important Labs Values to assess prior to order entry or at point of clinical follow up	Hepatitis B surface antigen (HBsAg) - Antibody concentrations ≥10 mIU/mL against HBsAg are recognized as conferring protection against hepatitis B virus infection
Used in Pediatric Areas	Safety and effectiveness not established in pediatric subjects
Renal or Hepatic Dosing	Safety and effectiveness not established in adults on hemodialysis
Critical Issues (i.e., contraindications, warnings, etc) that should be emphasized	Warnings and precautions: - Review immunization history for possible vaccine sensitivity and previous adverse reactions related to vaccines - Appropriate medical treatment and supervision must be available prior to administration in the case of an adverse event
Special administration technique or considerations	Administer by intramuscular injection in the deltoid region using a sterile needle and syringe Store in a refrigerator at 2°C to 8°C (35°F to 46°F)
Prepared by	Mira Kim, Pharm.D. Candidate 2018
Source	Heplisav-B [Prescribing information]. Berkeley, CA: Dynavax Technologies Corporation; November 2017

Benralizumab / Fasenra / AstraZeneca	
Generic Name / Brand Name / Company	Benralizumab / Fasenra / AstraZeneca Ab
Date of approval	11/14/2017
Drug Class (Mechanism of Action if novel agent)	Interlukin-5 Receptor alpha-directed cytolytic monoclonal antibody
Indication	Add on treatment of patients with severe asthma aged 12 years or older, and with an eosinophilic phenotype
Comparative agent – Therapeutic interchange?	Reslizumab (Cinqair) 3 mg/kg IV every 4 weeks, mepolizumab (Nucala) 100 mg subcutaneously every 4 weeks
Dosage forms/strengths. Common Dose/sig	Dosage form: 30 mg/1 ml prefilled syringe Dose: 30 mg administered subcutaneously every 4 weeks for the first 3 doses, then every 8 weeks thereafter
DEA Schedule	None
Date of market availability	Available
Similar Medications (Look-Alike Sound-Alike)	Actemra, reslizumab
Clinical Use Evaluation	
Common Adverse Effects	headache, pharyngitis
Severe Adverse Effects	Hypersensitivity reactions
Severe Drug-Drug Interactions	None documented
Severe Drug-Food Interactions	None documented
Important Labs Values to assess prior to order entry or at point of clinical follow up.	Blood eosinophil counts
Used in Pediatric Areas	Not approved for children under the age of 12
Renal or Hepatic Dosing	No adjustment required
Critical Issues (i.e., contraindications, warnings, etc) that should be emphasized	Potential for anaphylaxis. If patient has a helminth infection, it must be treated prior to starting treatment, if the patient develops a helminth infection while taking benralizumab, and it does not respond to treatment, discontinue benralizumab until the infection resolves
Special administration technique or considerations	Allow product to come to room temperature before administering subcutaneously. Store product under refrigeration and use within 24 hours after product comes to room temperature.
Prepared by	Kyle Roxby
Source	Fasenra [Prescribing Information]. Wilmington, DE: AstraZeneca Pharmaceuticals, LP; November 2017

Vestronidase Alfa-Vjbk / Mepsevii / Ultragenyx Pharm Inc	
Generic Name / Brand Name / Company	Vestronidase Alfa-Vjbk / Mepsevii / Ultragenyx Pharm Inc
Date of approval	11/15/2017
Drug Class (Mechanism of Action if novel agent)	Enzyme: recombinant human lysosomal beta glucuronidase
Indication	Treatment option for mucopolysaccharidosis VII (MPS VII, Sly syndrome) in pediatric and adult patients.
Comparative agent – Therapeutic interchange?	No other drugs approved for this condition
Dosage forms/strengths. Common Dose/sig	Injection: 10 mg/5 mL in single dose vial Dose: 4 mg/kg by IV infusion every 2 weeks
DEA Schedule	None
Date of market availability	Available
Similar Medications (Look-Alike Sound-Alike)	None
Clinical Use Evaluation	
Common Adverse Effects	Infusion site extravasation, diarrhea, rash, Itching, peripheral swelling, infusion site swelling, anaphylaxis
Severe Adverse Effects	Anaphylaxis, allergic reactions - respiratory distress, cyanosis, decreased oxygen saturation, and hypotension reported as early as with first dose
Severe Drug-Drug Interactions	None reported
Severe Drug-Food Interactions	None reported
Important Labs Values to assess prior to order entry or at point of clinical follow up.	Monitor up to 60 minutes after IV administration for signs and symptoms of allergic reaction
Used in Pediatric Areas	Approved for pediatrics patients and adults (clinical studies included infants as young as 5 months old)
Renal or Hepatic Dosing	None reported
Critical Issues (i.e., contraindications, warnings, etc) that should be emphasized	Anaphylaxis – close monitoring required during and for 60 minutes after infusion
Special administration technique or considerations	Administer as an IV infusion over 4 hours, with administration of 2.5% of the total volume during the first hour. Use an in-line, low-protein binding 0.2 micron filter. Administer non-sedating antihistamine with or without anti-pyretic medication 30 to 60 minutes prior to the start of the infusion.
Prepared by	Nichole P Alexander Pharm D Candidate of 2019
Source	Mepsevii [Prescribing information]. Novato, CA: Ultragenyx Pharmaceutical Inc; November 2017

Emicizumab-kxwh / Hemlibra / Genentech Inc.	
Generic Name / Brand Name / Company	Emicizumab-kxwh / Hemlibra / Genentech Inc.
Date of approval	11/16/2017
Drug Class (Mechanism of Action if novel agent)	Humanized monoclonal antibody that binds to coagulation factor IXa and factor X thus mimicking the normal function of coagulation factor VIII.
Indication	Routine prophylaxis to prevent or reduce the frequency of bleeding episodes in patients with hemophilia A (congenital factor VIII deficiency) with factor VIII inhibitors
Comparative agent – Therapeutic interchange?	None
Dosage forms/strengths. Common Dose/sig	The recommended dose is 3 mg/kg by subcutaneous injection once weekly for the first 4 weeks, followed by 1.5 mg/kg once weekly. Injection (single-dose vials): 30 mg/mL, 60 mg/0.4 mL, 105 mg/0.7 mL, 150 mg/mL
DEA Schedule	None
Date of market availability	February 2018
Similar Medications (Look-Alike Sound-Alike)	None
Clinical Use Evaluation	
Common Adverse Effects	Injection site reaction, headache, arthralgia, pyrexia, diarrhea, myalgia
Severe Adverse Effects	Cases of thrombotic microangiopathy (TMA) and thrombotic events were reported when, on average, a cumulative amount of >100 U/kg/24 hr of activated prothrombin complex concentrate (aPCC) was administered for ≥24 hr to patients receiving emicizumab-kxwh prophylaxis -Monitor the development of thrombotic microangiopathy and thrombotic events if aPCC is administered -Discontinue aPCC and suspend emicizumab-kxwh if symptoms occur
Severe Drug-Drug Interactions	Hypercoagulability with concomitant use of aPCC, rFVIIa, or FVIII
Severe Drug-Food Interactions	None
Important Labs Values to assess prior to order entry or at point of clinical follow up.	Can use Bethesda Essays (bovine chromogenic) for FVIII inhibitor titers. Thrombin time (TT) and prothrombin time (PT) if needed.
Used in Pediatric Areas	Safe and effective in pediatric population with same weight based dosing as adults (clinical studies included patients 1 month to 18 years old)
Renal or Hepatic Dosing	None
Critical Issues (i.e., contraindications, warnings, etc) that should be emphasized	Thrombotic microangiopathy and thrombotic events with aPCC coadministration
Special administration technique or considerations	Subcutaneous use only: Administer doses of up to 1 mL with a 1-mL syringe (graduation 0.01 mL), doses of >1 mL to ≤2 mL with a 2-mL or 3-mL syringe, etc. Administer each injection at a different anatomic location than the previous injection. Storage: in refrigerator at 2-8°C (36-46°F) in the original carton to protect from light; do not freeze; do not shake. Unopened vials may be stored at room temperature and then returned to refrigeration; temperature should not exceed 30°C (86°F) for up to 7 days.
Prepared by	Nichole P Alexander Pharm D candidate of 2019
Source	Hemlibra [Prescribing information]. South San Francisco, CA: Genentech, Inc; November 2017