College of Pharmacy and Pharmaceutical Sciences
WASHINGTON STATE UNIVERSITY

Drug Information Center

Highlights of FDA Activities – 05/01/19 – 05/31/19

Major Medication/Drug-Related Product Recalls Announced Through MedWatch:

Angiotensin II Receptor Blocker Recalls: Updated Information 5/2/19 & 5/21/19
The FDA continued to provide updates on the recalls of irbesartan, losartan, and valsartan due to the presence of impurities in the active pharmaceutical ingredient. New recalls were announced for Vivimed Life Sciences losartan potassium tablets (25 mg, 50 mg, and 100 mg) distributed by Heritage Pharmaceuticals. A searchable list of recalled products can be found on the FDA site. The FDA also published two new testing methods for detection of nitrosamine impurities in ARBs. Links to all FDA ARB updates can be found on this site.

Mycophenolate Mofetil for Injection, USP from Par Pharmaceutical, Inc.: Recall – Glass Fragment 5/3/19
Par Pharmaceutical, Inc., recalled one lot of Mycophenolate Mofetil for Injection, USP to the hospital and retail pharmacy level after one vial of product was found to contain a glass fragment after reconstitution. The recalled lot number AD812, expiry 09/2020, was distributed between 1/23/19 and 2/11/19.

Promacta 12.5 mg for Oral Suspension from Novartis: Recall - Potential Peanut Contamination 5/11/19
Novartis recalled three lots of Promacta (eltrombopag) 12.5 mg for oral suspension (lots 8H57901589, 9H57900189, 9H57900289) to the consumer level due to the risk of potential peanut flour contamination that occurred at a third-party contract manufacturing site.

Sterile Compounded Drugs from Pharm D Solutions, LLC: Recall - Potential Lack of Sterility Assurance 5/24/19
Pharm D Solutions, LLC recalled all sterile compounded drug products to the consumer level following a routine FDA inspection raised concerns about risk for product contamination.

Amikacin Sulfate Injection and Prochlorperazine Edisylate Injection, by Heritage Pharmaceuticals: Recall - Sterility Test Failure 5/28/19
Heritage Pharmaceuticals Inc. recalled to the consumer level one lot of Amikacin Sulfate Injection, USP, 1 g/4 mL (250 mg/mL), Lot: VEAC025, Expiry Date: October 2019 and one lot of Prochlorperazine Edisylate Injection, USP, 10 mg/2 mL (5 mg/mL), Lot: VPCA172, Expiry Date: April 2020 following detection of microbial growth in a test sample.

PECGEN DMX by NOVIS: Recall - Labeling Error 5/31/19
Novis PR LLC recalled 5 lots of PECGEN DMX, 16 oz, a liquid cough syrup to the consumer level. The product provided incorrect dosage information on its label due to a typographical error. The drug facts label incorrectly states a dose for children 6 to under 2 years of age. The label should state the dose is for children 6 to under 12. Additionally, the label does not advise consumers to consult a doctor for children under 2 years of age.

Dietary Supplement Recalls & Public Notifications

Notifications were issued regarding undeclared active ingredients or contaminants in the following products. Patients are advised not to purchase or use these products.

Product	*Promoted Use*	*Undeclared Ingredient(s) or Contaminants*
THE BEAST capsules / STIFF BOY LLC*	Sexual enhancement	Sildenafil[1]
HoliCare Metabolism Cleansing (MET-CLS) / Life Rising Corp*	Chinese herbal suppl.	Lead
Life Rising Holder-W Holder Warmer capsules / Life Rising Corp*	Chinese herbal suppl.	Lead
Life Rising NECK-ND Neck Clear capsules / Life Rising Corp*	Chinese herbal suppl.	Lead

***Product** (continued…)*	***Promoted Use***	***Undeclared Ingredient(s) or Contaminants***
Man Fuel Xtreme Edition / DNS Distribution	Sexual enhancement	Sildenafil, dithiodesmethyl, carbodenafil, desmethyl carbodenafil[1]
Man Fuel Male Enhancement Shooter (Tropical Fruit Flavor) / DNS Distribution	Sexual enhancement	Tadalafil and desmethyl carbodenafil[1]

*recalled

[1]Sildenafil, tadalafil, and PDE-5 inhibitor analogs may interact with nitrates to lower blood pressure to dangerous levels

New Product Shortages	***Date Initially Posted***
Tacrolimus oral capsules, USP	5/17/19
Sildenafil citrate (Revatio, Pfizer)	5/21/19

Product Discontinuations/Withdrawals	***Date Posted***
Naftifine HCl cream 1% and 2% cream (Mylan Pharmaceuticals Inc); remains available from other manufacturers.	5/15/19
Ethosuximide oral solution 250 mg/5 mL (Teva Pharmaceuticals); remains available from other manufacturers.	5/17/19
Dexmethylphenidate HCl tablets 2.5 mg, 5 mg, and 10 mg (Teva Pharmaceuticals); remains available from other manufacturers.	5/17/19
Glimepiride tablets 1 mg, 2 mg, 4 mg (Teva Pharmaceuticals); remains available from other manufactures.	5/17/19
Methylphenidate HCl ER tablets 36 mg and 54 mg (Teva Pharmaceuticals; remains available from other manufacturers.	5/17/19
Methylphenidate HCl tablets 5 mg, 10 mg, 20 mg (Teva Pharmaceuticals); remains available from other manufacturers.	5/17/19
Norethindrone acetate 0.02 mg, ethinyl estradiol 1 mg, ferrous fumarate 75 mg (Mylan); remains available from other manufacturers.	5/23/19

New Drug Approvals:	***Description (See Attached Drug Summaries)***	***Date Approved***
Dengue tetravalent vaccine, live / Dengvaxia / Sanofi Pasteur	For the prevention of dengue disease caused by all dengue virus serotypes (1, 2, 3 and 4) in people ages 9 through 16 who have laboratory-confirmed previous dengue infection and who live in endemic areas.	5/1/19
Tafamidis meglumine / Vyndaqel and Tafamidis / Vyndamax / FoldRx	For the treatment of cardiomyopathy caused by transthyretin mediated amyloidosis (ATTR-CM) in adults.	5/3/19
Amifampridine / Ruzurgi / Jacobus Pharmaceutical Company, Inc.	For the treatment of Lambert-Eaton myasthenic syndrome (LEMS) in patients 6 to less than 17 years of age.	5/6/19
Onasemnogene abeparvovec-xioi / Zolgensma / AveXis	Gene therapy approved to treat children less than two years of age with spinal muscular atrophy (SMA), the most severe form of SMA and a leading genetic cause of infant mortality.	5/24/19
Alpelisib / Piqray / Novartis Pharms Corp	For the treatment of postmenopausal women, and men, with hormone receptor (HR)- positive, human epidermal growth factor receptor 2 (HER2)-negative, PIK3CA-mutated, advanced or metastatic breast cancer as detected by an FDA-approved test following progression on or after an endocrine-based regimen.	5/24/19

New Indications:	***Description***	***Date Approved***
Ivosidenib / Tibsovo / Agios Pharms Inc.	Newly diagnosed acute myeloid leukemia with susceptible IDH1 mutation detected by an FDA-approved test, in patients who are at least 75 years old or have comorbidities that preclude use of intensive induction chemotherapy.	5/2/19
Dapagliflozin, saxagliptin / Qtern / AstraZeneca AB	Adjunct to diet and exercise to improve glycemic control in adults with type 2 diabetes mellitus not previously treated with dapagliflozin.	5/2/19
Ado-trastuzumab / Kadcyla / Genentech	Adjuvant treatment of patients with HER2-positive early breast cancer who have residual invasive disease after neoadjuvant taxane and trastuzumab-based treatment.	5/3/19
Calcipotriene foam / Sorilux / Mayne Pharma	Topical treatment of plaque psoriasis of the scalp and body in patients 12 years and older.	5/6/19
Ramucirumab / Cyramza / Eli Lilly and Co	Single agent for hepatocellular carcinoma in patients who have an alpha fetoprotein (AFP) of ≥ 400 ng/mL and have been previously treated with sorafenib.	5/10/19
IncobotulinumtoxinA / Xeomin / Merz Pharms	First-line treatment of blepharospasm in adult patients.	5/10/19
Aflibercept / Eylea / Regeneron Pharmaceuticals	To treat all stages of diabetic retinopathy	5/13/19
Avelumab / Bavencio / EMD Serono Inc	In combination with axitinib for first-line treatment of patients with advanced renal cell carcinoma	5/14/19
Venetoclax / Venclexta / Abbvie Inc	Adult patients with chronic lymphocytic leukemia or small lymphocytic lymphoma	5/15/19
Dalteparin Sodium / Fragmin / Pfizer Inc.	Treatment of symptomatic venous thromboembolism to reduce recurrence in patients 1 month of age and older.	5/16/19
Pitavastatin Calcium / Livalo / Kowa Co.	Heterozygous familial hypercholesterolemia to reduce elevated TC, LDL-C, and Apo B in patients 8 years and older.	5/16/19
Teduglutide Recombinant / Gattex Kit / NPS Pharms Inc	Pediatric patients 1 year of age and older with short bowel syndrome who are dependent on parenteral support.	5/16/19
Trastuzumab-pkrb / Herzuma / Celltrion Inc	Treatment of HER2-overexpressing metastatic gastric cancer or gastroesophageal junction adenocarcinoma.	5/16/19
Rituximab-Abbs / Truxima / Celltrion Inc	Treatment of adult patients with previously untreated diffuse Large B-cell, CD20-positive non-Hodgkin's lymphoma in combination with cyclophosphamide, doxorubicin, vincristine, and prednisone (CHOP) or other anthracycline-based chemotherapy regimens and previously untreated and previously treated CD20-positive chronic lymphocytic leukemia in combination with fludarabine and cyclophosphamide.	5/23/19
Pregabalin / Lyrica / Pf Prism Cv	Adjunctive therapy in the treatment of partial-onset seizures, to include pediatric patients 1 month of age and older.	5/23/19
Ruxolitinib phosphate / Jakafi / Incyte Corp	Treatment of acute graft versus host disease	5/24/19
Cariprazine Hydrochloride / Vraylar / Allergan Sales LLC	Treatment of depressive episodes associated with bipolar I disorder (bipolar depression) in adults.	5/24/19
Lenalidomide/Revlimid/ Celgene Corp	Use in combination with a rituximab product for previously treated follicular lymphoma and previously treated marginal zone lymphoma.	05/28/19

New Dosage Forms or Formulation:	***Description***	***Date Approved***
Dapagliflozin, Saxagliptin, Metformin HCl / Qternmet XR / AstraZeneca AB	Combination extended-release tablet to improve glycemic control in adults with type 2 diabetes mellitus who are currently taking metformin.	5/2/19
Midazolam nasal spray / Nayzilam / Proximagen LLC	Nasal spray for the acute treatment of intermittent, stereotypic episodes of frequent seizure activity (i.e., seizure clusters, acute repetitive seizures) that are distinct from a patient's usual seizure pattern in patients with epilepsy 12 years of age and older. *See attached drug summary.*	5/17/19
Drospirenone / Slynd / Exeltis	Progestin only tablets for use by females of reproductive potential to prevent pregnancy.	05/23/19

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Dengue tetravalent vaccine, live / Dengvaxia / Sanofi Pasteur	
Generic Name / Brand Name / Company	Dengue tetravalent vaccine, live / Dengvaxia / Sanofi Pasteur
Date of approval	5/1/19
Drug Class (Mechanism of Action if novel agent)	Dengue virus vaccine, Live
Indication	For the prevention of dengue disease caused by dengue virus serotypes 1, 2, 3 and 4 in individuals 9 through 16 years of age with laboratory-confirmed previous dengue infection and living in endemic areas (eg Puerto Rico)
Comparative agent – Therapeutic interchange?	None
Dosage forms/strengths. Common Dose/sig	Suspension for injection (0.5 mL) supplied as a lyophilized powder to be reconstituted with the supplied diluent. Administered subcutaneously as three doses (0.5 mL each) 6 months apart (at month 0, 6, and 12)
DEA Schedule	None
Date of market availability	Unknown
Similar Medication Names	None identified
Clinical Use Evaluation	
Common Adverse Effects	Headache (40%), injection site pain (32%), malaise (25%), asthenia (25%), and myalgia (29%)
Severe Adverse Effects	Severe dengue in patients not previously infected by dengue virus
Severe Drug-Drug Interactions	Unknown safety and efficacy with concomitant administration with other vaccines. Immunosuppressive treatments may reduce immune response. Vaccine may cause temporary depression of tuberculin purified protein derivative (PPD) test sensitivity, leading to false negative results. Tuberculin testing should be performed before vaccine is administered or at least 1 month following vaccination.
Severe Drug-Food Interactions	None
Important Labs Values to assess prior to order entry or at point of clinical follow up.	Previous laboratory-confirmed dengue infection or serologic testing; point of care test in development but not yet approved.
Used in Pediatric Areas	Indicated for use in children 9 to 16 years of age; safety and efficacy not established in children younger than 9 years of age.
Renal or Hepatic Dosing	No adjustments required
Critical Issues (i.e., contraindications, warnings, etc) that should be emphasized	Contraindicated in patients with a history of severe allergic reaction to a previous dose of the vaccine or any vaccine components and in immunocompromised individuals. In persons not previously infected by dengue virus, an increased risk of severe dengue disease can occur following vaccination with the dengue vaccine and subsequent infection with any dengue virus serotype.
Special administration technique or considerations	Reconstitute with the supplied diluent. Discard reconstituted vaccine if not used within 30 minutes. Administer subcutaneously. Do not administer by intramuscular injection.
Prepared by	Sally Hughes
Source	Dengvaxia [prescribing information]. Swiftwater, PA: Sanofi Pasteur Inc. May 2019.

Tafamidis meglumine / Vyndaqel and Tafamidis / Vyndamax / FoldRx	
Generic Name / Brand Name / Company	Tafamidis meglumine / Vyndaqel and Tafamidis / Vyndamax / FoldRx
Date of approval	5/3/19
Drug Class (Mechanism of Action if novel agent)	Selective stabilizer of transthyretin (TTR)
Indication	The treatment of the cardiomyopathy of wild type or hereditary transthyretin-mediated amyloidosis in adults to reduce cardiovascular mortality and cardiovascular-related hospitalization.
Comparative agent – Therapeutic interchange?	Tafamidis meglumine and tafamidis are not substitutable on a per mg basis
Dosage forms/strengths. Common Dose/sig	Capsules: Tafamidis meglumine 20 mg; tafamidis 61 mg Tafamidis meglumine 80 mg (4 capsules) once daily or tafamidis 61 mg (1 capsule) once daily.
DEA Schedule	None
Date of market availability	Tafamidis is available; tafamidis meglumine will be available in late 2019
Similar Medication Names	None identified
Clinical Use Evaluation	
Common Adverse Effects	No known adverse effects
Severe Adverse Effects	No known adverse effects
Severe Drug-Drug Interactions	BCRP substrates: tafamidis inhibits breast cancer resistant protein (BCRP) in vitro and may increase exposure of substrates of this transporter (eg, methotrexate, rosuvastatin, imatinib). Dose adjustments may be needed for BCRP substrates.
Severe Drug-Food Interactions	None known
Important Labs Values to assess prior to order entry or at point of clinical follow up.	None
Used in Pediatric Areas	Safety and efficacy have not been established in pediatric patients
Renal or Hepatic Dosing	No dosing adjustments recommended. Tafamidis exposure was reduced in patients with moderate hepatic impairment, however TTR tetramer stabilization was maintained; the effect of severe hepatic impairment is unknown.
Critical Issues (i.e., contraindications, warnings, etc) that should be emphasized	No contraindications or warning listed in prescribing information. Tafamidis may cause fetal harm if administered to a pregnant woman; pregnancy prevention is advised for females of reproductive potential.
Special administration technique or considerations	The capsules should be swallowed whole and not cut or crushed.
Prepared by	Vanessa Gutierrez
Source	Vyndaqel (tafamidis meglumine) capsules and Vyndamax (tafamidis) capsules [prescribing information]. New York, NY: Pfizer Inc.; May 2019.

Amifampridine / Ruzurgi / Jacobus Pharmaceutical Company, Inc.	
Generic Name / Brand Name / Company	Amifampridine / Ruzurgi / Jacobus Pharmaceutical Company, Inc.
Date of approval	5/6/19
Drug Class (Mechanism of Action if novel agent)	Broad spectrum potassium channel blocker
Indication	Treatment of Lambert-Eaton myasthenic syndrome (LEMS) in patients 6 to 17 years old
Comparative agent – Therapeutic interchange?	Amifampridine phosphate (Firdapse, Catalyst Pharmaceuticals) is indicated for the treatment of Lambert-Eaton myasthenic syndrome in adults.
Dosage forms/strengths. Common Dose/sig	Tablets: 10 mg scored Weighing 45 kg or more: 15-30 mg orally daily in 2-3 divided daily doses, increase daily in 5-10 mg increments to up to 5 doses per day (max single dose: 30 mg, max total daily maintenance dose: 100 mg) Weighing less than 45 kg: 7.5-15 mg PO daily in 2-3 divided daily doses, increase daily in 2.5-5 mg increments up to 5 doses per day (max single dose: 15 mg, max total daily maintenance dose: 50 mg)
DEA Schedule	None
Date of market availability	Available
Similar Medication Names	Amifampridine phosphate, amifostine, dalfampridine, fampridine
Clinical Use Evaluation	
Common Adverse Effects	>10%: paresthesia/dysesthesia, abdominal pain, dyspepsia, dizziness, nausea
Severe Adverse Effects	Seizures, hypersensitivity
Severe Drug-Drug Interactions	Concomitant administration with drugs lowering seizure threshold Concomitant administration with drugs with cholinergic effects
Severe Drug-Food Interactions	None known
Important Labs Values to assess prior to order entry or at point of clinical follow up.	Renal and hepatic function, ECG
Used in Pediatric Areas	Safety and efficacy established in patients 6 to 17 years of age. Safety and efficacy in patients younger than 6 years of age have not been established.
Renal or Hepatic Dosing	Recommended starting dose for patients with renal impairment (eGFR 15-90 mL/min) or any degree of hepatic impairment: 15 mg daily in divided doses (patient weight 45 kg or greater) or 7.5 mg daily in divided doses (patient weight less than 45 kg)
Critical Issues (i.e., contraindications, warnings, etc) that should be emphasized	Contraindicated in patients with history of seizures or hypersensitivity to amifampridine or another aminopyridine. Reduced starting dose in patients who are known N-acetyltransferase 2 (NAT2) poor metabolizers.
Special administration technique or considerations	Package insert has instructions for preparing a suspension using the tablets and sterile water for patients who have difficulty swallowing tablets; suspension can be stored under refrigeration up to 24 hours. Store in original container with desiccant in refrigerator prior to dispensing; patients should be instructed to store tablets in the pharmacy dispensed container.
Prepared by	Jordan Erickson
Source	Ruzurgi (amifampridine) [package insert]. Princeton, NJ: Jacobus Pharmaceutical Company; May 2019.

Onasemnogene abeparvovec-xioi / Zolgensma / AveXis Inc	
Generic Name / Brand Name / Company	Onasemnogene abeparvovec-xioi / Zolgensma / AveXis Inc
Date of approval	5/24/19
Drug Class (Mechanism of Action if novel agent)	Gene therapy; provides a functional copy of the human survival motor neuron 1 (SMN1)
Indication	Treatment of pediatric patients less than 2 years of age with spinal muscular atrophy (SMA) with bi-allelic mutations in the SMN1 gene.
Comparative agent – Therapeutic interchange?	Nusinersen (Spinraza) injection solution
Dosage forms/strengths. Common Dose/sig	Suspension for intravenous injection: 5.5 mL or 8.3 mL vials at a concentration of 2.0×10^{13} vector genomes/mL Dose: 1.1×10^{14} vector genomes per kg of body weight, administered over 60 minutes.
DEA Schedule	None
Date of market availability	Unknown
Similar Medication Names	Zolgen (non-USA name)
Clinical Use Evaluation	
Common Adverse Effects	>5%: elevated aminotransferases and vomiting.
Severe Adverse Effects	Acute serious hepatic injury may occur.
Severe Drug-Drug Interactions	Administration requires administration of corticosteroids, certain vaccines are contraindicated in patients experiencing substantial immunosuppression. Seasonal RSV prophylaxis is not precluded.
Severe Drug-Food Interactions	None
Important Labs Values to assess prior to order entry or at point of clinical follow up.	Anti-AAV9 antibody testing should be performed prior to treatment. The following tests should be conducted at baseline: Liver function (clinical exam, AST, ALT, total bilirubin, prothrombin time) weekly for the first month; every other week for the second and third months, until results are unremarkable (below 2 x upper limit of normal). Platelet counts weekly for the first month, and then every other week for the second and third months, until platelet counts return to baseline. Troponin-I weekly for the first month, and then monthly for the second and third months, until troponin-I level returns to baseline.
Used in Pediatric Areas	Approved to treat children less than 2 years of age with SMA. Administration to premature neonates before reaching full-term gestational age is not recommended because concomitant treatment with corticosteroids may adversely affect neurological development. Delay treatment with the gene therapy until corresponding full term gestational age is reached.
Renal or Hepatic Dosing	No adjustments recommended.
Critical Issues (i.e., contraindications, warnings, etc) that should be emphasized	No labeled contraindications. Warnings: Boxed warning – acute serious liver injury Thrombocytopenia, requires platelet monitoring Monitor troponin-I
Special administration technique or considerations	Starting one day prior to treatment, administer corticosteroids equivalent to oral 1 mg/kg prednisolone per day for 30 days. If unremarkable findings on hepatic monitoring, taper the corticosteroid dose over the next 28 days. Otherwise continue corticosteroids until findings become unremarkable, then taper dose over next 28 days.
Prepared by	Li Wei Chen
Source	Zolgensma (onasemnogene abeparvovec-xioi) [prescribing information] Bannockburn, IL: AveXis, Inc. May 2019.

Alpelisib / Piqray / Novartis	
Generic Name / Brand Name / Company	Alpelisib / Piqray / Novartis
Date of approval	5/24/19
Drug Class (Mechanism of Action if novel agent)	Phosphatidylinositol-3-kinase (PI3K) inhibitor
Indication	Treatment in combination with fulvestrant of HR positive, HER2 negative, PIK3CA-mutated, advanced or metastatic breast cancer in postmenopausal women and men following an endocrine-based regimen.
Comparative agent – Therapeutic interchange?	None
Dosage forms/strengths. Common Dose/sig	Tablet: 150 mg Dose: 300 mg orally once daily with food
DEA Schedule	None
Date of market availability	Available
Similar Medication Names	None identified
Clinical Use Evaluation	
Common Adverse Effects	>20%: blood glucose increased, creatinine increased, diarrhea, rash, lymphocyte count decreased, GGT increased, nausea, ALT increased, fatigue, hemoglobin decreased, lipase increased, decreased appetite, stomatitis, vomiting, weight decreased, calcium decreased, glucose decreased, aPTT prolonged, and alopecia.
Severe Adverse Effects	Severe hypersensitivity reactions, severe cutaneous reactions, severe hyperglycemia, pneumonitis, diarrhea, acute kidney injury
Severe Drug-Drug Interactions	CYP3A4 inducers (decrease alpelisib concentration) - avoid BCRP inhibitors (increase alpelisib concentration) – avoid or closely monitor. CYP2C9 substrates (decreased concentrations) - monitor
Severe Drug-Food Interactions	Food increases absorption; take with food.
Important Labs Values to assess prior to order entry or at point of clinical follow up.	Test fasting plasma glucose, HbA1c prior to initiation; after initiation monitor blood glucose or fasting plasma glucose once every week for 2 weeks then every 4 weeks. Monitor HbA1c every 3 months.
Used in Pediatric Areas	Safety and efficacy not established
Renal or Hepatic Dosing	Effect of severe renal impairment (CrCl < 30 mL/min) unknown; normal dosing for other types of renal or hepatic impairment
Critical Issues (i.e., contraindications, warnings, etc) that should be emphasized	Contraindicated in patients with severe hypersensitivity to alpelisib or to any of its components. Cautions: Severe hypersensitivity, including anaphylaxis. Severe cutaneous reactions, including Stevens-Johnson Syndrome or Erythema Multiforme. Severe hyperglycemia, including ketoacidosis; requires monitoring. Severe pneumonitis Severe diarrhea, including dehydration and acute kidney injury.
Special administration technique or considerations	Administer with food.
Prepared by	Jordan Erickson
Source	Piqray (alpelisib) [prescribing information]. East Hanover, NJ: Novartis; May 2019.

Midazolam Nasal Spray / Nayzilam / Proximagen LLC	
Generic Name / Brand Name / Company	Midazolam nasal spray / Nayzilam / Proximagen LLC
Date of approval	5/17/19
Drug Class (Mechanism of Action if novel agent)	Benzodiazepine
Indication	Acute treatment of intermittent, stereotypic episodes of frequent seizure activity (i.e. seizure clusters, acute repetitive seizures) distinct from a patient's usual seizure pattern
Comparative agent – Therapeutic interchange?	Rectal diazepam
Dosage forms/strengths. Common Dose/sig	Nasal spray: 5 mg/0.1 mL single-dose unit Initial dose: one spray (5 mg) in one nostril Second dose (if needed): one additional spray (5 mg) in the opposite nostril after 10 minutes if the patient has not responded to the initial dose
DEA Schedule	Schedule IV
Date of market availability	Late 2019
Similar Medication Names	Midazolam syrup
Clinical Use Evaluation	
Common Adverse Effects	>5%: somnolence, headache, nasal discomfort, throat irritation, rhinorrhea
Severe Adverse Effects	
Severe Drug-Drug Interactions	Concomitant use with opioids: increased risk of sedation, respiratory depression, coma, and death Moderate or strong CYP3A4 inhibitors: potential for prolonged sedation
Severe Drug-Food Interactions	None known.
Important Labs Values to assess prior to order entry or at point of clinical follow up.	None required.
Used in Pediatric Areas	Indicated for use in patients 12 to 17 years of age and adults. Safety and efficacy have not been established in patients younger than 12 years.
Renal or Hepatic Dosing	Exposure may be prolonged in patients with moderate or severe renal impairment. No dosage adjustments are routinely advised in patients with renal or hepatic impairment.
Critical Issues (i.e., contraindications, warnings, etc) that should be emphasized	Contraindicated in patients with known hypersensitivity to midazolam and patients with acute narrow-angle glaucoma. Cautions: Recommended avoid concomitant use with opioid. Risk of respiratory depression and serious cardiorespiratory adverse effects. Increased risk of central nervous system depression with concomitant use of other CNS depressants, moderate or strong CYP3A4 inhibitors. Increased risk of suicidal behavior and ideation. Impaired cognitive function for several hours after administration. Increased intraocular pressure; only administer to patients with open-angle glaucoma if they are receiving appropriate therapy.
Special administration technique or considerations	Do not open package until ready to use. Do not prime before use. Second dose should not be administered if the patient has trouble breathing or there is excessive sedation. Do not administer more than 2 doses to treat a single episode. Do not use to treat more than one episode every 3 days and no more than 5 episodes per month.
Prepared by	Terri Levien
Source	Midazolam (Nayzilam) [prescribing information]. Plymouth, MN: Proximagen, LLC; May 2019.