College of Pharmacy and Pharmaceutical Sciences
WASHINGTON STATE UNIVERSITY

Drug Information Center

Highlights of FDA Activities – 4/1/2020 – 4/30/2020

FDA Drug Safety Communications & Drug Information Updates:

Ranitidine – Removal from Market – MedWatch Safety Alert 4/1/20

The FDA requested removal of all over-the-counter and prescription ranitidine products from the market immediately, advised consumers to discontinue use of an OTC ranitidine products in their possession and to properly dispose of those products, and advised patients taking prescription ranitidine to speak with a health care professional about other treatment options. The FDA has found levels of the contaminant N-nitrosodimethylamine (NDMA) in ranitidine increases over time and when stored a higher than room temperatures may result in exposure to unacceptable levels of this probable carcinogen.

Chlorine Dioxide, "Miracle Mineral Solution" – Warning – Risk of Serious Adverse Events 4/8/20

The FDA issued a warning letter to the Genesis II Church of Health and Healing for marketing chlorine dioxide products as "Miracle Mineral Solution" for the prevention and treatment of COVID-19 in adults and children. The FDA has previously warned consumers not to purchase or drink chloride dioxide products sold as medical treatments as there is not any scientific evidence supporting their safety or efficacy. Chlorine dioxide is a bleaching agent. The FDA has received reports of serious adverse events experienced in patients drinking chlorine dioxide products including respiratory failure, QT prolongation, dehydration resulting in hypotension, acute liver failure, hemolytic anemia, and severe vomiting and diarrhea

Ivermectin Products Intended for Animal Use – Do NOT Use in Humans 4/10/20

Following reports of consumers self-medicating for COVID-19 using ivermectin products intended for animals, the FDA issued a MedWatch alert. In vitro data has been reported suggesting some possible activity against SARS-CoV-2 with ivermectin; however, clinical trials have not been conducted for this indication. The FDA issued the reminder that people should never take animal drugs, which have only been evaluated for safety and efficacy in the particular animal species for which they are labeled, that people should only take ivermectin prescribed by a licensed health care provider and obtained through a legitimate source, and that ivermectin for animal use should only be given to animals as prescribed by a veterinarian.

Temporary Compounding Policy for Outsourcing Facilities – COVID-19 4/16/20

The FDA issued a guidance establishing a temporary policy for outsourcing facilities, including state-licensed pharmacies and federal facilities, to compound certain human drugs for hospitalized patients during the COVID-19 public health emergency. To meet demand for these drugs experiencing shortages during the emergency the FDA does not plan to take action against outsourcing facilities compounding a drug that is essentially a copy of an approved drug using bulk substances or providing a drug to a hospital without first obtaining a patient-specific prescription. The following drugs are included in the guidance: cisatracurium besylate, dexmedetomidine HCl, etomidate, fentanyl citrate, furosemide, hydromorphone HCl, ketamine HCl, lorazepam, midazolam HCl, norepinephrine bitartrate, rocuronium bromide, vancomycin HCl, and vecuronium bromide. The list will be updated as needed. Hospitals that cannot obtain FDA-approved drugs and seek to use compounded drugs are encouraged to first contact outsourcing facilities that produce compounded drugs under more robust quality standards than those made by state-licensed pharmacies or federal facilities.

Ambrisentan REMS Merged – Drug Information Update 4/20/20

The FDA approved the merger of two separate ambrisentan Risk Evaluation and Mitigation Strategy (REMS) programs into a single shared system for all ambrisentan products. The PS-Ambrisentan SS REMS was merged with the Ambrisentan SS REMS. Patients and prescribers currently enrolled in the PS-Ambrisentan SS REMS will be automatically enrolled in the Ambrisentan SS REMS and will be contacted when their enrollment is complete. Inpatient pharmacies currently in the PS-Ambrisentan REMS but not in the Ambrisentan SS REMS will be automatically certified and receive email notification. Outpatient pharmacies certified in the PS-Ambrisentan REMS

but not in the Ambrisentan SS REMS will need to enroll to become certified; the coordinating center will coordinate with these pharmacies to ensure enrollment/certification and registration is completed. Wholesalers-distributers not currently in the Ambrisentan SS REMS will need to register in order to be able to ship to certified pharmacies.

Repackaging or Combining Propofol During COVID-19 Public Health Emergency 4/22/20

The FDA announced it will not take action against a state-licensed pharmacy, Federal facility, or outsourcing facility that repackages an FDA-approved propofol injectable emulsion, 10 mg/mL product, or combines different FDA-approved propofol injectable emulsion, 10 mg/mL products in the same container as long as the following conditions outlined in the guidance are met:

1) The repackaged or combined product is provided directly to a hospital that is treating patients with COVID-19 and that has made reasonable attempts to obtain adequate supplies of clinically appropriate FDA-approved drug product and been unable to do so.
2) The repackaged or combined product is discarded if there is any change in appearance (e.g., color, visible separation, particulate matter).
3) The product is repackaged or combined following practices described in the Repackaging Guidance with the following exceptions permitted:
   a) Propofol may be repackaged or combined without doing so under nitrogen
   b) When a product is prepared by placing products into a new container and the preservatives and antioxidants listed in the products' labeling match, a beyond use date (BUD) of no more than 12 hours is used and the product is not frozen.
   c) If there is a difference in the preservative or antioxidant components listed in the propofol labeling the products are not combined unless the combined products are approved under ANDAs 077908, 205067, and 205307, and the assigned BUD is not more than 4 hours. Products approved under NDA 019627 and ANDA 075102 should not be combined with any other propofol product. (see Appendix A in guidance for specific products that may be combined.)
   d) The container in which the propofol product is repackaged or combined is appropriate for storage of propofol products and its potential adsorption issues.
   e) The labeling specifies: "Store between 4 to 25C (40 to 77F). Do not freeze. The tubing and any unused portions of the propofol injectable emulsion should be discarded after [insert time and date that corresponds to the BUD]."
4) The product is repackaged or combined under the following conditions:
   a) Prepared by or under the direct supervision of a licensed pharmacist.
   b) In a state-licensed pharmacy or Federal facility, it is distributed only after the receipt of a valid prescription for an individual patient.
   c) It is produced in accordance with USP Chapter 797 in a state-licensed pharmacy or Federal facility, or in accordance with CGMP requirements except as described above if prepared in an outsourcing facility.

Hydroxychloroquine or Chloroquine in COVID-19 and Heart Rhythm Abnormalities 4/24/20

The FDA reminded prescribers and patients that the Emergency Use Authorization (EUA) for hydroxychloroquine and chloroquine only authorized the use of these agents in hospitalized patients when clinical trials are not available, or participation is not feasible. Case reports of heart rhythm disturbances and death in patients with COVID-19 receiving hydroxychloroquine or chloroquine, either alone or in combination with azithromycin or other QT prolonging medicines, have been reported in the FDA Adverse Event Reporting System database, published medical literature and the American Association of Poison Control Centers National Poison Data System. For healthcare professionals, the FDA recommends initial evaluation and monitoring when using hydroxychloroquine or chloroquine under the EUA or in clinical trials; monitoring may include baseline ECG, electrolytes, renal function, and hepatic tests. The FDA also reminded healthcare professionals that hydroxychloroquine or chloroquine can cause QT prolongation, increase the risk of QT prolongation in patients with renal insufficiency or failure, increase insulin levels and insulin action increasing the risk of severe hypoglycemia, cause hemolysis in patients with glucose-6-phosphate dehydrogenase (G6PD) deficiency, and interact with other medications that cause QT prolongation even after discontinuation due to their long 30-60 day half-lives.

Alcohol-Based Hand Sanitizer: COVID-19 Update 4/27/20
The FDA updated information regarding hand sanitizer availability during COVID-19. As a result of the increased flexibility permitted during the pandemic the FDA reports more than 1,500 additional manufacturers have registered with the FDA to produce hand sanitizer. The FDA reminds that hand sanitizer must be manufactured in a way to make them unpalatable to people, particularly young children. Adding denaturants to the alcohol makes them more bitter and less appealing to ingest. In addition, products must include a Drug Facts Label with a warning to keep the product out of reach of children, information to get medical help or call a poison control center if swallowed, and to supervise use in children under 6 years of age. The FDA also reminded manufacturers than marketing of hand sanitizer with unproven claims is in violation of federal law.

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

Tetracycline HCl Capsules, Avet Pharmaceuticals/Heritage Pharmaceuticals: Recall – Low Dissolution 4/16/20
Avet Pharmaceuticals Inc. recalled 8 lots of tetracycline HCl 250 mg and 500 mg capsules following failure to reach required dissolution specifications which would result in reduced tetracycline availability. The affected lots were distributed nationally from August 2019 through March 2020 under the Heritage Pharmaceuticals Inc. label in 100-count bottles.

Nizatidine Oral Solution, Amneal: Recall – NDMA Impurity Detected 4/17/20
Amneal recalled three lots of nizatidine oral solution 15 mg/mL packaged in 480 mL bottles (NDC 60846-301-15) to the consumer level due to potential NDMA amounts exceeding levels established by the FDA. The products were distributed by Gemini Laboratories, LLC. Recalled lots were 06598004A, 06599001A, and 06599002A.

Ketorolac Tromethamine Injection, Fresenius Kabi: Recall – Particulate Matter in Vials 4/20/20
Fresenius Kabi recalled 13 lots of ketorolac tromethamine injection 30 mg and 60 mg vials (NDC 63323-162-01 and 63323-162-02) to the user level due to the presence of particulate matter composed of carbon, silicon, oxygen, and polyamides found in reserve sample vials. The full list of recalled lots can be found in the FDA alert.

Ceftazidime Injection, B. Braun: Recall – Out of Specification High Molecular Weight Polymers 4/21/20
B. Braun recalled one lot (H8J812) of ceftazidime for injection USP 2 g and dextrose injection USP 50 mL in Duplex container (NDC 0264-3145-11) due to the presence of high molecular weight polymers exceeding specification limits.

True Matrix Air Blood Glucose Meter, Trividia Health: Recall – Incorrect Unit of Measure 4/21/20
Trividia recalled a single True Matrix Air blood glucose meter packaged in a True Matrix Blood Glucose Meter Kit that incorrectly displays glucose in mmol/L rather than mg/dL. The affected meter, with serial number TA1548753 was packaged in a kit with the serial number TA1548753 and lot number KW0135.

Compounded R.E.C.K., QuVa Pharma 4/28/20
The ketorolac recall by Fresenius Kabi on April 20, 2020 resulted in the recall of all lots of compounded R.E.C.K. (ropivacaine, epinephrine, clonidine, ketorolac) 50 mL in sodium chloride 60 mL BD syringes by QuVa Pharma. QuVa has reached out to all hospital pharmacy customers who purchased the product.

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*
Benefiber Healthy Shape Prebiotic Fiber Supplement, 500 g (Lot MP8B)*	Digestive health	Plastic pieces or shavings
Benefiber Prebiotic Fiber Supplement 500 g (Lot YT2Y) and 760 g (Lot UV5C)*	Digestive health	Plastic pieces or shavings from bottle cap
Black Mamba Premium 18000	Sexual enhancement	Tadalafil
Herbal Doctor Remedies*	Various	Manufactured in insanitary conditions and in violation of current good manufacturing practices (CGMP)

*recalled

New Product Shortages	*Date Initially Posted*
Azithromycin tablets	4/14/20
Cisatracurium besylate injection	4/8/20
Continuous Renal Replacement Therapy (CRRT) solutions	4/22/20
Dexmedetomidine injection	4/10/20
Etomidate injection	4/10/20
Furosemide injection, USP	4/7/20
Hydrocortisone tablets, USP	4/2/20
Midazolam injection, USP	4/2/20
Propofol injectable emulsion	4/10/20
Sulfasalazine tablets	4/24/20

Product Discontinuations/Withdrawals (sole source/branded product withdrawals)	*Date Posted*
Acetaminophen/tramadol HCl tablets (Ultracet, Janssen Pharmaceuticals); generics remain available	4/1/20
Fentanyl extended-release film 12, 25, 37, 50, 75, 100 mcg/hr (Duragesic, Janssen Pharmaceuticals); generics remain available	4/1/20
Ocriplasmin injection (Jetrea, ThromboGenics); no therapeutic equivalent is available	4/24/20
Sumatriptan injection 6 mg vial (Imitrex, GlaxoSmithKline); remains available as generic and in Statdose formulation	4/3/20
Tramadol HCl tablets (Ultram, Janssen Pharmaceuticals); generics remain available	4/1/20

New Drug Approvals:	*Description (See Attached Drug Summaries)*	*Date Approved*
Selumetinib / Koselugo / AstraZeneca	Kinase inhibitor for the treatment of pediatric patients 2 years and older with neurofibromatosis type 1 who have symptomatic, inoperable plexiform neurofibromas	4/10/20
Pemigatinib / Pemazyre / Incyte	Kinase inhibitor for the treatment of adults with previously treated, unresectable locally advanced or metastatic cholangiocarcinoma with a fibroblast growth factor receptor 2 (FGFR2) fusion.	4/17/20
Tucatinib / Tukysa / Seattle Genetics	Kinase inhibitor for use in combination with trastuzumab and capecitabine for the treatment of adults with unresectable or metastatic HER2-positive breast cancer who have received one or more prior anti-HER2-based regimens	4/17/20

New Drug Approvals (continued…):	***Description (See Attached Drug Summaries)***	***Date Approved***
Sacituzumab govitecan-hziy / Trodelvy / Immunomedics	Antibody drug conjugate for the treatment of metastatic triple-negative breast cancer in patients in patients who have received at least two prior therapies for metastatic disease	4/22/20
Opicapone / Ongentys / Neurocrine	Catechol-O-methyltransferase (COMT) inhibitor for adjunctive treatment in patients with Parkinson's disease experiencing "off" episodes	4/24/20

New Indications:	***Description***	***Date Approved***
Luspatercept / Reblozyl / Celgene Corporation	Treatment of anemia failing an erythropoiesis stimulating agent (ESA) and requiring 2 or more red blood cell (RBC) units over 8 weeks in adult patients with very low- to intermediate-risk myelodysplastic syndromes with ring sideroblasts (MDS-RS) or with myelodysplastic/ myeloproliferative neoplasm with ring sideroblasts and thrombocytosis (MDS/MPN-RS-T)	4/3/20
Encorafenib / Braftovi / Array Biopharma Inc	Use in combination with cetuximab for the treatment of metastatic colorectal cancer with BRAFV600E mutation following prior therapy	4/8/20
Apremilast / Otezla / Amgen	Indication expanded to include use in moderate to severe plaque psoriasis of the scalp	4/10/20
Duloxetine / Cymbalta / Lilly	Indication expanded to include use in fibromyalgia in patients 13 years and older	4/20/20
Ibrutinib / Imbruvica / Pharmacyclics LLC & Janssen Biotech Inc.	In combination with rituximab for the initial treatment of adult patients with chronic lymphocytic leukemia or small lymphocytic lymphoma	4/21/20
Efinaconazole topical solution 10% / Jublia / Bausch Health	Indication expanded to include use in pediatric patients 12 years and older with onychomycosis of the toenails	4/26/20
Niraparib tosylate / Zejula / GlaxoSmithKline	Indication expanded to include maintenance treatment in patients with advanced ovarian cancer who are in complete or partial response to first-line platinum-based chemotherapy	4/29/20

New Dosage Forms or Formulation:	***Description***	***Date Approved***
Coagulation factor VIIa (recombinant)-jncw / Sevenfact /	Coagulation factor for the treatment and control of bleeding episodes in adults and adolescents with hemophilia A or B with inhibitors. First hemophilia treatment containing an active ingredient obtained from rabbits genetically engineered to produce the protein for coagulation.	4/1/20
Mitomycin for pyelocalyceal solution / Jelmyto / UroGen Pharma, Inc.	Mitomycin for pyelocalyceal solution is prepared in a multistep process requiring use of a chilling block (see Instructions for Pharmacy in the Jelmyto prescribing information); instilled via ureteral catheter or nephrostomy tube in the treatment of low-grade upper tract urothelial cancer	4/15/20
Meningococcal (Groups A, C, Y, W) conjugate vaccine / MedQuadfi / Sanofi Pasteur	Quadrivalent meningococcal vaccine conjugated to tetanus toxoid protein for prevention of invasive meningococcal disease caused by Neisseria meningitidis serogroups A, C, W, and Y in patients 2 years of age and older	4/27/20

New Dosage Forms or Formulation (continued…):

Progesterone vaginal ring / Milprosa / Ferring Pharmaceuticals	Vaginal ring 1.78 g, releases average of 11 mg/day over 7-days. Indicated to support embryo implantation and early pregnancy as part of an assisted reproductive technology treatment program for infertile women	4/29/20

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Selumetinib / Koselugo / AstraZeneca Pharmaceuticals LP	
Generic Name / Brand Name / Company	Selumetinib / Koselugo / AstraZeneca Pharmaceuticals LP
Date of approval	4/10/20
Drug Class (Mechanism of Action if novel agent)	Small molecule inhibitor of mitogen-activated protein kinases (MEK) 1 and 2
Indication	Indicated for the treatment of pediatric patients 2 years of age and older with neurofibromatosis type 1 (NF1) who have symptomatic, inoperable plexiform neurofibromas
Comparative agent – Therapeutic interchange?	No other agents available for indication
Dosage forms/strengths	Capsules: 10 mg, 15 mg
Common Dose/sig	The recommended dose is 25 mg/m^2 orally twice daily until disease progression or unacceptable toxicity. Dose modifications are recommended for adverse reactions.
DEA Schedule	None
Date of market availability	Available
Similar Medication Names	Selfemra, selenium, selegiline
Clinical Use Evaluation	
Common Adverse Effects	≥40%: vomiting, rash (all), abdominal pain, diarrhea, nausea, dry skin, fatigue, musculoskeletal pain, pyrexia, acneiform rash, stomatitis, headache, paronychia, pruritus
Severe Adverse Effects	Clinically significant adverse reactions include cardiomyopathy (23%), ocular toxicity (15%), diarrhea (77%), rash (91%), and increased creatinine phosphokinase (76%)
Severe Drug-Drug Interactions	Strong or Moderate CYP3A Inhibitors or Fluconazole: Avoid coadministration of selumetinib with strong and moderate CYP3A inhibitors or fluconazole. If coadministration cannot be avoided, reduce the dose of selumetinib. Strong or Moderate CYP3A Inducers: Avoid concomitant use of strong or moderate CYP3A inducers with selumetinib. Vitamin E: Selumetinib contains vitamin E; daily vitamin E intake that exceeds the recommended dosage may increase the risk of bleeding. An increased risk of bleeding may occur in patients taking a vitamin K antagonist or an anti-platelet medication; monitor for bleeding in this patient population.
Severe Drug-Food Interactions	None known

Selumetinib (continued…)	
Important Labs Values to assess prior to order entry or at point of clinical follow up.	Obtain serum creatinine phosphokinase levels prior to initiation and monitor levels periodically during treatment
Used in Pediatric Areas	Safety and efficacy have not been established in patients younger than 2 years of age.
Renal or Hepatic Dosing	Renal Impairment: No dose adjustment is recommended for patients with renal impairment or those with End Stage Renal Disease. Hepatic Impairment: Reduce the dose of selumetinib in patients with moderate hepatic impairment (Child-Pugh B). A recommended dosage of selumetinib in patients with severe hepatic impairment (Child-Pugh C) has not been established.
Critical Issues (i.e., contraindications, warnings, etc) that should be emphasized	Contraindications: none Warnings and Precautions: • Cardiomyopathy: Ejection fraction must be assessed by echocardiogram prior to initiating treatment with selumetinib, every 3 months during the first year of treatment, every 6 months thereafter, and as clinically indicated. Reduce dose, temporarily withhold, or permanently discontinue selumetinib depending on severity of adverse reaction. • Ocular toxicity: Comprehensive ophthalmic assessments must be conducted prior to initiation of selumetinib, at regular intervals during treatment, and at any sign of new or worsening visual changes. Permanently discontinue selumetinib in patients with retinal vein occlusion; withhold selumetinib in patients with retinal pigment epithelial detachment and follow up with optical coherence tomography assessments every 3 weeks until the condition is resolved, then resume the medication at a reduced dose. • Gastrointestinal toxicity: Patients are to be advised to initiate an anti-diarrheal agent immediately after the first episode of unformed, loose stool and to increase fluid intake during episodes of diarrhea. Withhold, reduce dose, or permanently discontinue selumetinib based on diarrhea severity. • Skin toxicity: Monitor patients for severe skin rashes. Withhold, reduce dose, or permanently discontinue selumetinib based on rash severity. • Increased creatinine phosphokinase (CPK): Serum CPK is to be obtained prior to initiation of selumetinib, periodically during treatment, and as clinically indicated. Evaluate patients for rhabdomyolysis if increased CPK occurs. Withhold, reduce dose, or permanently discontinue selumetinib based on severity. • Increased levels of vitamin E and risk of bleeding: Monitor for bleeding in patients taking concomitant vitamin-K antagonists or anti-platelet agents. • Embryo-fetal toxicity: Selumetinib can cause fetal harm when administered to a pregnant woman. Advise females of reproductive potential to use effective contraception during treatment and for 1 week after the last dose of selumetinib.
Special administration technique or considerations	Take selumetinib on an empty stomach: do not eat food 2 hours before or 1 hour after each dose. Swallow capsules whole with water; do not chew, dissolve, or open capsules. Do not take a missed dose unless it is more than 6 hours until the next scheduled dose.
Prepared by	Vanessa Gutierrez
Source	Koselugo (selumetinib) [prescribing information]. Wilmington, DE: AstraZeneca Pharmaceuticals LP; April 2020.

Pemigatinib / Pemazyre / Incyte Corporation	
Generic Name / Brand Name / Company	Pemigatinib / Pemazyre / Incyte Corporation
Date of approval	4/17/20
Drug Class (Mechanism of Action if novel agent)	Small molecule kinase inhibitor targeting fibroblast growth factor receptor (FGFR)
Indication	Indicated for the treatment of adults with previously treated, unresectable locally advanced or metastatic cholangiocarcinoma with a FGFR2 fusion or other rearrangement as detected by an FDA-approved test.
Comparative agent – Therapeutic interchange?	No other agents available for indication
Dosage forms/strengths	Tablets: 4.5 mg, 9 mg, 13.5 mg
Common Dose/sig	The recommended dose is 13.5 mg orally once daily for 14 consecutive days followed by 7 days off therapy, in 21-day cycles. Dose reductions are recommended for adverse reactions.
DEA Schedule	None
Date of market availability	Spring 2020
Similar Medication Names	Pegaptanib, pemetrexed, pemfexy, pemoline, pemirolast, pembrolizumab
Clinical Use Evaluation	
Common Adverse Effects	≥15%: hyperphosphatemia, decreased appetite, hypophosphatemia, dehydration, alopecia, nail toxicity, dry skin, palmar-plantar erythrodysesthesia syndrome, diarrhea, nausea, constipation, stomatitis, dry mouth, vomiting, abdominal pain, fatigue, edema peripheral, dysgeusia, headache, dry eye, arthralgia, back pain, pain in extremity, urinary tract infection, weight loss
Severe Adverse Effects	≥2%: abdominal pain, pyrexia, cholangitis, pleural effusion, acute kidney injury, cholangitis infective, failure to thrive, hypercalcemia, hyponatremia, small intestinal obstruction, urinary tract infection Fatal adverse reactions: failure to thrive, bile duct obstruction, cholangitis, sepsis, pleural effusion
Severe Drug-Drug Interactions	Strong and Moderate CYP3A Inhibitors: Concomitant use increases pemigatinib plasma concentrations. If concomitant use cannot be avoided, reduce pemigatinib dose. Strong and Moderate CYP3A Inducers: Concomitant use decreases pemigatinib plasma concentrations. Avoid concomitant use of strong and moderate CYP3A inducers with pemigatinib.
Severe Drug-Food Interactions	None known
Important Labs Values to assess prior to order entry or at point of clinical follow up.	Monitor serum phosphate levels during treatment.
Used in Pediatric Areas	Safety and effectiveness have not been established in pediatric patients.
Renal or Hepatic Dosing	Renal Impairment: No dose adjustment is recommended for patients with mild or moderate renal impairment (GFR ≥ 30 to <90 mL/min). A recommended dosage of pemigatinib for patients with severe renal impairment (GFR <30 mL/min) has not been established. Hepatic Impairment: No dose adjustment is recommended for patients with mild or moderate hepatic impairment. A recommended dosage of pemigatinib in patients with severe hepatic impairment (total bilirubin >3 X ULN with any AST) has not been established.

Pemigatinib (continued…)	
Critical Issues (i.e., contraindications, warnings, etc) that should be emphasized	Contraindications: none Warnings and Precautions: • Ocular toxicity: Comprehensive ophthalmic assessments must be conducted prior to initiation of pemigatinib, every 2 months for the first 6 months, and every 3 months thereafter during treatment. Refer patients for ophthalmologic evaluation immediately upon the onset of visual symptoms, with follow-up every 3 weeks until symptom resolution or discontinuation of pemigatinib. • Hyperphosphatemia: Hyperphosphatemia was reported in 92% of patients, as increases in phosphate levels are a pharmacodynamic effect of pemigatinib therapy. Monitor serum phosphate levels and initiate a low phosphate diet when levels reach >5.5 mg/dL. If serum phosphate reaches levels >7 mg/dL, initiate phosphate lowering therapy and withhold, reduce the dose, or permanently discontinue pemigatinib based on duration and severity of hyperphosphatemia. • Embryo-fetal toxicity: Pemigatinib can cause fetal harm when administered to a pregnant woman. Advise females of reproductive potential and males with female partners of reproductive potential to use effective contraception during treatment and for 1 week after the last dose of pemigatinib. Advise pregnant women of the potential risk to a fetus.
Special administration technique or considerations	Swallow tablets whole. Take pemigatinib with or without food at approximately the same time every day.
Prepared by	Vanessa Gutierrez
Source	Pemazyre (pemigatinib) [prescribing information]. Wilmington, DE: Incyte Corporation; April 2020.

Tucatinib / Tukysa / Seattle Genetics, Inc.	
Generic Name / Brand Name / Company	Tucatinib / Tukysa / Seattle Genetics, Inc.
Date of approval	4/17/20
Drug Class (Mechanism of Action if novel agent)	Tyrosine kinase inhibitor of HER2
Indication	Indicated in combination with trastuzumab and capecitabine for treatment of adult patients with advanced unresectable or metastatic HER2-positive breast cancer, including patients with brain metastases, who have received one or more prior anti-HER2-based regimens in the metastatic setting.
Comparative agent – Therapeutic interchange?	Other HER2- positive breast cancer therapies: lapatinib, neratinib, trastuzumab, pertuzumab, ado-trastuzumab emtansine, fam-trastuzumab deruxtecan
Dosage forms/strengths	Tablets: 50 mg, 150 mg
Common Dose/sig	The recommended dose is 300 mg orally twice daily in combination with trastuzumab and capecitabine until disease progression or unacceptable toxicity. Dose modifications are recommended for adverse reactions.
DEA Schedule	None
Date of market availability	Available
Similar Medication Names	Tikosyn
Clinical Use Evaluation	
Common Adverse Effects	≥20%: diarrhea, palmar-plantar erythrodysesthesia, nausea, fatigue, hepatotoxicity, vomiting, stomatitis, decreased appetite, abdominal pain, headache, anemia, rash

Tucatinib (continued…)	
Severe Adverse Effects	Serious adverse reactions: diarrhea (4%), vomiting (2.5%), nausea (2%), abdominal pain (2%), seizure (2%). Fatal adverse reactions: sudden death, sepsis, dehydration, cardiogenic shock
Severe Drug-Drug Interactions	Strong CYP3A Inducers or Moderate CYP2C8 Inducers: Avoid concomitant use Strong or Moderate CYP2C8 Inhibitors: Avoid concomitant use with a strong CYP2C8 inhibitor. Increase monitoring for tucatinib toxicity with moderate CYP2C8 inhibitors. CYP3A Substrates: Avoid concomitant use. Decrease the CYP3A substrate dosage in accordance with approved product labeling if concomitant use is avoidable. P-glycoprotein (P-gp) Substrates: Consider reducing the dosage of P-gp substrates with concomitant use.
Severe Drug-Food Interactions	None known
Important Labs Values to assess prior to order entry or at point of clinical follow up.	Monitor ALT, AST, and bilirubin prior to initiating treatment, every 3 weeks during treatment, and as clinically indicated.
Used in Pediatric Areas	Safety and effectiveness have not been established in pediatric patients.
Renal or Hepatic Dosing	Renal Impairment: Use in severe renal impairment is not recommended: capecitabine (used concomitantly with tucatinib) is contraindicated in patients with severe renal impairment. No dose adjustment is recommended for patients with mild or moderate renal impairment (creatinine clearance 30-89 mL/min). Hepatic Impairment: Reduce the dose of tucatinib for patients with severe (Child-Pugh C) hepatic impairment. No dose adjustment is recommended for patients with mild (Child-Pugh A) or moderate (Child-Pugh B) hepatic impairment.
Critical Issues (i.e., contraindications, warnings, etc) that should be emphasized	Contraindications: none Warnings and Precautions: • Diarrhea: Administer antidiarrheal treatment as clinically indicated. Interrupt dose, reduce dose, or permanently discontinue tucatinib based on severity. • Hepatotoxicity: Monitor ALT, AST, and bilirubin prior to initiating treatment with tucatinib, every 3 weeks during treatment, and as clinically indicated. • Embryo-fetal toxicity: Tucatinib can cause fetal harm when administered to a pregnant woman. Advise females of reproductive potential and males with female partners of reproductive potential to use effective contraception during treatment and for 1 week after the last dose of tucatinib. Advise pregnant women of the potential risk to a fetus.
Special administration technique or considerations	Take tucatinib in combination with trastuzumab and capecitabine. Swallow tablets whole; take approximately 12 hours apart and at the same time each day, with or without food.
Prepared by	Vanessa Gutierrez
Source	Tukysa (tucatinib) [prescribing information]. Bothell, WA: Seattle Genetics Inc.; April 2020

Sacituzumab govetican-hziy / *Trodelvy* / Immunomedics, Inc.	
Generic Name / Brand Name / Company	Sacituzumab govetican-hziy / *Trodelvy* / Immunomedics, Inc.
Date of approval	4/22/20
Drug Class (Mechanism of Action if novel agent)	Antibody drug conjugate, antineoplastic agent, monoclonal antibody, topoisomerase I inhibitor
Indication	Treatment of adult patients with metastatic triple-negative breast cancer with a history of at least two prior therapies for metastatic malignancy.
Comparative agent – Therapeutic interchange?	Topoisomerase I inhibitors – Fam-trastuzumab deruxtecan, irinotecan, topotecan; do not substitute this agent for irinotecan or use with irinotecan
Dosage forms/strengths.	Injection: 180 mg lyophilized powder in single-dose vial for reconstitution
Common Dose/sig	Administer 10 mg/kg by intravenous infusion once weekly on Days 1 and 8 of 21-day treatment cycles. Continue treatment until disease progression or unacceptable toxicity.
DEA Schedule	None
Date of market availability	Available
Similar Medications (Look-Alike Sound-Alike)	Sacubitril, trastuzumab, *Trokendi*
CLINICAL USE EVALUATION	
Common Adverse Effects	≥25%: nausea, neutropenia, diarrhea, fatigue, anemia, vomiting, alopecia, constipation, rash, decreased appetite, and abdominal pain
Severe Adverse Effects	Hypersensitivity, Grade 3 nausea or Grade 3-4 vomiting at time of treatment, neutropenia, diarrhea, and embryo-fetal-toxicity
Severe Drug-Drug Interactions	Uridine diphosphate-glucuronosyl transferase 1A1 (UGT1A1) inhibitors or inducers: avoid concomitant use
Severe Drug-Food Interactions	None known
Important Labs Values to assess prior to order entry or at point of clinical follow up.	Pregnancy testing, absolute neutrophil count, and electrolytes.
Used in Pediatric Areas	Safety and efficacy have not been established in pediatric patients.
Renal or Hepatic Dosing	No adjustment to starting dose is necessary when administering sacituzumab govetican-hziy to patients with mild hepatic impairment. No recommendation is available for patients with moderate or severe hepatic impairment due to lack of evidence. Sacituzumab govetican-hziy has not been studied in patients with renal impairment or end-stage renal disease (CrCl ≤ 30 mL/min).
Critical Issues (i.e., contraindications, warnings, etc) that should be emphasized	Contraindications: hypersensitivity; history of severe allergic-type reactions to sacituzumab govetican-hziy. Black box warnings: severe neutropenia and severe diarrhea may occur. Warnings: hypersensitivity reactions, monitor patients for infusion-related reactions, serious nausea/vomiting, increased risk of neutropenia in patients who are homozygous for the UGT1A1*28 allele, and embryo-fetal toxicity. Females of reproductive potential should be advised to use effective contraception during treatment and for 6 months after last dose. Male patients with female partners of reproductive potential should be counseled to employ effective contraception during treatment and for 3 months after the last dose.

Sacituzumab govetican-hziy (continued…)	
Special administration technique or considerations	Sacituzumab govetican-hziy is a cytotoxic drug. Do not administer sacituzumab govetican-hziy as an intravenous push or bolus, or with other medicinal products. Premedication for prevention of infusion reactions and prevention of chemotherapy-induced nausea and vomiting is recommended. Medical staff must be present to monitor patients during and 30 minutes after treatment. Administer first infusion over 3 hours. Observe patients during the infusion and for at least 30 minutes for signs or symptoms of infusion-related reactions. Administer subsequent infusions over 1 to 2 hours if prior infusions were tolerated, observe patients during and for at least 30 minutes following the infusion.
Prepared by	Li-Wei Chen
Source	Trodelvy (sacituzumab govetican-hziy) [prescribing information]. Morris Plains, NJ: Immunomedics, Inc.; April 2020.

Opicapone / *Ongentys* / Neurocrine Biosciences	
Generic Name / Brand Name / Company	Opicapone / *Ongentys* / Neurocrine Biosciences
Date of approval	4/24/20
Drug Class (Mechanism of Action if novel agent)	Catechol-O-methyltransferase (COMT) inhibitor
Indication	Adjunctive treatment to levodopa/carbidopa in patients with Parkinson's disease PD experiencing "off" episodes
Comparative agent – Therapeutic interchange?	COMT inhibitors: entacapone, tolcapone
Dosage forms/strengths. Common Dose/sig	Capsules: 25 mg and 50 mg Recommended dosage is 50 mg administered once daily at bedtime
DEA Schedule	None
Date of market availability	Later in 2020
Similar Medications (Look-Alike Sound-Alike)	None
CLINICAL USE EVALUATION	
Common Adverse Effects	≥4%: dyskinesia, constipation, blood creatinine kinase increased, hypotension/syncope, weight decreased
Severe Adverse Effects	None including in labeling
Severe Drug-Drug Interactions	Non-selective Monoamine Oxidase (MAO) inhibitors - contraindicated Drugs metabolized by COMT (e.g. isoproterenol, epinephrine, norepinephrine, dopamine and dobutamine): monitor heart rate, rhythm, and blood pressure
Severe Drug-Food Interactions	Concomitant administration with food decreased exposure and delayed time to peak concentration
Important Labs Values to assess prior to order entry or at point of clinical follow up.	None required
Used in Pediatric Areas	Safety and effectiveness in pediatric patients have not been established

Opicapone (continued…)	
Renal or Hepatic Dosing	No dose adjustment required for patients with mild, moderate or severe renal impairment. However, because of a potential for increased exposure, monitor patients with severe renal impairment for adverse reaction and discontinue if tolerability issues arise. Avoid use in patients with end-stage renal disease (ESRD) (Crcl<15 ml/min). No dosage adjustment is required in patients with mild (Child-Pugh A) hepatic impairment. In patients with moderate hepatic impairment (Child-Pugh B), the recommended dose is 25 mg orally daily at bedtime. Avoid use in patients with severe (Child-Pugh C) hepatic impairment.
Critical Issues (i.e., contraindications, warnings, etc) that should be emphasized	Contraindications in patients with: -Concomitant use of non-selective monoamine oxidase (MAO) inhibitors. -Pheochromocytoma, paraganglioma or other catecholamine secreting neoplasms. Warnings: -Possible arrhythmias, increased heart rate, and excessive changes in blood pressure may occur with concomitant use of Ongentys and drugs metabolized by COMT (COMT) (e.g. isoproterenol, epinephrine, norepinephrine, dopamine and dobutamine). -Before initiating treatment, advise patients of potential to develop drowsiness and specifically ask about factors that may increase the risk of somnolence with dopaminergic therapy. -Monitor patients for hypotension (orthostatic and non-orthostatic) and the risk of syncope, and presyncope. -Consider stopping opicapone if hallucinations or psychotic-like behaviors occur. -Patients treated with opicapone can experience intense urges to gamble, increased sexual urges, intense urges to spend money, binge eating and or other intense urges and inability to control these urges. -A symptoms complex resembling neuroleptic malignant syndrome (characterized by elevated temperature, muscular rigidity, altered consciousness, and autonomic instability) has been reported in association with rapid dosing reduction withdrawal of or changes in drugs that increase central dopaminergic tone. When discontinuing opicapone, monitor patients and consider adjustment of other dopaminergic therapies as needed.
Special administration technique or considerations	Patients should not eat food for 1 hour before and for at least 1 hour after administration.
Prepared by	Audrian Santos
Source	Ongentys (opicapone) [prescribing Information]. San Diego, CA: Neurocrine Biosciences, Inc.; April 2020.