New Drugs and Drug News of 2018

Pharmacy practitioners need to be knowledgeable about new drugs introduced to the market, and public health advisories about drug therapy.

Learning Objectives

Pharmacist
1. Recognize the approved indication, common adverse effects and drug interactions for new drugs approved by the FDA in 2018.
2. For each new medication approved in 2018, identify the burden-to-benefit ratio of therapy.
3. Identify important drug alerts by the FDA (Public Health Advisories) and implications for patient care.

Pharmacy Technician
1. Recognize the approved indication, common adverse effects and drug interactions for new drugs approved by the FDA in 2018.
2. For each new medication approved in 2018, identify the burden-to-benefit ratio of therapy.
3. Identify important drug alerts by the FDA (Public Health Advisories).

Nurse
1. Recognize the approved indication, common adverse effects and drug interactions for new drugs approved by the FDA in 2018.
2. For each new medication approved in 2018, identify the burden-to-benefit ratio of therapy.
3. Identify important drug alerts by the FDA (Public Health Advisories) and implications for patient care.
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Target Audience
Pharmacists, Pharmacy Technicians, Nurses

Universal Activity Number

<table>
<thead>
<tr>
<th>Profession</th>
<th>Universal Activity Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pharmacist</td>
<td>0798-0000-19-008-L01-P</td>
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<tr>
<td>Pharmacy Technician</td>
<td>0798-0000-19-008-L01-T</td>
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<tr>
<td>Nurse</td>
<td>0798-0000-19-008-L01-P</td>
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</tbody>
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Credit Hours
1.25 Hour

Activity Type
Knowledge-Based

CE Broker Tracking Number
20-651857

Activity Release Date
March 19, 2019

Activity Offline Date
March 19, 2022

ACPE Expiration Date
March, 2019

Educational Support Provided By
PharmCon, Inc.

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Consult full prescribing information on any drugs or devices discussed.

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NEW DRUGS AND DRUG NEWS OF 2018

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PharmD, MA, BCPS, CPE

MARY LYNN MCPHERSON, PHARMD, MA, BCPS, CPE
PROFESSOR, UNIVERSITY OF MARYLAND SCHOOL OF PHARMACY

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Learning Objectives

- At the conclusion of this program, the participant will be able to:
  - Recognize the approved indication, common adverse effects and drug interactions for new drugs approved by the FDA in 2018.
  - For each new medication approved in 2018, identify the burden-to-benefit ratio of therapy.
  - Identify important drug alerts by the FDA (Public Health Advisories) and implications for patient care.

2018 NEW DRUG APPROVALS

- BANNER YEAR!
- US Regulators approved a total of SIXTY-ONE drugs
- 59 by FDA’s Center for Drug Evaluation and Research (from 51 companies)
- 2 recombinant therapies (Andexxa and Jivi) by the Center for Biologics Evaluation and Research

2018 NEW DRUG APPROVALS

- FDA NME NDAs/BLAs
- Filings and Approvals by CV as of 11/30/18

New Drugs and Drug News of 2018
2018 NEW DRUG APPROVALS

- 31 of the new drugs are for rare diseases
- 31 are orphan drugs
- 26 were priority reviews
- 16 were fast-track
- 12 were breakthrough therapy

DERMATOLOGY

<table>
<thead>
<tr>
<th>Generic</th>
<th>Trade</th>
<th>Indication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tildrakizumab</td>
<td>Ilumya</td>
<td>Treatment of plaque psoriasis</td>
</tr>
<tr>
<td>Glycopyrronium</td>
<td>Obrexa</td>
<td>For the treatment of primary axillary hyperhidrosis</td>
</tr>
<tr>
<td>Sarecycline</td>
<td>Seysara</td>
<td>For the treatment of moderate to severe acne vulgaris in patients 9 years of age and older</td>
</tr>
</tbody>
</table>

**Endocrine**

<table>
<thead>
<tr>
<th>Generic</th>
<th>Trade</th>
<th>Indication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semaglutide</td>
<td>Ozempic</td>
<td>Glucagon-like peptide</td>
</tr>
<tr>
<td>Ertugliflozin</td>
<td>Steglatro</td>
<td>Adjunct to diet/exercise for the management of type 2 diabetes</td>
</tr>
</tbody>
</table>

**GLYCOPHYRBRONIUM (QBREXZA)**

- Indication/MOA – anticholinergic indicated for topical treatment of primary axillary hyperhidrosis in adults and pediatric patients 9 years of age and older
- Dosage – apply once daily to both axillae using a single cloth (pre-moistened with 2.4% glycopyrronium solution)
- Contraindications – patients with medical conditions that can be exacerbated by anticholinergic effects (glaucoma, paralytic ileus, unstable CV state in acute hemorrhage, severe ulcerative colitis, toxic megacolon, myasthenia gravis, Sjogren’s syndrome)

**SEMAGLUTIDE (OZEMPIC)**

- The 6th glucagon-like peptide-1 (GLP-1) approved
- Exenatide (Byetta, Bydureon), liraglutide (Victoza), lixisenatide (Adlyxin), dulaglutide (Trulicity)
- Indication – Given SQ qweek as an adjunct to diet and exercise to improve glycemic control in adults with type 2 diabetes mellitus
- MOA – suppression of glucagon secretion, stimulation of glucose-dependent insulin secretion, slowing gastric emptying, and promoting satiety (4-5 kg weight loss; ~1.5% reduction in A1c)
- Warnings – thyroid C-cell tumors (rodents), medullary thyroid carcinoma, endocrine neoplasia syndrome type 2, pancreatitis
- AE – nausea (20%), vomiting (9%), diarrhea (9%), abd pain (6%)
  
  
  Each cloth $22  
  Botox ~ $2400 q6months; Qbrexza ~ $4,000 q6months  

  
  
  $600 per weekly dose
ERTUGLIFLOZIN L-PYROGLUTAMIC ACID (STEGLATRO)

- Sodium-glucose cotransporter 2 (SGLT2) inhibitor
  - Canagliflozin (Invokana), dapagliflozin (Farxiga), empagliflozin (Jardiance; ↓ risk CV disease)
- Indicated as adjunct to diet/exercise in type 2 diabetes
- Advantages – risk of lower limb amputation not as definitive as canagliflozin; not associated with bladder cancer (vs. dapagliflozin)
- AE – female genital mycotic infection (12%), male genital mycotic infection (4%), UTI (4%), headache (3%), back pain (3%), ↑ LDL (5%)
- Dose – initially 5 mg po qd; may be increased to 15 mg po qd
- Do not initiate therapy with eGFR of 30-60 ml/min

$11 per tablet

SGLT-2 INHIBITORS (CANAGLIFOZIN, DAGAGLIFOZIN, EMPAGLIFOZIN, ERTUGLIFLOZIN)

- Rare but serious infection of the genitals and area around genitals have been reported
- AKA necrotizing fasciitis of perineum; Fournier’s gangrene
- Advise patients to seek medication attention with complaints of tenderness, redness, or swelling of the genitals or the area from the genitals back to the rectum, and have a fever above 100.4F or a general feeling of being unwell.
- Symptoms worsen quickly
- Tx – broad spectrum antibiotics and surgical debridement prn

Gastroenterology

<table>
<thead>
<tr>
<th>Generic</th>
<th>Trade</th>
<th>Indication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prucalopride</td>
<td>Motegrity</td>
<td>For the treatment of chronic idiopathic constipation</td>
</tr>
</tbody>
</table>

SGLT2 inhibitors have also been associated with euglycemic DKA

IMODIUM (LOPERAMIDE) FOR OTC USE

- FDA requiring manufacturers to use blister packs or other single dose packaging and to limit the number of doses in a package.
- FDA continues to receive reports of serious heart problems and deaths with much higher than the recommended doses of loperamide, primarily among people who are intentionally misusing or abusing the product, despite added warnings.
- Maximum daily dose is 8 mg/day OTC, 16 mg/day Rx.

GENETIC DISEASE

<table>
<thead>
<tr>
<th>Generic</th>
<th>Trade</th>
<th>Indication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burosumab</td>
<td>Cytolex</td>
<td>For the treatment of X-linked hypophosphatemia</td>
</tr>
<tr>
<td>Midostaurin</td>
<td>Galafold</td>
<td>For the treatment of Fabry Disease</td>
</tr>
<tr>
<td>Patisiran</td>
<td>Onpattro</td>
<td>For the treatment of transthyretin-mediated amyloidosis in adults</td>
</tr>
<tr>
<td>Emapaglumab</td>
<td>Gamifant</td>
<td>For the treatment of primary hemophagocytic lymphohistiocytosis</td>
</tr>
<tr>
<td>Lanadelumab</td>
<td>Takhzyro</td>
<td>For the prevention of hereditary angioedema attacks</td>
</tr>
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Immunology

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<td>Lanadelumab</td>
<td>Takhzyro</td>
<td>For the prevention of hereditary angioedema attacks</td>
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</tbody>
</table>
HEMATOLOGY

Generic | Trade | Indication
---|---|---
Coagulation factor Xa (recombinant, inactivated) | Andexxa | For the reversal of factor Xa inhibitors
Antihemophilic factors (recombinant) | Jivi | For hemophilia A

**COAGULATION FACTOR XA INACTIVATED (ANDEXXA)**

- Accelerated approval by FDA for urgent reversal of the anticoagulant effect of the direct factor Xa inhibitors:
  - Apixaban (Eliquis) and rivaroxaban (Xarelto)
    - Has NOT been approved for reversal of anticoagulation with edoxaban (Savaysa) or betrixaban (Bevyxxa)
    - Has NOT been approved for reversal of indirect factor Xa inhibitors enoxaparin and fondaparinux (although it is expected to be efficacy with all these agents)
  - Idarucizumab (Praxbind) was approved in 2015 for reversal of the anticoagulant effect of the direct thrombin inhibitor dabigatran (Pradaxa)

- **MOA** – Andexanet alfa is a genetically modified variant of human factor Xa (alanine is substituted for serine) produced in the Chinese hamster ovary cell line
  - Acts as a decoy, binding to factor Xa inhibitors and neutralizing their anticoagulant effect
  - AE – labeling includes boxed warning about risk of thromboembolic, ischemic, and cardiac events, including sudden death
  - 11% of patients had a thrombotic event and 12% died within 30 days after administration of the drug

- **Efficacy** – two studies, evaluating mean change from baseline in anti-factor Xa activity
  - 66 healthy subjects received apixaban 5 mg twice daily for 3.5 days
  - Three hours after last dose, subjects received andexanet alfa (400 mg IV bolus with or without subsequent 4 mg/minute continuous infusion for 2 hours) or placebo
  - Anti-factor Xa activity was reduced within 2-5 minutes by 94% with andexanet alfa IV bolus, vs. 21% with placebo
  - Thrombin generation was fully restored within 2-5 minutes in 100% of andexanet-treated patients vs. 11% placebo-treated patients
  - Similar results with a rivaroxaban study (800 mg IV andexanet alfa)

- **Dosing**
  - Patients taking ≤ 10 mg rivaroxaban or ≤ 5 mg apixaban per dose should receive low-dose regimen – 400 mg IV bolus dose of andexanet alfa, followed by a 4 mg/minute continuous infusion for up to 120 minutes
  - Patients taking > 10 mg of rivaroxaban or > 5 mg apixaban per dose should receive the high-dose regimen – 800 mg IV bolus dose of andexanet alfa, followed by an 9 mg/minute continuous infusion for up to 120 minutes if their last dose was < 8 before starting andexanet alfa; if the last dose was ≥ 8 hours before starting andexanet alfa, the low-dose regimen should be used. If unknown, use the high-dose regimen

  Cost of high dose regimen is approximately $50,000.
### INFECTIOUS AND INFECTIOUS DISEASES

<table>
<thead>
<tr>
<th>Generic</th>
<th>Trade</th>
<th>Indication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biktarvy</td>
<td>For the treatment of HIV-1 infection in adults</td>
<td></td>
</tr>
<tr>
<td>Delstrigo</td>
<td>For the treatment of HIV-1 infection</td>
<td></td>
</tr>
<tr>
<td>Pifeltro</td>
<td>For the treatment of HIV-1 infection</td>
<td></td>
</tr>
<tr>
<td>Symtuza</td>
<td>For the treatment of HIV-1 infection</td>
<td></td>
</tr>
<tr>
<td>Tafenoquine</td>
<td>For the prevention of malaria relapse in patients receiving appropriate antimalarial therapy</td>
<td></td>
</tr>
<tr>
<td>Aemcolo</td>
<td>For the treatment of traveler's diarrhea</td>
<td></td>
</tr>
<tr>
<td>Xerava</td>
<td>For the treatment complicated intra-abdominal infections</td>
<td></td>
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</tbody>
</table>

### INFECTIOUS AND INFECTIOUS DISEASES

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<tr>
<th>Generic</th>
<th>Trade</th>
<th>Indication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vaxelis</td>
<td>For the prevention of diphtheria, tetanus, pertussis, poliomyelitis, hepatitis B, and Haemophilus influenzae type b</td>
<td></td>
</tr>
<tr>
<td>Moxidectin</td>
<td>For the treatment of onchocerciasis (river blindness)</td>
<td></td>
</tr>
<tr>
<td>Nuzyra</td>
<td>For the treatment of community-acquired bacterial pneumonia and acute bacterial skin and skin structure infections</td>
<td></td>
</tr>
<tr>
<td>Xofluza</td>
<td>For the treatment of acute uncomplicated influenza</td>
<td></td>
</tr>
<tr>
<td>Zemdri</td>
<td>For the treatment of complicated urinary tract infections</td>
<td></td>
</tr>
<tr>
<td>Baxdela</td>
<td>For the treatment of adults with acute bacterial skin and skin structure infections (IV or oral)</td>
<td></td>
</tr>
</tbody>
</table>

### DELAFLOXACIN MEGLUMINE (BAXDELA)

- Fluoroquinolone antibacterial with broad spectrum of action (PO/IV)
- Indication – Tx of adults with acute bacterial skin and skin structure infections
  - S. aureus (including MRSA), other Staph, Strep, Enterococcus, Escherichia, Enterobacter, Klebsiella, Pseudomonas
  - First FQ shown to be effective in tx of infections caused by MRSA
    - Non-inferior to vancomycin + aztreonam combination
    - 80% of patients had > 20% decrease in lesion size at 48-72 hours
    - > 95% treatment success at 14 days
  - It's effectiveness as a single agent that can be given orally provides an advantages over the concurrent use of IV vancomycin + aztreonam

### DELAFLOXACIN MEGLUMINE (BAXDELA)

- Dose
  - 450 mg po – 300 mg IV
  - 300 mg IV every 12 hours over 60 minutes
  - 450 mg po every 12 hours
  - May be initiated IV and switched to oral
  - Treatment duration 5-14 days
  - IV – reduce by 50% for severe renal impairment
  - AE – nausea (8%), diarrhea (8%), headache (3%), transaminase elevations (3%)

$81/dose

### MORE FQ WARNINGS

- FDA has required changes in the labeling of all systemic FQ antibiotics – severe hypoglycemia and mental health effects
- Most hypoglycemia cases were in patients with diabetes, older age, renal insufficiency
- Labeling must include warnings of delirium, agitation, nervousness, and disturbances in attention, memory and orientation.
- Can occur after a single FQ dose, DC therapy
- Systemic FQ therapy may also cause permanent peripheral neuropathy, tendinitis, tendon rupture, exacerbation of myasthenia gravis, Clostridium difficile infection, QT prolongation (except delafloxacin).

Avoid FQ use in uncomplicated UTI, acute sinusitis, acute exacerbation of chronic bronchitis, unless no alternate treatment option is available.
BALOXAVIR MARBOXIL (XOFLUZA)

- Baloxavir marboxil is a prodrug that is almost completely converted by hydrolysis to its active metabolite, baloxavir.
- Activity against influenza A and influenza B viruses.
- Indication – treatment of acute uncomplicated influenza in patients ≥ 12 yo who have been symptomatic for no more than 48 hours.
- Dosing:
  - Patients weighing 40 kg to < 80 kg – single dose of 40 mg
  - Patients weighing at least 80 kg – single dose of 80 mg
- AE – diarrhea (3%), bronchitis (2%)

Advantages
- Single dose treatment (oseltamivir bid for 5 days)
- Unique MOA (polymerase acidic endonuclease inhibitor)
- May be effective in patients with influenza resistant to oseltamivir
- Use not associated with neuropsychiatric adverse effects
- No dosage adjustment in renal impairment required

Disadvantages
- Effectiveness/safety not established < 12 yo (oseltamivir indicated ≥ 2 weeks old)
- May be less effective against influenza B
- Has not been evaluated for the prophylaxis of influenza (oseltamivir has indication)
- Absorption and activity may be reduced by coadministration with polyvalent cation-containing products (antacids)
- May decrease the effectiveness of intranasal live attenuated influenza vaccine
- $155 for baloxavir vs. $45 with oseltamivir

BIOTERRORISM - ANTHIM

- Anthim - oblitotoxaximab
- Inhalational anthrax – caused by inhalation of the spores of Bacillus anthracis is a continuing concern because of its potential use as a bioterrorism agent.
  - Death is caused by a toxin, so treatment must include both antimicrobials and antitoxins.
  - Raxibacumab was previously approved.
  - Both are manufactured only for the CDC national stockpile.
- AE – hypersensitivity reactions (10.6%), anaphylaxis (0.9%)
- IV infusion over 90 minutes

TECOVIRIMAT (TPOXX)

- Indication – Treatment of human smallpox disease caused by variola virus in adult and pediatric patients weighing at least 13 kg.
- Limitations of Use – Effectiveness has not been determined in humans because adequate and well-controlled field trials have not been feasible. Inducing smallpox in humans to study the drug’s effects is not ethical.
- Dose ≥ 40 kg – 600 mg twice daily x 14 days (take 30 minutes after a full meal of moderate or high fat (increases absorption 39%)
- Dose 13-40 kg – weight based for 14 days
  - May be mixed in liquid or soft food. Consume within 30 minutes of preparation.

AE – headache (12%), nausea (5%), abdominal pain (2%), vomiting (2%)
- Drug interactions:
  - Repaglinide serum level increased (hypoglycemic risk)
  - Midazolam serum level decreased (reduced effectiveness)
- Clinical trials done in animal models

NEW DOSAGE FORM
**NEW DOSAGE FORM - FIVANQ**

- Vancomycin hydrochloride powder for oral solution, equivalent to 3.75 g, 7.5 g, 10.5 g, 15 g vancomycin and grape-flavored diluent

<table>
<thead>
<tr>
<th>Volume (ml)</th>
<th>Strength (g)</th>
<th>Strength (mg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>5.75</td>
<td>147</td>
</tr>
<tr>
<td>50</td>
<td>11.5</td>
<td>294</td>
</tr>
</tbody>
</table>

**NEW DOSAGE FORM - ZTLIDO**

- ZTLido contains lidocaine, an amide local anesthetic, indicated for relief of pain associated with post-herpetic neuralgia
- ZTLido is 1.8% but has enhanced bioavailability, and is equivalent to Lidoderm 5%
- Can apply up to three patches; patches may be cut; 12 hours on/12 hours off

**MUSCULOSKELETAL**

<table>
<thead>
<tr>
<th>Generic Name</th>
<th>Trade Name</th>
<th>Indication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amifampridine</td>
<td>Firdapse</td>
<td>For the treatment of Lambert-Eaton myasthenic syndrome</td>
</tr>
</tbody>
</table>

**NEUROLOGY**

<table>
<thead>
<tr>
<th>Generic</th>
<th>Trade</th>
<th>Indication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Erenumab</td>
<td>Aimovig</td>
<td>For the preventive treatment of migraine in adults</td>
</tr>
<tr>
<td>Fremanezumab</td>
<td>Ajovy</td>
<td>For the treatment of migraine</td>
</tr>
<tr>
<td>Galcanezumab</td>
<td>Emgality</td>
<td>For the preventive treatment of migraine in adults</td>
</tr>
<tr>
<td>Sufentanil</td>
<td>Dsuvia</td>
<td>For the treatment of acute pain</td>
</tr>
<tr>
<td>Amifampridine</td>
<td>Firdapse</td>
<td>For the treatment of Lambert-Eaton myasthenic syndrome</td>
</tr>
</tbody>
</table>

**CALCITONIN GENE-RELATED PEPTIDE-TARGETED THERAPIES FOR MIGRAINE AND CLUSTER HEADACHE**

- Calcitonin gene-related peptide (CGRP) was initially identified in 1982
- It’s a 37 amino-acid signaling neuropeptide intricately involved in migraine and other headache and facial pain disorders
- CGRP has a high affinity for the CGRP receptor, located in the vasculature, trigeminal sensory afferents, the trigeminal ganglion, and the trigeminal nucleus caudalis
- Exogenous CGRP infusion triggers a migraine attack in migraine sufferers
- CGRP is a potent vasodilator of intracranial and extracranial vessels as well as centrally modulating vascular nociception

**CGRP ANTAGONISTS**

<table>
<thead>
<tr>
<th>Drug</th>
<th>Indication</th>
<th>Dosing</th>
<th>Effectiveness</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Erenumab (Ajovy)</td>
<td>Preventive treatment of migraine in adults</td>
<td>Loading dose of 240 mg SQ (2 consecutive injections of 120 mg each)</td>
<td>About 50% of patients treated experience a 50% reduction in headache frequency</td>
<td>~ $600/month (~$7,000/year)</td>
</tr>
<tr>
<td>Fremanezumab (Ajovy)</td>
<td></td>
<td>Administer SQ 225 mg once a month, or 675 mg every 3 months. The 675 mg dose is administered as 3 consecutive injections of 225 mg each.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Galcanezumab (Emgality)</td>
<td></td>
<td>Administer SQ 70 mg once a month; some patients may benefit from 140 mg once a month which is administered as two consecutive injections of 70 mg each.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**SO HOW DO THE CGRP ANTAGONISTS WORK?**

- Ajovy
- Aimovig
- Emgality

Look for mechanism of action.

**ESKETAMINE (SPRAVATO)**

- “Watershed” moment in the treatment of depression
- First “rapid-acting” medication for depression
- NMDA-receptor antagonist
- Indicated WITH an oral antidepressant for the treatment of treatment-resistant depression
- Must be administered under the direct supervision of a healthcare provider
- Treatment session consists of nasal administration of Spravato and post-administration observation under supervision

**ESKETAMINE (SPRAVATO NASAL SPRAY)**

- Avoid food for at least 2 hours before administration, and avoid drinking liquids at least 30 minutes prior to administration (some experience N/V)
- Assess BP prior to dosing
  - If > 140 mmHg SBP or > 90 mmHg DBP weigh risks and benefits
  - Do not administer if increase in BP or intracranial pressure poses a serious risk
- Reassess BP 40 minutes after administration (correlates with Cmax)
- DC patient after 2 hours if BP normal

**ESKETAMINE (SPRAVATO)**

<table>
<thead>
<tr>
<th>Induction Phase</th>
<th>Weeks 1-4</th>
<th>Adults</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administer twice a week</td>
<td>Day 1 starting dose: 56 mg</td>
<td>Subsequent doses: 56 or 84 mg</td>
</tr>
<tr>
<td>Maintenance Phase</td>
<td>Weeks 5-8</td>
<td></td>
</tr>
<tr>
<td>Administer once weekly</td>
<td>56 mg or 84 mg</td>
<td></td>
</tr>
<tr>
<td>Week 9 and after</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Administer every 2 weeks or once weekly</td>
<td>56 mg or 84 mg</td>
<td></td>
</tr>
</tbody>
</table>

Nasal spray device delivers a total of 28 mg (one spray/nostril). Use 2 devices for 56 mg dose; 3 devices for 84 mg dose. Allow a 5-minute rest between use of each device.

$4,720 to 6,785/month

**STIRIPENTOL (DIACOMIT)**

- Indication – for the treatment of seizures associated with Dravet syndrome in patients 2 years of age and older taking clobazam.
- Dosage – 50 mg/kg/day, administered by mouth in 2 or 3 divided doses
- Capsules must be swallowed whole
- Powder for suspension should be mixed in a glass of water and taken immediately after mixing during a meal.
- Warnings – somnolence, decreased appetite and decreased weight, neutropenia, thrombocytopenia, withdrawal, contains phenylalanine (PKU risk)
- Monitor for suicidal thoughts or behaviors
- AE (> 10%) – somnolence, decreased appetite, agitation, ataxia, weight decreased, hypotonia, nausea, tremor, dysarthria, insomnia

**Table 8: Primary Efficacy Results for Change from Baseline in MADRS Total Score at Week 4 in Patients with TRD in Study 1 (N=114)**

<table>
<thead>
<tr>
<th>Treatment Group</th>
<th>Number of Patients</th>
<th>Mean Baseline Score (SD)</th>
<th>LS Mean (SE) Change from Baseline at End of Week 4</th>
<th>LS Mean Difference (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>N=114</td>
<td>27.0 (5.7)</td>
<td>-9.8 (0.3)</td>
<td>-4.9 (-7.3, -2.6)</td>
<td></td>
</tr>
</tbody>
</table>

MADRS – Montgomery-Asberg Depression Rating Scale
Two-item, clinical-rated scale, 0-60 (higher score = more severe depression)

New Drugs and Drug News of 2018
**STIRIPENTOL (DIACOMIT)**

- MOA – unknown; possibly a GABA effect, and indirect effects involving inhibition of cytochrome P450 activity with resulting increase in blood levels of clobazam and its active metabolite

<table>
<thead>
<tr>
<th></th>
<th>Study 1</th>
<th>Study 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>% change from baseline in seizure frequency</td>
<td>-91%</td>
<td>-81%</td>
</tr>
<tr>
<td>% responders/total (responder &gt; 50% decrease in generalized tonic-clonic or clonic seizures)</td>
<td>71%</td>
<td>67%</td>
</tr>
</tbody>
</table>

**CANNABIDIOL (EPIDIOLEX)**

- Clinical efficacy
  - Study 1414 – 14 week, multicenter, randomized, double-blind, placebo-controlled trial in patients with LGS
  - 225 patients randomized to CBD 10 mg/kg/day (bid); CBD 20 mg/kg/day (bid) or placebo
  - Primary endpoint – percentage change in baseline in drop seizure frequency
  - Secondary endpoints
    - % patient responders
    - % changes in total seizures/day
    - Change in S/C/GIC (Subjective Caregiver Global Impression of Change)

- Statistically significant differences between each CBD group vs. placebo

<table>
<thead>
<tr>
<th></th>
<th>20 mg/kg/day (n=72)</th>
<th>10 mg/kg/day (n=72)</th>
<th>Placebo (n=72)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline Period Mean</td>
<td>21.6</td>
<td>21.6</td>
<td>21.6</td>
</tr>
<tr>
<td>Treatment Period Mean</td>
<td>8.0</td>
<td>10.8</td>
<td>22.7</td>
</tr>
<tr>
<td>Median Percentage Change During Treatment, Interquartile Range (IQ)</td>
<td>62.5 (59.1, 65.9)</td>
<td>50.8 (45.3, 56.1)</td>
<td>73.7 (69.1, 78.3)</td>
</tr>
<tr>
<td>Change in S/C/GIC</td>
<td>-15.5 (-17.5, -13.5)</td>
<td>-18.3 (-16.3, -20.3)</td>
<td>-19.3 (-17.9, -21.7)</td>
</tr>
</tbody>
</table>

*Based on Hodges-Lehman estimator*

- MOA – unknown
- AE – somnolence (25%), decreased appetite (22%), diarrhea (20%), serum transaminase elevation (16%)
- Drug interactions
  - Cannabidiol is metabolized by CYP3A4, 2C19, UGT1A7, 1A9, 287
  - Moderate or strong 3A4 or 2C19 inhibitors can increase cannabidiol levels; inducers can decrease cannabidiol levels and efficacy
  - Cannabidiol is a potential inhibitor of UGT1A9 and 287, and CYP2C8, 2C9, 2C19
  - Cannabidiol can inhibit metabolism of clobazam and increase levels 3 fold
CANNABIDIOL (EPIDIOLEX)

- Dose:
  - Supplied in 100 ml bottles containing 100 mg/ml
  - Starting dosage is 2.5 mg/kg twice daily
  - After one week the dosage can be increased to a maintenance dose of 5 mg/kg twice daily
  - As tolerated can increase to a maximum of 10 mg/kg twice daily
  - Reduce dose in hepatic impairment
  - Taking with high fat/high-calorie meal can increase maximum serum concentration of the drug 5-fold

One month treatment cost estimate range from $1,000-3,000/month

DRONABINOL (SYNDROS)

- Last year the FDA approved a new liquid formulation of dronabinol
- Same indications as Marinol
- Anorexia associated with weight loss in patients with AIDS
- Nausea and vomiting associated with cancer chemotherapy in patients who did not respond adequately to conventional treatment
- Bioavailability compared to Marinol:
  - Dronabinol oral soln (Syndros) 4.25 mg is bioequivalent to dronabinol capsule (Marinol) 5 mg
  - Dose (available as a 5 mg/ml oral solution)
- 2.1 mg orally twice daily, one hour before lunch and dinner for anorexia
- N/V – 4.2 mg/m², administered 1-3 hours prior to chemotherapy, then every 2-4 hours after chemotherapy, for a total of 4-6 doses/day. Administer first dose on an empty stomach.


Syndros costs about $2,000/month. Anticipated sales about $400 million/year

EFFICACY OF DRONABINOL IN HIV WASTING/ANOREXIA

- Efficacy – 10 studies of HIV wasting syndrome using dronabinol (Marinol)
  - Weight gain ranged from -2.0 to 3.2 kg (placebo weight change was -0.7 to 1.1 kg)
  - Dronabinol 2.5 mg po bid (-2.0 kg) vs. megestrol acetate 750 mg po qd (6.5 kg) (p=0.0001)
  - No studies on dronabinol oral solution in terms of efficacy (all bioequivalence)
  - Efficacy of dronabinol in cancer-cachexia/anorexia (Marinol)
  - Open, dose-ranging studies evaluated on appetite stimulation in cancer patients
  - No significant weight gain was observed, but reduction in rate of weight loss and increased appetite scores were observed.
  - "Borderline" effect on mood ("If you’re happy and you know it…eat a cookie?")

SUFENTANIL (DSUVIA) – WOW! HOT POTATO!

- Indication:
  - Sufentanil, an opioid agonist, is indicated for use in adults in a certified medically supervised healthcare setting, such as hospitals, surgical centers, and emergency departments, for the management of acute pain severe enough to require an opioid analgesic and for which alternative treatments are inadequate. Includes battlefield injuries.
  - NOT for home use, or use in children. DC treatment before leaving medical facility.
  - NOT for use > 72 hours, only to be administered by a healthcare provider.

- Dose – 30 mcg SL as needed with a minimum of one hour between doses
- Do not exceed 12 tablets in 24 hours
- Do not DC abruptly in an opioid-tolerant patient
- AE – nausea, headache, vomiting, dizziness, hypotension
- Tmax ~ 1 hour
- Median time to meaningful pain relief – 54 minutes; 22% required rescue opioid

Dsuvia.com

SUFENTANIL (DSUVIA) – WOW! HOT POTATO!

Least squares mean of pain intensity difference was 3 for Dsuvia, 2 for Placebo

Dleast squares mean of pain intensity difference was 3 for Dsuvia, 2 for Placebo

Dsuvia.com

NEW DRUGS AND DRUG NEWS OF 2018
SO WHAT’S THE SIT WITH SUFENTANIL?

• 10 times more potent than fentanyl
• 500-1,000 more potent than morphine
• MAJOR concerns about Dsuvia contributing to the opioid epidemic through abuse and diversion
  • “1,000 more potent than morphine = 1,000 times more likely to be abused and 1,000 times more likely to kill.”
• Community pharmacies will not stock this opioid
• Useful in patients where you cannot establish IV access

NEW DOSAGE FORM: SYMPAZAN (CLOBAZAM)

• Thin and berry-flavored, SYMPAZAN is taken without water, adheres to the tongue, and dissolves to deliver clobazam. 5, 10, 20 mg films.
• Indication – benzodiazepine indicated to treat seizures associated with Lennox-Gastaut Syndrome in patients ≥ 2 years old. Administered twice daily.

New Dosage Form – Cassipa

• New/higher dosage strength (16 milligrams/4 milligrams) of buprenorphine and naloxone sublingual film

NEW DOSAGE FORM - APADAZ

• Benzhydrocodone/acetaminophen - 6.12 mg/325 mg
• CII indicated for acute severe pain (not to > 14 days)
• Initial dose, 1-2 tablets q4 or q6h prn, not to exceed 12 tablets/24 hours.
• Two week supply = $245; two week supply Vicodin = $35

New Dosage Form – Tiglutik

• Riluzole oral suspension (5 mg/ml)
• Dose – 50 mg twice daily, every 12 hours
• Take at least 1 hour before or two hours after a meal

NEW DOSAGE FORM – KAPSPARGO SPRINKLE

• Metoprolol extended-release capsule
• 25, 50, 100, 200 mg
• Swallow whole. If difficulty swallowing cap, may open and sprinkle contents over a teaspoonful of soft food (e.g., applesauce, yogurt, pudding) and consume mixture within 60mins; or, can give via NG tube (mix contents with 15mL of water first).
• Initially 100 mg once daily.
• May increase at 1-week intervals; max 400mg/day. Reduce dose gradually over 1–2 weeks.

New Dosage Form – Journay PM

• Delayed- and extended-release methylphenidate indicated for ADHD in patients 6 years and older
• Available as 20, 40, 60, 80, 100 mg once daily in the evening
NEW DOSAGE FORM — PERSERIS

- Risperidone, an atypical antipsychotic indicated for the treatment of schizophrenia in adults.
- Now available as an extended-release injectable suspension, 90 mg and 120 mg.
- Dose — establish oral risperidone dose
- Initiate Perseris at 90 or 120 mg, once a month
- Administer in abdomen by healthcare professional.

OBSTETRICS/GYNECOLOGY

<table>
<thead>
<tr>
<th>Generic</th>
<th>Trade</th>
<th>Indication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Segesterone acetate and ethinylestradiol vaginal system</td>
<td>Annovera</td>
<td>For the prevention of pregnancy</td>
</tr>
<tr>
<td>Estradiol and progesterone</td>
<td>Bijuva</td>
<td>For the treatment of moderate to severe vasomotor symptoms due to menopause</td>
</tr>
<tr>
<td>Estradiol vaginal inserts</td>
<td>Imvovero</td>
<td>For the treatment of moderate to severe dyspareunia, a symptom of vulvar and vaginal atrophy due to menopause</td>
</tr>
<tr>
<td>Elagolix</td>
<td>Orilissa</td>
<td>For the management of moderate to severe pain associated with endometriosis</td>
</tr>
</tbody>
</table>

ELAGOLIX SODIUM (ORILISSA)

- A nonpeptide small molecule GnRH receptor antagonist
- Indication – Management of moderate to severe pain associated with endometriosis
- MOA – Inhibits endogenous GnRH signaling by binding, competitively to GnRH receptors in the pituitary gland. Suppresses luteinizing hormone and follicle-stimulating hormone, leading to decreased blood concentrations of the ovarian sex hormones, estradiol and progesterone.
- Response rate 46-76% vs. placebo (20%) (dysmenorrhea and pain)

ELAGOLIX SODIUM (ORILISSA)

- Reduction in estrogen is associated with a dose- and duration-dependent decrease in bone mineral density.
- Contraindicated in osteoporosis, pregnant women
- AE – hot flushes or night sweats (24%), headache (17%), nausea (11%), mood swings (6%), amenorrhea (4%), depression (3%) – all more likely at higher dose
- Dose – 150 mg once a day (up to 24 months)
- Dyspareunia – up to 200 mg twice a day, up to 6 months
- Involved in many drug interactions

ONCOLOGY

<table>
<thead>
<tr>
<th>Generic</th>
<th>Trade</th>
<th>Indication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calaspargase pegol</td>
<td>Asparlas</td>
<td>For the treatment of acute lymphoblastic leukemia in adults and young adults</td>
</tr>
<tr>
<td>Encorafenib</td>
<td>Braftovi</td>
<td>For the treatment of unresectable or metastatic melanoma with a BRAFV600E or BRAFV600K mutation</td>
</tr>
<tr>
<td>Binimetinib</td>
<td>Mektovi</td>
<td>For the treatment of chronic lymphocytic leukemia, small lymphocytic lymphoma or follicular lymphoma</td>
</tr>
<tr>
<td>Duvetib</td>
<td>Copiktra</td>
<td>For the treatment of chronic lymphocytic leukemia, small lymphocytic lymphoma or follicular lymphoma</td>
</tr>
<tr>
<td>Glatiramer</td>
<td>Daizumo</td>
<td>For the treatment of newly diagnosed acute myeloid leukemia in adults 75 years of age or older</td>
</tr>
<tr>
<td>Tagraxofusp</td>
<td>Elzonris</td>
<td>For the treatment of blastic plasmacytoid dendritic cell neoplasm in adults and pediatrics</td>
</tr>
<tr>
<td>Apalutamide</td>
<td>Erleada</td>
<td>For the treatment of prostate cancer</td>
</tr>
</tbody>
</table>

ONCOLOGY

<table>
<thead>
<tr>
<th>Generic</th>
<th>Trade</th>
<th>Indication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complinab</td>
<td>Libbyo</td>
<td>For the treatment of cutaneous squamous cell carcinoma</td>
</tr>
<tr>
<td>Lutetamib</td>
<td>Lorbrena</td>
<td>For the treatment of ALK-positive metastatic non-small cell lung cancer</td>
</tr>
<tr>
<td>Misapenomab pegol</td>
<td>Lumoxiti</td>
<td>For the treatment of relapsed or refractory hairy cell leukemia</td>
</tr>
<tr>
<td>Lutetium Lu 177 dotatate</td>
<td>Lutathera</td>
<td>For the treatment of gastroenteropancreatic neuroendocrine tumors</td>
</tr>
<tr>
<td>Mogamulizumab</td>
<td>Poteligeo</td>
<td>For the treatment of mycosis fungoides or Sezary syndrome</td>
</tr>
<tr>
<td>Talazoparib</td>
<td>Talzenna</td>
<td>For the treatment of deleterious germline BRCA-mutated HER2-negative locally advanced or metastatic breast cancer</td>
</tr>
<tr>
<td>Ivosidenib</td>
<td>Tibsovo</td>
<td>For the treatment of acute myeloid leukemia with a susceptible IDH1 mutation</td>
</tr>
</tbody>
</table>

About $900/month for low dose

New Drugs and Drug News of 2018
**ONCOLOGY**

<table>
<thead>
<tr>
<th>Generic</th>
<th>Trade</th>
<th>Indication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Larotrectinib</td>
<td>Vitrakvi</td>
<td>For the treatment of solid tumors that have a neurotrophic receptor tyrosine kinase (NTRK) gene fusion</td>
</tr>
<tr>
<td>Dacomitinib</td>
<td>Vizimpro</td>
<td>For the treatment of metastatic non-small cell lung cancer</td>
</tr>
<tr>
<td>Gilteritinib</td>
<td>Xospata</td>
<td>For the treatment of acute myeloid leukemia with a FLT3 mutation</td>
</tr>
</tbody>
</table>

**APALUTAMIDE (ERLEADA)**

- **Indication** – An androgen receptor inhibitor, indicated for the treatment of patients with non-metastatic castration-resistant prostate cancer.
- **Dose** – 240 mg (four 60 mg tablets) orally once daily; swallow whole. Can take with or without food.
- **Warnings** – falls (16%), fractures (12%), seizures (0.2%)
- **AE > 10%** - fatigue, hypertension, rash, diarrhea, nausea, weight decreased, arthralgia, falls, hot flush, decreased appetite, fracture, peripheral edema.

<table>
<thead>
<tr>
<th>Metastasis-free survival</th>
<th>Erleada</th>
<th>Placebo</th>
</tr>
</thead>
<tbody>
<tr>
<td>40.51 months</td>
<td>16.20 months</td>
<td></td>
</tr>
<tr>
<td>Time to metastasis</td>
<td>40.51 months</td>
<td>16.59 months</td>
</tr>
<tr>
<td>Progression-Free survival</td>
<td>40.51 months</td>
<td>14.72 months</td>
</tr>
</tbody>
</table>

$12,000/month

**OSIMERTINIB (TAGRISSO)**

- **Indication** – A kinase inhibitor indicated for:
  - The first-line treatment of patients with metastatic NSCLC whose tumors have epidermal growth factor receptor (EGFR) exon 19 deletions or exon 21 L858R mutations, as detected by an FDA-approved test.
  - The treatment of patients with metastatic EGFR T790M mutation-positive NSCLC, as detected by an FDA-approved test, whose disease has progressed on or after EGFR TKI therapy.
  - NOT chemotherapy or immune therapy.
  - **Dose** – 80 mg by mouth once daily, with or without food.

**Warnings**

- Interstitial lung disease
- QTc interval prolongation
- Cardiomyopathy
- Keratitis
- Embryo-fetal toxicity

**Adverse Effects ≥ 20%**

- Diarrhea
- Rash
- Dry skin
- Nail toxicity
- Stomatitis
- Fatigue
- Decreased appetite

$15,000/month

**OPHTHALMOLOGY**

**PHARMACOLOGY**

<table>
<thead>
<tr>
<th>Generic</th>
<th>Trade</th>
<th>Indication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cenegermin</td>
<td>Oxervate</td>
<td>For the treatment of neurotrophic keratitis</td>
</tr>
<tr>
<td>Nanavut dimersylate</td>
<td>Rhopressa</td>
<td>Reduction of elevated IOP in patients with open-angle glaucoma or ocular hypertension</td>
</tr>
<tr>
<td>Voretigene neparvovec</td>
<td>Luxturna</td>
<td>First gene therapy to target inherited retinal dystrophy</td>
</tr>
<tr>
<td>Lofexidine</td>
<td>Lucemyra</td>
<td>For the mitigation of opioid withdrawal symptoms to facilitate abrupt opioid discontinuation in adults</td>
</tr>
</tbody>
</table>

**NETARSUDIL DIMESYLATE (RHOPRESSA)**

- **Ophthalmic solution indicated for the reduction of intraocular pressure in patients with open-angle glaucoma or ocular hypertension**
- **Unique MOA** – Rho kinase inhibitor – reduces IOP by increasing the outflow of aqueous humor through the trabecular meshwork.
- **Dose** – 0.02% per day in the evening (5 minutes apart from other ophthalmic medications).
- **Efficacy** ≤ ophthalmic timolol (equal up to baseline IOP of 25 mmHg).
- **AE** – conjunctival hyperemia (53%), corneal verticillate (opacities), instillation-site pain, conjunctival hemorrhage (20% for each).

About $260/month
NEW DOSAGE FORM — XELPROS

- Latanoprost, prostaglandin F2α analogue indicated for reduction of elevated intraocular pressure in patients with open-angle glaucoma, or ocular hypertension.
- Now available as an ophthalmic suspension
- Dose is one drop in the affected eye(s) once daily in the evening
- AE ≥ 5% - eye pain/stinging, ocular hyperemia, conjunctival hyperemia, eye discharge, growth of eyelashes, eyelash thickening.

<table>
<thead>
<tr>
<th>Generic latanoprost/month</th>
<th>Xelpros/month</th>
</tr>
</thead>
<tbody>
<tr>
<td>$13.00</td>
<td>$60.00</td>
</tr>
</tbody>
</table>

It’s a SPEED-DATING tip!

- Researchers in Canada evaluated 214 patients with primary open-angle glaucoma who received a prostaglandin analog (e.g., latanoprost [Xalatan]) for at least six months.
- Half the group was randomized to discontinue the prostaglandin analog, and intraocular pressure was compared with the control group at 1, 3 and 6 weeks later.
- In the group who discontinued therapy, their intraocular pressure increased somewhat, but was significantly lower than their baseline pressure.
- AE — insomnia (50% vs. 48% with placebo), hypotension (30%), orthostatic hypotension (29%), bradycardia (24%), dizziness (19%), sedation (13%), somnolence (11%), dry mouth (10%). Caution with cardiac patients.
- Dose — 0.54 mg four times daily during peak withdrawal symptoms (first 5-7 days after last use of opioid); tx may continue up to 14 days (taper down)

LOFEXIDINE (LUCEMYRA)

- A central alpha-2 adrenergic agonist with properties similar to those of clonidine
- First nonopioid agent approved for mitigation of opioid withdrawal symptoms to facilitate abrupt opioid discontinuation in adults
- MOA — binds to receptors on adrenergic neurons, reducing the release of NE and decreasing sympathetic tone
- Reduces, may not completely prevent, withdrawal symptoms
- Recommended treatment duration is up to 14 days

LOFEXIDINE (LUCEMYRA)

- Efficacy — two trials. Outcomes included:
  - SOWS-Gossop (Short Opiate Withdrawal Scale of Gossop)
  - Mean SOWS-Gossop was lower with lofexidine vs. placebo
  - Proportion of patients who completed treatment period
    - 41% with lofexidine vs. 28% placebo patients finished 7 day treatment
    - 49% with lofexidine vs. 33% placebo patients within 5 day treatment
  - AE — insomnia (50% vs. 48% with placebo), hypotension (30%), orthostatic hypotension (29%), bradycardia (24%), dizziness (19%), sedation (13%), somnolence (11%), dry mouth (10%). Caution with cardiac patients.

Rheumatology

- Baricitinib Olumiant For the treatment of moderate to severe rheumatoid arthritis with inadequate response to TNF antagonist therapies

Urology

- Desmopressin acetate Nocdurna For the treatment of nocturia due to nocturnal polyuria

PULMONARY/RESPIRATORY DISEASES

- Tezacaftor/ivacaftor Symdeko For the treatment of cystic fibrosis
- Revefenacin Yupelri For the maintenance treatment of chronic obstructive pulmonary disease

REVEFENACIN (YUPELRI)

- Indication — An anticholinergic indicated for the maintenance treatment of patients with COPD.
- Dosage — 175 mcg vial (3 ml) once daily by nebulizer
- Warnings
  - Do not use in acutely deteriorating COPD or to treat acute symptoms
  - If paradoxical bronchospasm occurs, DC medication
  - Worsening of urinary retention may occur
  - AE — cough, nasopharyngitis, URI, headache, back pain

96 of the 0.18 mg tablets (8 days treatment) ~ $2,000.00 ($3,500 for 14 days)
THOSE DARNED INHALERS…

<table>
<thead>
<tr>
<th>Drug</th>
<th>Formulation</th>
<th>Delivery Device</th>
<th>Usual Adult Dosage</th>
<th>Cost/Month</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aclidinium (Tudorza Pressair)</td>
<td>400 mcg/inh DPI</td>
<td>1 inh bid</td>
<td></td>
<td>$351.80</td>
</tr>
<tr>
<td>Glycopyrrolate (Seebri Neohaler)</td>
<td>15.6 mcg/cap DPI</td>
<td>1 inh bid</td>
<td></td>
<td>$394.20</td>
</tr>
<tr>
<td>Glycopyrrolate (Lonhala Magnair)</td>
<td>25 mcg/ml soln Nebulizer</td>
<td>1 inh once/day</td>
<td></td>
<td>$1,132.80</td>
</tr>
<tr>
<td>Revenfanin (Yupelri)</td>
<td>175 mcg/3 ml soln Nebulizer</td>
<td>175 mcg once/day</td>
<td></td>
<td>$1,030.00</td>
</tr>
<tr>
<td>Tiotropium (Spiriva Handihaler)</td>
<td>18 mcg/cap DPI</td>
<td>18 mcg once/day</td>
<td></td>
<td>$429.50</td>
</tr>
<tr>
<td>Tiotropium (Spiriva Respimat)</td>
<td>2.5 mcg/inh SMI</td>
<td>2 inh once/day</td>
<td></td>
<td>$429.50</td>
</tr>
<tr>
<td>Umeclidium (Incruse Ellipta)</td>
<td>62.5 mcg/inh DPI</td>
<td>1 inh once/day</td>
<td></td>
<td>$333.80</td>
</tr>
<tr>
<td>Ipratropium/albuterol 0.5 mg/3 mg /vial Nebulizer</td>
<td>1 inh q4h while awake</td>
<td></td>
<td>$75</td>
<td></td>
</tr>
</tbody>
</table>

NEW DOSAGE FORM — PRIMATENE MIST

- Heaven help us — it’s BAAAACCCKKK
- Epinephrine inhaler – Primatene Mist
- Back on the OTC market
- Originally used chlorofluorocarbons (CFCs) to propel the medication into the lungs. Reformulated with hydrofluoroalkane (HFA) propellants.
- This metered-dose inhaler is approved only for those who have been diagnosed with asthma by a healthcare provider.

PRESENTED BY:
The Medical Letter, Volume 61, No 1564, January 28, 2019

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PRESCRIPTION OPIOID COUGH/COLD MEDICATIONS

- FDA requiring safety labeling changes for products containing codeine or hydrocodone to limit the use of these products to adults 18 years or older due to risks in children.
- Risks of slowed or difficult breathing, misuse, abuse, addiction, overdose and death outweigh their benefit in patients younger than 18.

BARICITINIB (OLUMIANT)

- Second JAK inhibitor to be approved for tx of rheumatoid arthritis (joining tofacitinib [Xeljanz])
- Treatment of adult patients with moderately to severely active RA with inadequate response to one or more TNF antagonist therapies
- Palliative (NSAIDs, steroids)
- Disease-modifying anti-rheumatic drugs (DMARDs)
  - Conventional – methotrexate
  - Biologic – TNF inhibitors (adalimumab [Humira], certolizumab [Cimzia], etanercept [Enbrel], golimumab [Simponi], infliximab [Remicade])
- Janus kinase (JAK) enzymes are intracellular enzymes that transmit signals arising from cytokine or growth factor-receptors interactions on the cellular membrane to influence cellular processes of hematopoiesis and immune cell function. Baricitinib is a JAK inhibitor.

- In clinical trial, patients who failed methotrexate received baricitinib:
  - 60% of baricitinib patients achieved an ACR20 response at week 12, compared with 39% of placebo patients
- In clinical trial, patients who failed or didn’t tolerate a TNF inhibitor received baricitinib:
  - 49% achieved an ACR20 response at week 12, vs. 27% placebo patients
- Precautions/Contraindications
  - Do not use in combination with biologic DMARDs or strong immunosuppressants
  - Do not initiate therapy in patients with absolute lymphocyte count < 500 cell/mm3, ANC < 1,000 cell/mm3 or hemoglobin < 9 g/dl
  - Use not recommended with GFR < 60 ml/min or severe hepatic impairment
  - Caution in patients at increased risk for GI perforations; hematologic toxicity possible; lymphoma possible
  - May increase liver enzymes; increased risk for infections; dose dependent increase in lipids
  - Thrombosis (including DVT, PE, arterial thrombosis) have been observed
  - Do not administer live vaccines
- Dose – 2 mg by mouth once daily

Health Care Provider Clinical Practice Guidelines - 2018 Year in Review

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- Idiopathic pulmonary fibrosis
- Antimicrobial prophylaxis for cancer pts
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- Biologic DMARD safety guidelines
- Alzheimer’s disease clinical practice GL
- Alcohol-related liver disease clinical GL
- Neurpithelial pain pharma clinical practice GL
- Deprescribing BZD for insomnia GL
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- Crohn disease clinical practice guidelines
- Dianthe clinical practice guidelines
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- Hepatitis E clinical practice guidelines

New Drugs and Drug News of 2018

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IʼM EXHAUSTED . . . WHATʼS IN STORE FOR 2019??

- 5 potential BIG HITS in 2019
- Gene therapy for Duchenne muscular dystrophy (mutation on exon 53) – golodirsen – probably will be close to $300,000 per year
- An oral insulin adjunct for type 1 diabetes – sotagliflozin
- Injectable for psoriasis – risankizumab for plaque psoriasis, an autoimmune disease
- A longer-duration drug for a rare blood disorder – paroxysmal nocturnal hemoglobinuria (PNH) – Ultomiris – every 8 weeks (instead of every 2 weeks) - $458,000/year!

NEW DRUGS AND DRUG NEWS!

THE 411 AND IMPLICATIONS FOR PALLIATIVE CARE

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New Drugs and Drug News of 2018