NEW DRUGS AND DRUG NEWS

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Disclosures and Conflicts of Interest

NONE
Objectives

- List new medications approved or introduced to the market in 2016-2017.
- For each new medication, identify pertinent information regarding each drug, including indication(s), usual dosing, contraindications, major warnings/precautions, and major drug interactions.
- For each new medication, determine the drug’s place in therapy, based on known efficacy, safety, cost, and convenience factors.
- List drug statements and drug safety communications issued by the FDA in 2016-2017 that are relevant for pharmacy practice and describe implications for the pharmacist.
So, taking the first three letters of everybody's dog's name...

Vin All Pha Lex

Vinny ⇒ Vin
Allagash ⇒ All
Pharaoh ⇒ Pha
Lexy ⇒ Lex

How new medications are named.
What’s New in CNS Drugs?
Pimavanserin tartrate (Nuplazid)

- **Indication:** Treatment of hallucinations and delusions associated with Parkinson’s disease psychosis.

- **Advantages**
  - First drug with demonstrated efficacy in treatment of hallucinations and delusions associated with Parkinson’s disease psychosis
  - Unique mechanism of action
    - Inverse agonist and antagonist activity at serotonin 5-HT2A receptors
    - Does not act at DA receptors; unlikely to cause EPS
    - Less likely to cause serious adverse effects (TD, NMS)

- **Disadvantages:**
  - More likely to cause QTc prolongation/arrhythmia

Pimavanserin tartrate (Nuplazid)

- **Risks/Drug Interactions:**
  - Increased risk of death in elderly patients with dementia-related psychosis
  - QT prolongation or risk factors
  - Class 3 antiarrhythmics, antipsychotic medications
  - Antibacterials (moxifloxacin), 3A4 inhibitors and inducers

- **Adverse Effects:**
  - Nausea (7%), peripheral edema (7%), confusional state (6%)

- **Usual Dose:**
  - 34 mg (2 x 17 mg tabs) once a day
  - 17 mg a day with strong CYP3A4 inhibitor

Clinical Data:

- Approval based on a 6-week, randomized, double-blind, placebo-controlled trial in 199 patients with PD psychosis.

- Outcome: change in score on the Parkinson’s disease-adapted scale for assessment of positive symptoms:
  - -5.79 with pimavanserin
  - -2.73 with placebo

- No effect on motor function.
Pimavanserin tartrate (Nuplazid)

- **Conclusion:**
  - Consider concurrent use of other QTc prolonging drugs
  - Strong evidence of pimavanserin effectiveness; long-term benefit/risks?
  - Expected to “dramatically change the landscape” of PDP.

About $2,000/month

“It’s an experimental drug. We’re still testing to see how much customers will pay for it.”
Brivaracetam (Briviact)

- **Indication:**
  - Administered orally or IV as adjunctive therapy in the treatment of partial-onset seizures in patients ≥ 16 years of age (reduced seizure frequency 9-25%)

- **Comparable drugs:**
  - Levetiracetam (Keppra) (brivaracetam has a 10-30 higher affinity for binding site)

- **Advantages:**
  - Reduced seizure frequency in some patients who lack control previously

- **Disadvantages:**
  - Not compared directly to other antiepileptics; limited indications
  - Not evaluated < 16 years old
  - Twice daily dosing; Schedule V (levetiracetam not controlled)
Brivaracetam (Briviact)

- **Comments:**
  - Hypersensitivity reactions may occur, suicidal behavior and ideation
  - Psychiatric adverse events, neurological adverse events
  - Schedule V
  - Metabolized by CYP2C9

- **Adverse events:**
  - Somnolence/sedation (16%), dizziness (12%), fatigue (9%), nausea/vomiting (5%)

- **Dosage:**
  - Start at 50 mg twice a day; may be adjusted to 25-100 mg twice daily
  - Double dose if rifampin concurrent
  - May be given IV over 2-15 minutes at same dose and frequency

Brivaracetam (Briviact)

- **Products:**
  - Tablets – 10, 25, 50, 75, 100 mg
  - Oral solution 50 mg/5 ml
  - IV 50 mg/5 ml

- **Effectiveness:**
  - Brivaracetam is an analogue of levetiracetam
  - Effect due to affinity for synaptic vesicle protein 2A in the brain
  - Provides no additional benefit over levetiracetam
  - Not directly compared against levetiracetam

<table>
<thead>
<tr>
<th>Drug</th>
<th>Usual Adult Dose</th>
<th>Cost/month</th>
</tr>
</thead>
<tbody>
<tr>
<td>Levetiracetam generic</td>
<td>1000-3000 mg/day PO or IV in 2 divided doses</td>
<td>33.10</td>
</tr>
<tr>
<td>Levetiracetam (Keppra)</td>
<td></td>
<td>$436.40</td>
</tr>
<tr>
<td>Levetiracetam (Spritam)</td>
<td></td>
<td>$433.40</td>
</tr>
<tr>
<td>Brivaracetam (Briviact)</td>
<td>50-200 mg/day PO or IV in 2 divided doses</td>
<td>$910.00</td>
</tr>
</tbody>
</table>

Ingrezza (valbenazine)

- **Indication:** Treatment of tardive dyskinesia (TD) in adults
  - selective vesicular monoamine transporter 2 (VMAT2) inhibitor

- **Advantages:** First treatment for tardive dyskinesia

- **Disadvantages:** Prolongs QT interval

- **Clinical Data:**
  - Double-blind, placebo controlled RCT in 234 patients with moderate-severe TD and underlying schizophrenia
  - After 6 weeks, patients taking Ingrezza showed improvement in the severity of abnormal involuntary movements vs. patients who received placebo
  - Sustained reductions in TD were seen through 48 weeks of treatment
Ingrezza (valbenazine)

- **Risks/Drug Interactions:**
  - Increased risk for QT-interval prolongation with strong CYP2D6 or 3A4 inhibitors

- **Adverse Effects:**
  - Somnolence (11%)

- **Usual Dose:**
  - Initial, 40 mg once daily $\rightarrow$ increase to 80 mg daily after 1 week
  - $5,275 for 1 month
## Honorable Mentions: CNS

<table>
<thead>
<tr>
<th>Trade (Generic)</th>
<th>Indication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exondys 51 (eteplirsen)</td>
<td>An antisense oligonucleotide for Duchenne muscular dystrophy</td>
</tr>
<tr>
<td>Zinbryta (daclizumab)</td>
<td>Treatment of relapsing forms of multiple sclerosis</td>
</tr>
<tr>
<td>Radicava (edaravone)</td>
<td>Treatment of amyotrophic lateral sclerosis (ALS)</td>
</tr>
<tr>
<td>Austedo (deutetrabenazine)</td>
<td>Treatment of chorea associated with Huntington’s disease</td>
</tr>
<tr>
<td></td>
<td>Also undergoing FDA review for the treatment of tardive dyskinesia</td>
</tr>
<tr>
<td>Ocrevus (ocrelizumab)</td>
<td>Treatment of multiple sclerosis</td>
</tr>
<tr>
<td>Xadago (safinamide)</td>
<td>Treatment of Parkinson’s disease</td>
</tr>
</tbody>
</table>
What’s new in pain management?
Two New Long-Acting Opioids Approved

- **Vantrela ER – hydrocodone bitartrate**
  - Abuse deterrent formulation expected to reduce but not totally prevent oral, intranasal and intravenous abuse of the drug when tablets are manipulated
  - 15, 30, 45, 60, 90 mg strength; CII
  - Start opioid-naïve patients at 15 mg po q12h

- **Arymo ER – morphine sulfate**
  - Abuse deterrent formulation using a physical and chemical barrier approach; uses a polymer matrix that “results in tablets that are hard and difficult to manipulate for misuse and abuse...demonstrated to resist both common and rigorous methods of manipulation”
  - 15, 30, 60 mg
  - Start opioid-naïve patients at 15 mg po q8h or q12h
# LA Abuse Deterrent Opioid Formulations

<table>
<thead>
<tr>
<th>Drug</th>
<th>Abuse-Deterrent Mechanism</th>
<th>Cost for 30 days at opioid-naïve starting dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrocodone ER</td>
<td>Resists crushing and breaking; tablets form a viscous gel when dissolved</td>
<td>$215.80</td>
</tr>
<tr>
<td>Hysingla ER</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zohydro ER</td>
<td>Contains excipients that form a viscous gel when capsules are crushed or dissolved</td>
<td>$404.90</td>
</tr>
<tr>
<td>Morphine ER/naltrexone</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Embeda</td>
<td>Contains sequestered opioid antagonist, which is released if capsules are crushed or dissolved</td>
<td>$178.50</td>
</tr>
<tr>
<td>Oxycodone ER</td>
<td>Resists crushing and breaking; tablets form a viscous gel when dissolved</td>
<td>$188.80</td>
</tr>
<tr>
<td>OxyContin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Xtampza ER</td>
<td>Microspheres resist effects of crushing and chewing; melted or dissolved contents of capsules are difficult to inject</td>
<td>$430-730</td>
</tr>
</tbody>
</table>

Medical Letter 2016;58(1497):77-78.
Troxyca ER (oxycodone + naltrexone)

- Extended release capsule formulation of oxycodone plus naltrexone
- For pain severe enough to require daily, ATC, long-term opioid tx
- Opioid-naïve dose: 10 mg/1.2 mg capsule by mouth q12h
- Manufacturer conversion – ½ TDD oral oxycodone as Troxyca ER q12h
- AE – nausea, constipation, vomiting, headache, somnolence
- Cost - ?
Drug Safety Communication: Codeine and Tramadol

- FDA added a contraindication to single-ingredient codeine and tramadol
  - Do not use to treat pain in children < 12 years old
  - Do not use tramadol in children < 18 years old after tonsil/adenoid surgery
- New warning recommending against use

https://www.fda.gov/Drugs/DrugSafety/ucm549679.htm
Drug Safety Communication: Opioids and Benzodiazepines

- Boxed warnings added to prescription opioids (analgesics and cough medicines) and benzodiazepines warning of profound sedation, respiratory depression, coma, death
  - Should only be prescribed together if alternative treatment options are inadequate
  - Educate patients and caregivers about potential adverse effects
    - Unusual dizziness, sleepiness, slowed or difficult breathing, unresponsiveness – GET MEDICAL ATTENTION IMMEDIATELY
Tell me more: other news in CNS drugs

- Positive results announce for first-in-class opioid analgesic for treatment of moderate to severe chronic back pain
  - NKTR-181 is a long-acting, selective mu-opioid agonist
  - Low permeability across blood brain barrier

- Open-label titration period followed by double-blind, placebo-controlled RCT withdrawal trial
  - Improved pain compared to placebo during titration phase
  - Increased pain during withdrawal trial for placebo vs NKTR-181
  - Nausea and constipation most common adverse effects
  - No differences in daytime sleepiness

“It’s a mood elevator. Each capsule contains 10mg of ‘zippity’ and 5mg of ‘do-da’.”
A Tough Pill to Swallow: What’s New in GI Drugs
Symproic (naldemedine)

- **Indication:** Opioid-induced constipation in adults with chronic, non-cancer pain
  - Peripherally-acting mu-opioid receptor antagonist (PAMORA)
  - CII controlled substance
- **Advantages:** oral formulation, once-daily dosing
- **Disadvantages:** reports of opioid withdrawal after drug administration
Symproic (naldemedine)

- **Risks/Drug Interactions:**
  - Contraindicated in known/suspected GI obstruction
  - Avoid use with strong CYP3A inducers
  - Don’t use with other opioid antagonists

- **Adverse Effects:** abdominal pain, nausea, vomiting

- **Usual Dose:** 0.2 mg by mouth daily
  - Oral tablet, once daily dosing

Trulance (plecanatide)

- **Indication:** Chronic idiopathic constipation
  - Guanylate cyclase-C receptor agonist

- **Similar Drugs:** Linaclotide (Linzess)

<table>
<thead>
<tr>
<th>Drug</th>
<th>Dosing</th>
<th>Response rate</th>
<th>Adverse effects</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plecanatide</td>
<td>Once daily</td>
<td>Plecanatide: 21%</td>
<td>Diarrhea (5%)</td>
<td>$353.50</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Placebo: 10%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Linaclotide</td>
<td></td>
<td>Linaclotide: 16-21%</td>
<td>Diarrhea (16%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Placebo: 3-6%</td>
<td>Abdominal pain</td>
<td></td>
</tr>
</tbody>
</table>

Trulance (plecanatide)

- **Risks/Drug Interactions:**
  - Contraindicated in known/suspected GI obstruction
  - Not for use in patients < 18 years old

- **Adverse Effects:** Diarrhea
  - Led to discontinuation in 2% patients

- **Usual Dose:**
  - 3 mg once daily
Tell me more: GI Drugs News

- Proton pump inhibitors (PPIs) may increase risk of ischemic stroke
- PPIs may increase risk for kidney function decline
- Acid suppressants may increase risk of recurrent Clostridium difficile infection (CDI)

Bugs and Drugs: New Anti-Infectives
Epclusa (sofosbuvir and velpatasvir)

- **Indication:** Chronic hepatitis C (HCV) with or without cirrhosis

- **Advantages:**
  - Can be used in ANY hepatitis C genotype
  - One-tab, once daily dosing, 12 week regimen
  - As effective as other regimens

- **Disadvantages:**
  - Expensive (as are other hepatitis C regimens)
    - $75,000 per course

- **Usual Dose:**
  - Sofosbuvir 400 mg/velpatasvir 100 mg orally once daily for 12 weeks
  - Add ribavirin in decompensated cirrhosis
Epclusa (sofosbuvir and velpatasvir)

- **Risks/Drug Interactions:**
  - Concurrent use of amiodarone not recommended; symptomatic bradycardia reported
  - P-glycoprotein inhibitors, moderate-strong CYP2B6, 2C8, 3A4 inhibitors may reduce therapeutic effect
  - Acid reducers may decrease absorption
    - Avoid PPIs, take H2 blockers at the same time or 12 hours apart, separate antacids by 4 hours

- **Adverse Effects:**
  - Headache (11-22%), fatigue (15-32%), nausea (9-15%)
Drug Safety Communication: HBV Reactivation

- New boxed warning: Hepatitis B (HBV) reactivation reported in co-infected patients undergoing HCV antiviral treatment
- Health care professionals should screen and monitor for HBV in all patients receiving direct-acting antiviral treatment.
### Honorable Mentions: Infectious Disease

<table>
<thead>
<tr>
<th>Trade (Generic)</th>
<th>Indication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zepatier (elbasvir and grazoprevir)</td>
<td>Chronic HCV genotypes 1 or 4 infection with or without ribavirin</td>
</tr>
<tr>
<td>Vaxchora</td>
<td>Immunization against disease caused by <em>Vibrio cholera</em>, in adults 18-64 of age traveling to cholera-affected areas</td>
</tr>
<tr>
<td>Zinplava (bezlotoxumab)</td>
<td>Monoclonal antibody intended to reduce recurrence of <em>Clostridium difficile</em> infection in patients receiving concurrent antibacterial therapy</td>
</tr>
</tbody>
</table>
Drug Safety Communication: Fluoroquinolones

- Revised boxed warning – risk of disabling and potentially permanent side effects of tendons, muscles, joints, nerves, CNS.

- Reserve use for patients with no acceptable alternative when treating:
  - Acute bacterial sinusitis
  - Acute bacterial exacerbation of chronic bronchitis
  - Uncomplicated urinary tract infections
Pharmaceutical Research and Development Dept.

"We've run out of things to name our drugs. It's time to invent some new alphabet letters."
New Drugs in Cancer Treatment
Syndros (dronabinol oral solution)

- Indication – anorexia associated with AIDS and CINV
- Pharmaceutical version of tetrahydrocannabinol
- Starting dose:
  - Anorexia - 2.1 mg orally twice daily, one hour before lunch and one hour before dinner; start once a day in elderly. Increase to 4.2 mg twice daily as needed
  - CINV – 4.2 mg/m² orally 1-3 hours before chemotherapy, then every 2-4 hours after chemotherapy for a total of 4-6 doses
- Quicker onset than Marinol
- Cost? (one month Marinol $300; Syndros will be higher)
### Miscellaneous New Drugs - Cancer

<table>
<thead>
<tr>
<th>Trade (Generic)</th>
<th>Indication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defitelio (defibrotide)</td>
<td>Veno-occlusive disease of the liver, Renal or pulmonary dysfunction following hematopoietic stem cell transplantation</td>
</tr>
<tr>
<td>Venclexta (Venetoclax)</td>
<td>Chronic lymphoid leukemia, In patients with 17p chromosome deletion, who have received at least 1 prior therapy</td>
</tr>
<tr>
<td>Tecentriq (Atezolizumab)</td>
<td>Metastatic urothelial carcinoma, Or locally advanced, in patients not eligible for cisplatin-containing chemotherapy, or with progression during or after platinum-containing chemotherapy or within 12 months of neoadjuvant or adjuvant chemotherapy</td>
</tr>
<tr>
<td>Lartruvo (Olaratumab)</td>
<td>Soft tissue sarcoma, Histologic subtype appropriate for an anthracycline-containing regimen which is not amenable to curative treatment with radiotherapy or surgery, in combination with doxorubicin</td>
</tr>
<tr>
<td>Rubraca (Rucaparib)</td>
<td>Ovarian cancer, Monotherapy in advanced disease with deleterious BRCA mutations (germline and/or somatic), with 2 or more previous chemotherapies</td>
</tr>
</tbody>
</table>
## Miscellaneous New Drugs - Cancer

<table>
<thead>
<tr>
<th>Trade (Generic)</th>
<th>Indication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rydapt (Midostaurin)</td>
<td>Acute myeloid leukemia, Newly diagnosed, FLT3 mutation-positive, in combination with standard cytarabine and DAUNOrubicin induction and cytarabine consolidation chemotherapy</td>
</tr>
<tr>
<td>Alunbrig (Brigatinib)</td>
<td>Anaplastic lymphoma kinase positive non-small cell lung cancer, Metastatic, in patients who have progressed on or are intolerant of crizotinib</td>
</tr>
<tr>
<td>Zejula (Niraparib)</td>
<td>Ovarian cancer, Fallopian tube, or primary peritoneal cancer, maintenance therapy for recurrent and platinum-sensitive disease</td>
</tr>
<tr>
<td>Bavencio (Avelumab)</td>
<td>Merkel cell carcinoma, metastatic</td>
</tr>
<tr>
<td>Kisqali (Ribociclib)</td>
<td>Breast cancer, Metastatic or advanced, HER-2 negative, hormone receptor-positive, postmenopausal women, in combination with an aromatase inhibitor for initial endocrine-based treatment</td>
</tr>
<tr>
<td>Xermelo (telotristat ethyl)</td>
<td>For the treatment of carcinoid syndrome diarrhea</td>
</tr>
</tbody>
</table>
Potpourri: Other New Drugs
Adlyxin (lixisenatide)

- Once-daily glucagon-like peptide-1 receptor agonist (GLP-1)
- GLP-1 is a peptide hormone that is released within minutes after eating a meal
  - Suppresses glucagon secretion from pancreatic alpha cells
  - Stimulates glucose-dependent insulin secretion by pancreatic beta cells
  - Slows gastric emptying
- Dose is 20 mcg once daily
- Lowers A1c 0.7-1%; non-inferior to exenatide
- AE – nausea, vomiting, headache, diarrhea, dizziness, hypoglycemia
- $600 for a one month supply
Drug Safety Communication: Canagliflozin

- Canagliflozin increases the risk of leg and foot amputations
  - CANVAS and CANVAS-R: leg and foot amputations occurred twice as often with canagliflozin as with placebo
- **New boxed warning**
- Patient counseling:
  - Patients should immediately report new pain, tenderness, or ulcers
Drug Safety Communication: Canagliflozin and dapagliflozin

- Strengthened warnings about risks of acute kidney injury (AKI) with these medications
- Added recommendations to minimize risk
  - Factors that predispose patients to AKI:
    - Decreased blood volume
    - Chronic kidney disease
    - Concurrent use of ACEIs, ARBs, NSAIDs
What else is new in diabetes mellitus?

- FDA warns of pioglitazone and risk of bladder cancer (label change)
  - Risk increases with increasing dose and duration of therapy
- Introduction of Humulin R U 500 and syringe
- Empagliflozin (Jardiance) (SGLT-2 inhibitor) received indication from FDA to be used to reduce the risk of cardiovascular death in T2DM and CVD (benefits seen within a few months of starting therapy)
  - 38% reduction in cardiovascular disease mortality
  - 32% reduction in overall mortality
  - 35% reduction in hospitalization for CHF
- Empagliflozin not indicated with GFR < 45 ml/min
  - Can see acute renal failure; long-term may improve renal function
  - Caution with diuretics, NSAIDs
Xiidra (Lifitegrast)

- 5% ophthalmic solution of lifitegrast, a lymphocyte function-associated antigen-1 antagonist for treatment of dry eye (firstie)
- Dry eye disease – ocular surface inflammation
- Standard treatment – artificial tears, ocular insert devices, ocular anti-inflammatory agents, tetracyclines
- MOA lifitegrast – reduces ocular surface inflammation
- Modestly effective; 1 drop each eye BID; $426/month
- AE – eye irritation, dysgeusia, reduced visual acuity
  - Mostly mild to moderate

“Be sure to take this drug exactly as directed: tilt your head to the right at a 37 degree angle, extend your tongue precisely 4.93182 inches past the furthest point of the upper lip, place the pill directly between the 48th and 49th taste bud on the left side of the tongue...”
Reslizumab (Cinqair)

- **Indication:** Add-on maintenance treatment of severe asthma in patients ≥ 18 years old, and with an eosinophilic phenotype
  - Eosinophilic phenotype not well defined, but general means severe disease with high eosinophil levels in blood/sputum despite treatment with a corticosteroid
- **IL-5** major cytokine responsible for the growth, differentiation, recruitment and activation of eosinophils
  - Reslizumab binds to IL-5 and blocks its binding to IL-5 receptors
- Shown to reduce asthma exacerbations
- Dose is 3 mg/kg infused IV over 20-50 minutes every 4 weeks
- $2500 a dose
COPD Inhalers

<table>
<thead>
<tr>
<th>Drug</th>
<th>Delivery Device</th>
<th>Usual Adult Dosage</th>
<th>Monthly Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LA Anticholinergic/LA Beta2-Agonst Combinations</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bevespi Aerosphere</td>
<td>Metered dose inhaler</td>
<td>2 inhalations BID</td>
<td>$315.70</td>
</tr>
<tr>
<td>(glycopyrrolate/formoterol)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Utibron Neohaler</td>
<td>Dry powder inhaler</td>
<td>1 inhalation BID</td>
<td>$297.80</td>
</tr>
<tr>
<td>(glycopyrrolate/indacaterol)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stiolto Respimat</td>
<td>Inhalation spray inhaler</td>
<td>2 inhalations once daily</td>
<td>$315.70</td>
</tr>
<tr>
<td>(tiotropium/olodaterol)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anoro Ellipta</td>
<td>Dry powder inhaler</td>
<td>1 inhalation once daily</td>
<td>$315.70</td>
</tr>
<tr>
<td>(umeclidium/vilanterol)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

• **Considerations:**
  • Dosing frequency (once vs. twice daily)
  • Ease of use (MDI, DPI, ISI)

## COPD Inhalers

<table>
<thead>
<tr>
<th>Drug</th>
<th>Delivery Device</th>
<th>Usual Adult Dosage</th>
<th>Monthly Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LA Anticholinergics</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seebri Neohaler (glycopyrrolate)</td>
<td>Dry powder inhaler</td>
<td>1 inhalation twice daily</td>
<td>$297.80</td>
</tr>
<tr>
<td>Tudorza Pressair ( aclidinium)</td>
<td>Dry powder inhaler</td>
<td>1 inhalation twice daily</td>
<td>$301.10</td>
</tr>
<tr>
<td>Spiriva HandiHaler (tiotropium)</td>
<td>Dry powder inhaler</td>
<td>1 inhalation daily</td>
<td>$315.70</td>
</tr>
<tr>
<td>Spiriva Respimat (tiotropium)</td>
<td>Inhalation spray inhaler</td>
<td>2 inhalations daily</td>
<td>$315.70</td>
</tr>
<tr>
<td>Incruse Ellipta (umeclidium)</td>
<td>Dry powder inhaler</td>
<td>1 inhalation daily</td>
<td>$252.60</td>
</tr>
</tbody>
</table>

Same considerations: Dosing frequency and ease of use

## Miscellaneous New Drugs

<table>
<thead>
<tr>
<th>Trade (Generic)</th>
<th>Indication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Afstyla (antihemophilic factor)</td>
<td>Hemophilia A: to treat and control bleeding episodes, for perioperative management, and routine prophylaxis to reduce frequency of bleeding episodes</td>
</tr>
<tr>
<td>Kovaltry (antihemophilc factor)</td>
<td>Hemophilia A: to treat and control bleeding episodes, for perioperative management, and routine prophylaxis to reduce frequency of bleeding episodes</td>
</tr>
<tr>
<td>Idelvion (coagulation Factor IX recombinant)</td>
<td>Hemophilia B: to control and prevent bleeding episodes, for perioperative management, and routine prophylaxis to prevent/reduce frequency of bleeding episodes</td>
</tr>
<tr>
<td>Vonvendi (von Willebrand factor)</td>
<td>On-demand treatment and control of bleeding episodes in adults with von Willebrand disease (VWD)</td>
</tr>
<tr>
<td>Intrarosa (prasterone)</td>
<td>Vaginal insert for treatment of painful sexual intercourse due to menopause</td>
</tr>
<tr>
<td>Vraylar (cariprazine)</td>
<td>Atypical antipsychotic agent (comparators aripiprazole, brexipiprazole)</td>
</tr>
</tbody>
</table>
## Miscellaneous New Drugs – Reformulations

<table>
<thead>
<tr>
<th>Trade (Generic)</th>
<th>Combination</th>
<th>Indication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Byvalson</td>
<td>Nebivolol and valsartan</td>
<td>Hypertension</td>
</tr>
<tr>
<td>Yosprala</td>
<td>Aspirin and omeprazole</td>
<td>Cardiovascular/cerebrovascular protection</td>
</tr>
<tr>
<td>Sustol</td>
<td>Granisetron</td>
<td>Extended-release injectable formulation to prevent CINV</td>
</tr>
</tbody>
</table>
| Soliqua         | Insulin glargine and lixisenatide  | Combo LA insulin and GLP-1 agonist for T2DM  
  • 100/33 five solostar pens of 3 ml - $675                                 |
| Xultophy        | Insulin degludec and liraglutide    | Combo LA insulin and GLP-1 agonist for T2DM  
  • 100/3.6 five solostar pens of 3 ml - $1144                               |
| Epaned          | Enalapril                           | Oral solution formulation  
  • 150 ml of 1 mg/ml  
  • $300  
  • 10 mg a day ~ $600/month                                                 |
| Qtern           | Dapagliflozin and saxagliptin       | Type II diabetes mellitus                                                   |
### I’ve got my eye on you…

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Potential Signal of a Serious Risk / New Safety Information</th>
<th>Additional Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contrave (naltrexone HCl and bupropion HCl) extended-release tablets</td>
<td>Loss of consciousness</td>
<td>FDA is evaluating need for regulatory action</td>
</tr>
<tr>
<td>Oral Anticoagulants</td>
<td>Menorrhagia</td>
<td>No action necessary at this time</td>
</tr>
<tr>
<td>Depo-Medrol and Dep-Provera</td>
<td>Medication Errors</td>
<td>Labeling revised to help differentiate between the 2 drugs</td>
</tr>
<tr>
<td>Diabeta (glyburide) tablets</td>
<td>Skin reactions</td>
<td>Labeling updated to include bullous reactions, erythema multiforme, and exfoliative dermatitis.</td>
</tr>
<tr>
<td>Entresto (sacubitril/valsartan)</td>
<td>Risk of rhabdomyolysis with concomitant use of statin therapy</td>
<td>FDA is evaluating need for regulatory action</td>
</tr>
<tr>
<td>Northera (droxidopa) capsules</td>
<td>Cerebrovascular accident</td>
<td>Label updated to include information about stroke</td>
</tr>
<tr>
<td>Otezla (apremilast) tablets</td>
<td>Diarrhea, nausea, and vomiting</td>
<td>FDA is evaluating need for regulatory action</td>
</tr>
</tbody>
</table>

“These pills will help you stay asleep. They change your dreams into Powerpoint presentations!”