Pharmacy in the News:

AstraZeneca COVID-19 Vaccine Shows Promise

- Interim phase 1 and 2 data for the trial COV001, a blinded, multi-centered randomized controlled study is available
- The study was composed of 1,077 healthy adults between the ages of 18 and 55, and participants received a single dose of the vaccine, with 10 participants receiving 2 doses one month apart
- A single injection resulted in a 4-fold increase in antibodies to SARS-CoV-2 in 95% of participants 1 month after injection, with neutralizing activity seen in 91% of participants 1 month after injection. In those receiving 2 doses, 100% of participants had neutralizing antibodies 1 week after the 2nd injection
- The vaccine had no severe adverse effects, while common adverse reactions included injection site pain/tenderness, headache, fatigue, chills, and feverishness

Studies Find Approximately Half of Health Care Workers Positive for COVID-19 are Asymptomatic

- Among 249 front-line health care workers who cared for coronavirus patients in the first month of the pandemic in Tennessee, 8% tested positive for COVID-19 by serology testing, suggesting they had contracted COVID-19 while caring for COVID-19 patients
- When looking at those with positive serology results it was found that 42% reported no symptoms of respiratory illness in the prior 2 months
- These findings indicate that health care workers are at high risk for COVID-19 infections and may not present with typical symptoms. This suggests the need for screening health care workers for COVID-19 even if they show no symptoms to help prevent the spread of the virus within hospitals

Common Hypertension Medications May Reduce Colorectal Cancer Risk

- Researchers in Hong Kong reviewed health records of 187,897 adult patients from 2005 to 2013 with a negative baseline colonoscopy and found a relationship between ACE inhibitor or ARB use and colorectal cancer
- It was found that those taking ACE inhibitors or ARBs had a 22% lower risk of developing colorectal cancer the subsequent year (HR 0.78 [95% CI, 0.64-0.96])
- The benefits were still seen in those 55 years or older in those with a history of polyps, however the benefit was limited to the first 3 years after the negative baseline colonoscopy

Reference
**Newly Approved Drugs**

**Byfavo (remimazolam)**, Cosmo; 7/2/2020  
*Indication:* To induce sedation  
*MOA:* Benzodiazepine that binds to brain benzodiazepine sites (GABA-A receptors) to cause sedation  
*Dosing:* 2.5 to 5 mg IV over 1 minute for induction of procedural sedation; 2.5 mg over 15 seconds as needed for maintenance of procedural sedation

**Dojolvi (triheptanoin)**, Ultragenyx; 6/30/2020  
*Indication:* To treat molecularly long-chain fatty acid oxidation disorders  
*MOA:* Medium-chain triglyceride that provides a source of calories and fatty acids for energy production; bypasses long-chain fatty acid oxidation enzyme deficiencies  
*Dosing:* 10% of patient’s total daily caloric intake (DCI) divided into 4 times daily by mouth (liquid), with increase of 5% of total DCI every 2-3 days up to 35%

**Artesunate (artesunate)**, Guilin Pharmaceutical; 5/26/2020  
*Indication:* Severe malaria treatment  
*MOA:* Prodrug metabolized to dihydroartemisinin (DHA), activated by heme-iron binding; inhibits protein and nucleic acid synthesis, decreasing parasite growth and survival. Active against blood-stage parasite and gametocytes of Plasmodium  
*Dosing:* 2.4 mg/kg/dose IV at 0, 12, and 24 hours; transition to oral when parasitemia ≤1% and patient tolerates oral therapy; continue 2.4 mg/kg/dose until ≤1%, max 7 days

**Tauvid (flortaucipir)**, Eli Lilly; 5/28/2020  
*Indication:* Diagnostic agent for patients with Alzheimer’s disease  
*MOA:* Binds aggregated tau protein; the F18 isotope produces positron signal that is detected by positron emission tomography scanner  
*Dosing:* 10 mCi (millicurie) IV for radio imaging

**Rukobia (fostemsavir)**, Viiv Healthcare; 7/2/2020  
*Indication:* To treat HIV  
*MOA:* Fostemsavir is hydrolyzed to temsavir, the active moiety, which is a gp120 attachment inhibitor. Temsavir binds to the HIV-1 envelope protein gp120 subunit, inhibiting the interaction between virus and CD4 receptors, preventing attachment to the host cell  
*Dosing:* 600 mg by mouth twice daily in combination with other antiretrovirals (extended release tablet)

**Zepzelca (lurbinectedin)**, Jazz; 6/15/2020  
*Indication:* Metastatic small cell lung cancer  
*MOA:* Binds guanine residues in minor groove of DNA, forming adduct resulting in bending of DNA helix towards major groove that leads to perturbation of cell cycle and cell death (alkylating agent)  
*Dosing:* 3.2 mg/m(2) IV infusion over 60 minutes every 21 days until disease progression or unacceptable toxicity

**Recently Approved Generics:**  
- Cotempla (methylphenidate) XR ODT – 6/30/2020  
- Vivlodex (meloxicam) capsules – 6/1/2020  
- Protonix (pantoprazole) Sodium DR oral suspension – 6/30/2020  
- Vascepa (icosapent Ethyl) Capsules – 5/15/2020  
- Noxafil (posaconazole) Oral Suspension – 5/15/2020

**Anticipated Generics for 2020:**  
- Chantix (varenicline) tablets – Nov. 2020  
- Northera (droxidopa) capsules – Feb. 2021  
- Ofirmev (acetaminophen) injection - Dec. 2020  
- Bystolic (nebivolol) – Sept. 2021  
- Absorica (isotretinoin) – Dec. 2020  
- Amitiza (lubiprostone) – Jan. 2021
Statin Intolerance

• Evaluate possibility of patient intolerance to statin therapy
• Steps to manage a patient presenting with muscle pain currently taking a statin
• Compare statin characteristics and drug interactions
• Free app

MDCalc Medical Calculator

• Quick access to medical calculators
• Useful next steps based on calculated scores, with evidence to support recommendations
• Ability to choose practice specialty and save favorite calculators
• Free app

OTCme

• OTC product recommendations tailored to patient needs without overwhelming number of options
• Provides easy-to-read label information, coupon links, and nearby pharmacy availability
• Free app, but pharmacist consultations still needed to ensure safety

Writing Tip #1:
Avoid dating writing so it does not become outdated. e.g., avoid “recently”

Writing Tip #2:
That is indicative of a specific subject. Which is used to add information about a subject.
Example: “The medication, which reduced incidence of COPD exacerbation in patients, had adverse effects including…."
“The studies that have been done show…."

Writing Tip #3:
Struggle with confusing words like “affect” and “effect”? Check out confusedwords.org!
Drug Information Question of the Month

**Question:** “What is the pathway of weight gain caused by psychopharmacologic agents? Is this due to an increase in appetite (so increase in daily caloric intake) or is this also in part to a specific change/disruption in the metabolic pathway of how calories are turned into energy (body is storing more than it should even with no daily caloric change)?”

**Response:**

The exact mechanism in which psychopharmacologic agents cause weight gain is currently unknown. It is speculated that the main mechanism in which antipsychotics cause weight gain includes appetite stimulation, ultimately leading to a caloric surplus (these extra calories are stored as body fat). Some patients that take antipsychotics state that they develop a craving for specific foods, such as sweets or fatty foods. There are also multiple antipsychotics that produce sedating effects, which could lead to a reduced energy output. An increase in weight is typically seen within 6-8 weeks of starting psychopharmacology therapy, continuing at a decreased rate throughout treatment. There are multiple factors that can contribute to a patient’s likelihood of experiencing weight gain, such as poor diet choices, inactive lifestyle, and social withdrawal – factors that can be prevalent in patients with mental health problems.

Antipsychotics cause weight gain primarily through an increased appetite, but there are also several neuropeptides involved in the regulation of body weight that are affected by antipsychotic use. Antipsychotics inhibit certain receptors that are known to cause a decrease in appetite. Serotonin stimulates POMC (proopiomelanocortin) neurons through the 5-HT2C (5-hydroxytryptamine2C) receptor, which causes a decrease in appetite. Histamine reduces AMPK (AMP-activated protein kinase), an enzyme produced in the hypothalamus (the site of appetite regulation) that stimulates appetite when it is activated. Dopamine is involved in reward pathways and aids in self-indulgent appetite control. Each agent differs in the ability to block these receptors which partially explains the differences in metabolic risk between the agents. Relative to antipsychotics, an increased risk of weight gain (and subsequently, cardiovascular disease and diabetes) is associated with high-M3 and high-H1 receptor affinity. Histamine (H1) receptors in the hypothalamus are involved in regulating energy outflow, sympathetic outflow to brown adipose tissue (BAT), white adipose tissue (WAT) lipid metabolism, and fat accumulation. White adipose tissue is involved with storing energy as triglycerides, and brown adipose tissue is involved in the dispersion of energy through heat production. Long-term use of antipsychotics may be associated with reduced thermogenesis in BAT along with a decreased lipolysis and increased lipogenesis in WAT due to continued block of H1 receptors in the hypothalamus.

Overall, weight gain is a significant issue with psychopharmacology use. The exact mechanism in which this occurs is currently unknown, but there have been multiple proposed methods, such as an increased appetite, decreased energy output, or outcomes related to continuous neurotransmitter receptor blockade.

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**References:**

Tips for Mental Health during Covid-19

Mayo Clinic – April 2020

Take care of your body.
- Get plenty of rest. Set a sleep schedule by going to bed and getting up at the same time each day
- Exercise regularly, it can help decrease anxiety and boost mood
- Consume healthy foods by choosing a well-balanced diet. Excess caffeine can worsen stress and anxiety
- Avoid tobacco, alcohol, and other drugs as these can reduce the use of positive coping mechanisms
- Limit use of electronic devices. To improve sleep, ensure that electronic devices are powered off at least 30 minutes prior to bedtime
- Set aside time to recharge. Even a few minutes of quiet time can be refreshing and reset your mind. Practice relaxation techniques (i.e., deep breathing, yoga, tai chi, meditation) regularly

Take care of your mind.
- Keep a steady routine, the predictability can help you feel more in control of your daily life
- Limit news and social media exposure, constant news can heighten fears about the disease
- Stay preoccupied, a distraction can help prevent negative thoughts. Engaging in a positive hobby can aid in managing stress and anxiety
- Emphasize positive thoughts. One way to do this would be to start each morning with a positive statement or acknowledging what you are thankful for. If you believe in a spiritual power, this belief can also bring comfort during this time
- Set priorities. It is easy to become overwhelmed, but setting reasonable goals for each day can alleviate these feelings

Connect with others.
- Make connections and socialize from home. Connect via phone, email, or other apps. Ask those around you about their coping tips
- Do something for other people. Offering to help family, friends, or neighbors who are in need can provide purpose and improved self-motivation
- Help and support those around you including friends and family members

Get help when you need it.
- Utilize phones and social media to contact friends or loved ones
- Seek out counseling from a mental health professional
- Contact a spiritual or community leader
- Be aware of organizations available to help: National Alliance on mental Illness, Substance Abuse and Mental Health Services Administration, National Suicide Prevention Lifeline (1-800-273-8255)