

Polypharmacy Project

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N322 Introduction to Pharmacology

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The patient in this polypharmacy case is Lucy. She is a 68 year old female who is 5 ft 2in and weighs 300 pounds. She was recently diagnosed with community acquired pneumonia and has an extensive past medical history. Lucy also has anxiety and lately she has been having increased difficulty sleeping. She lives at home with her adult daughter. Lucy is a smoker and states to smoke 1 pack a day of cigarettes and has done so for 36 years. She denies alcohol use.

Lucy's past medical history includes: hypertension, anxiety, insomnia, sleep apnea (using C-pap but non-compliant), chronic obstructive pulmonary disease, arthritis, uses oxygen at 2L nasal cannula. Her only known allergies are seasonal allergies.

Her current list of medications includes the following:

Hydrochlorothiazide 50 mg by mouth twice daily

Simvastatin 40 mg **by mouth** at night

Prednisone **10 mg tablets** tapering dose **by mouth** (end in 7 days)

Days 1 and 2: take 6 tablets

Days 3 and 4: take 5 tablets

Days 5 and 6: take 4 tablets

Days 7 and 8: take 3 tablets

Days 9 and 10: take 2 tablets

Days 11 and 12: take 1 tablet

Budesonide 160/4.5 mcg 2 puffs via inhalation BID

Meloxicam 15 mg by mouth once a day

Zolpidem 10mg by mouth at bedtime

Ciprofloxacin 750mg every 12 hours by mouth (end in 7 days)

Cheratussin 1tsp every 4 hours by mouth as needed.

Tylenol #3 (30-300) take one tab by mouth every 4 to 6 hours PRN for pain.

Albuterol sulfate 2.5 mg nebulization every 4 to 6 hours as needed.

Drug #1	<p>Drug Name (Generic): hydrochlorothiazide</p> <p>Drug Name (Trade): Microzide, Esidrix, HydroDIURIL</p> <p>Drug Class: Thiazide diuretics</p> <p style="text-align: right;">(Jones & Bartlett Learning, 2023).</p>
How is the medication taken: (include dose, route, and frequency)	This patient is to take 50 mg of hydrochlorothiazide orally, two times per day.
Specific Directions not included above:	<p>Hydrochlorothiazide should be taken in the morning or well before bedtime due to the diuretic effect causing increased urination (Jones & Bartlett Learning, 2023). It can be taken without food, though it is recommended to be taken with food if nausea or other gastrointestinal issues arise (Jones & Bartlett Learning, 2023). Patients should be careful not to take a double dose. If a dose is missed, it is okay to take it when remembered unless it is too close to the time of the next dosage (Jones & Bartlett Learning, 2023). This medication should be stored in a dark and dry area, away from sunlight and extreme changes in temperature.</p>
Does this medication interact with any other medication(s) on this list? (see rubric for further	Hydrochlorothiazide does interact with multiple of this patient's other medications. First, it interacts with codeine, which causes an additive effect of the antihypertensive effects of

instruction)

hydrochlorothiazide. This can result in orthostatic hypotension and fainting (Drugs.com, 2024c). It may also interact with zolpidem in the same fashion, causing a severe decrease in blood pressure (Drugs.com, 2024c). Next, it may interact with prednisone. Prednisone is a corticosteroid, which can deplete potassium (Drugs.com, 2024c). As hydrochlorothiazide is not a potassium sparing diuretic, patients risk hypokalemia when taking it. When combined with prednisone, the risk of hypokalemia is amplified (Drugs.com, 2024c).

Hydrochlorothiazide also interacts with budesonide and albuterol in the same manner, as both have potassium depleting properties and therefore may cause hypokalemia (Drugs.com, 2024c). Patients taking these medications need to be sure to supplement to replace the potassium to ensure that lethal arrhythmias due to hypokalemia do not occur (Drugs.com, 2024c). Lastly, meloxicam and hydrochlorothiazide interact and may damage the kidneys. Meloxicam is a nonsteroidal anti-inflammatory drug, which is filtered through the kidneys and on its own may damage them (Drugs.com, 2024c). Hydrochlorothiazide is a diuretic and uses the kidneys to filter and remove excess fluid and salt from the body. This can also cause dehydration, which may further damage the kidneys. As both are hard on the kidneys, combined they can cause damaging effects (Drugs.com, 2024c). Meloxicam may also reduce the diuretic effects of hydrochlorothiazide, which can cause water retention and increase the

	risk of congestive heart failure (Drugs.com, 2024c).
Lifestyle interactions: (Daily tobacco use, alcohol, drugs, etc.)	Patients taking hydrochlorothiazide should not drink alcohol. This is because hydrochlorothiazide is a diuretic, which decreases blood pressure. As alcohol is a central nervous system depressant, it may increase the antihypertensive effects of hydrochlorothiazide and cause orthostatic hypotension (Drugs.com, 2024c).
Does any of the client's past medical history contradict the use of this medication?	The client does not have any past medical history that directly contraindicates the use of hydrochlorothiazide. However, patients taking hydrochlorothiazide should be careful to monitor for urinary retention and stop taking the medication if noted (Jones & Bartlett Learning, 2023). They should also use hydrochlorothiazide carefully when also taking corticosteroids as this may potentially decrease potassium levels (Jones & Bartlett Learning, 2023).
What is the indication for use of this medication based on the client's past medical history? (If unable to determine an indication based on past medical history, please list potential indications for use of the medication in general)	Based on the patient's medical history, hydrochlorothiazide is indicated due to a diagnosis of hypertension (Jones & Bartlett Learning, 2023). Diuretics work to lower blood pressure by removing excess water and salt from the body through the urine, which reduces the total volume in the circulatory system and therefore lowers blood pressure (Jones & Bartlett Learning, 2023).
What would you teach the client about taking this	1. Because of the diuretic effect of hydrochlorothiazide, patients should be aware of signs and

<p>medication? You must prioritize 2 (see rubric)</p>	<p>symptoms of hypokalemia. This includes heart arrhythmias, palpitations, and muscle cramps (Jones & Bartlett Learning, 2023). If any of these symptoms are noticed by the patient, they should report it to their provider to have their electrolyte levels checked. To prevent hypokalemia, they should eat foods high in potassium, such as citrus, bananas, dates, avocados, and tomatoes (Jones & Bartlett Learning, 2023).</p> <p>2. Patients should be educated about weighing themselves daily. This weight should be taken nude or with the same clothing at the same time of the day, every day, with the same scale. If a weight gain of more than two pounds in one day or five pounds in one week is noted, the patient should contact their provider (Jones & Bartlett Learning, 2023).</p>
<p>How much would medication cost per month if paying out of pocket?</p>	<p>The out-of-pocket cost for a 30-day prescription of 50 mg generic hydrochlorothiazide twice daily is \$14-18 (GoodRx, n.d.-f).</p>

<p>Drug #2</p>	<p>Drug Name (Generic): simvastatin</p> <p>Drug Name (Trade): Zocor, FloLipid</p>
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	<p>Drug Class: Statins</p> <p>(Jones & Bartlett Learning, 2023)</p>
<p>How is the medication taken: (include dose, route, and frequency)</p>	<p>The patient is taking 40 mg once a day, taken orally at night.</p>
<p>Specific Directions not included above:</p>	<p>Simvastatin should be taken at night because cholesterol is made at night. It can be taken with or without food, though it should be taken with food if GI problems occur (Jones & Bartlett Learning, 2023). It should not be taken with grapefruit juice as this can cause increased levels of simvastatin in the blood (Jones & Bartlett Learning, 2023). It should be swallowed whole and not crushed (Jones & Bartlett Learning, 2023).</p>
<p>Does this medication interact with any other medication(s) on this list? (see rubric for further instruction)</p>	<p>Simvastatin interacts with ciprofloxacin. Ciprofloxacin may cause increased levels of simvastatin in the blood (Drugs.com, 2024f). As simvastatin is hard on the liver, an increased blood level can cause liver damage. In addition to liver damage, increased levels of simvastatin may cause a breakdown of the skeletal muscles, called rhabdomyolysis, which can be fatal (Drugs.com, 2024f).</p>
<p>Lifestyle interactions: (Daily tobacco use, alcohol, drugs, etc.)</p>	<p>Patients taking simvastatin should not drink grapefruit juice or alcohol (Drugs.com, 2024f). Grapefruit juice can cause an increased level of simvastatin in the body. This increased level</p>

	<p>can cause the skeletal muscle cells to break down, leading to myopathy or rhabdomyolysis (Drugs.com, 2024f). Alcohol is damaging to the liver, as are statin drugs. The combination can cause severe liver damage or even failure (Drugs.com, 2024f).</p>
<p>Does any of the client's past medical history contradict the use of this medication?</p>	<p>The patient does not have any medical history that contraindicates the use of simvastatin. However, patients taking simvastatin in addition to ciprofloxacin should be cautious to monitor for signs and symptoms of rhabdomyolysis, such as muscle pain, weakness, or tenderness, as well as dark urine (Jones & Bartlett Learning, 2023).</p>
<p>What is the indication for use of this medication based on the client's past medical history? (If unable to determine an indication based on past medical history, please list potential indications for use of the medication in general)</p>	<p>This patient does not have any direct medical history that indicates the use of simvastatin. However, she does have a history of hypertension and cigarette use and she is obese, all of which may cause atherosclerosis, a buildup of plaque made up of cholesterol on the walls of veins and arteries. This plaque can dislodge and block or decrease blood flow to the heart and brain, leading to myocardial infarctions or strokes (Jones & Bartlett Learning, 2023). Statins work to reduce how much cholesterol is in the blood, which lessens the risk of plaque buildup. As she is at risk for atherosclerosis, medications to reduce her risk of plaque buildup and subsequent infarction or stroke is recommended (Jones & Bartlett Learning, 2023).</p>
<p>What would you teach the client about taking this medication? You must prioritize 2 (see rubric)</p>	<ol style="list-style-type: none"> 1. Patients taking simvastatin should be taught to monitor for signs and symptoms of myopathy or rhabdomyolysis, which can be lethal (Jones & Bartlett Learning, 2023).

	<p>Muscle pain, weakness, and tenderness, dark amber urine, weight loss, right upper quadrant pain, and jaundice can all indicate muscle breakdown and liver damage from rhabdomyolysis (Jones & Bartlett Learning, 2023). If any of these symptoms are noted, the patient should report them to their provider to determine if the medication should be stopped or if emergency treatment is necessary (Jones & Bartlett Learning, 2023). Women over the age of 65 are at an increased risk of myopathy, so being aware of the risk and recognizing the signs and symptoms is important for this patient.</p> <p>2. Patient education about diet is important for reducing the risk of toxicity as well as managing cholesterol levels. Grapefruit juice is to be avoided as it causes the blood levels of simvastatin to rise to a toxic level (Jones & Bartlett Learning, 2023). Patients should also be taught to follow a low-fat diet to assist in the cholesterol lowering effects of simvastatin (Jones & Bartlett Learning, 2023).</p>
How much would medication cost per month if paying out of pocket?	The out-of-pocket cost for a 30-day prescription of 40mg generic simvastatin is \$60-98 (GoodRx, n.d.-i).

Drug #3	<p>Drug Name (Generic): prednisone</p> <p>Drug Name (Trade): Rayos, Deltasone, Sterapred</p> <p>Drug Class: Glucocorticoids</p> <p style="text-align: right;">(Jones & Bartlett Learning, 2023)</p>
How is the medication taken: (include dose, route, and frequency)	<p>This patient is to take a tapered dosage of 10 mg prednisone orally. For day 1 and 2, she was to take 6 tablets daily for a total of 60 mg per day. For days 3 and 4, she was to take 5 tablets daily for a total of 50 mg per day. Days 5 and 6 she needs to take 4 pills daily for a total of 40 mg per day. On days 7 and 8 she needs to take 3 pills daily for a total of 30 mg per day. Days 9 and 10 she needs to take 2 pills daily for a total of 20 mg per day. Days 11 and 12 she needs to take 1 pill daily for a total of 10 mg per day. She is currently on day 6, so she is to take 4 tablets orally for a total or 40 mg prednisone.</p>
Specific Directions not included above:	<p>Patients should be instructed to take prednisone in the morning because the body releases the most cortisol upon waking and prednisone mimics cortisol (Jones & Bartlett Learning, 2023). Prednisone should be taken with food or milk in order to prevent gastrointestinal issues such as nausea, vomiting, or diarrhea (Jones & Bartlett Learning, 2023). Patients taking prednisone should take the medication exactly as prescribed and should not stop the medication abruptly (Jones & Bartlett Learning, 2023). Activities that require operating heavy machinery should</p>

	<p>be avoided (Jones & Bartlett Learning, 2023). Patients should not receive any vaccinations while taking prednisone due to the effects on the immune system (Jones & Bartlett Learning, 2023).</p>
<p>Does this medication interact with any other medication(s) on this list? (see rubric for further instruction)</p>	<p>Prednisone interacts with ciprofloxacin. Fluoroquinolones such as ciprofloxacin have the potential to cause tendon rupture, though the cause is unknown. Corticosteroids increase the risk of tendon rupture (Drugs.com, 2024e). Prednisone also interacts with hydrochlorothiazide by increasing the depletion of potassium from the body, which can cause hypokalemia and therefore potentially harmful or fatal heart arrhythmias (Drugs.com, 2024e). Prednisone and meloxicam interact and can cause GI toxicity. This can lead to GI ulceration, inflammation, bleeding, and perforation (Drugs.com, 2024e). Lastly, prednisone interacts mildly with albuterol and may cause lower potassium levels in the blood (Drugs.com, 2024e).</p>
<p>Lifestyle interactions: (Daily tobacco use, alcohol, drugs, etc.)</p>	<p>Prednisone should not be taken if the patient uses alcohol. This is because alcohol and prednisone can exacerbate GI issues and lead to ulceration or bleeding of the GI tract (Jones & Bartlett Learning, 2023). Patients taking prednisone should also follow a low sodium diet because prednisone can cause fluid and sodium retention, which leads to edema and high blood pressure (Jones & Bartlett Learning, 2023). Following a low sodium diet can decrease</p>

	the risk of retention.
Does any of the client's past medical history contradict the use of this medication?	The client's past medical history does not contraindicate the use of prednisone. However, this patient should be cautious with concurrent medication use and interactions, especially those of ciprofloxacin and hydrochlorothiazide (Jones & Bartlett Learning, 2023).
What is the indication for use of this medication based on the client's past medical history? (If unable to determine an indication based on past medical history, please list potential indications for use of the medication in general)	This client is currently taking prednisone due to pneumonia, as she has a history of chronic obstructive pulmonary disease which can make it difficult for her to clear the infection from her lungs (Jones & Bartlett Learning, 2023). Prednisone is a steroidal treatment, so it will help strengthen the lungs and reduce inflammation of the respiratory tract (Jones & Bartlett Learning, 2023). Prednisone can also be used for this patient to treat inflammation from arthritis (Jones & Bartlett Learning, 2023).
What would you teach the client about taking this medication? You must prioritize 2 (see rubric)	<ol style="list-style-type: none"> 1. Patients taking prednisone concurrently with fluoroquinolones and NSAIDs should monitor for and report signs and symptoms of GI bleeds or ulceration and tendon rupture (Jones & Bartlett Learning, 2023). GI bleeds or ulceration may present with black, tarry or bright red stools, abdominal pain, a gnawing sensation in the stomach after eating, pallor, and fatigue (Jones & Bartlett Learning, 2023). Tendon ruptures may present with severe pain or swelling of a joint, a snapping sensation, or inability

	<p>to move an extremity (Jones & Bartlett Learning, 2023).</p> <p>2. Patients should be educated on the proper dosing of prednisone and the importance of taking the correct amount as prescribed. Taking too much prednisone can cause severe heart issues, seizures, loss of hearing, and psychosis (Jones & Bartlett Learning, 2023). They should also take the full course of prednisone, as stopping abruptly can cause withdrawal (Jones & Bartlett Learning, 2023).</p>
<p>How much would medication cost per month if paying out of pocket?</p>	<p>The out-of-pocket cost for a 30-day prescription of generic prednisone is \$5-19 (GoodRx, n.d.-h).</p>
<p>Drug #4</p>	<p>Drug Name (Generic): budesonide</p> <p>Drug Name (Trade): Pulmicort Flexhaler, Pulmicort Respules, Pulmicort Turbuhaler</p> <p>Drug Class: Inhaled corticosteroids</p> <p style="text-align: right;">(Jones & Bartlett Learning, 2023)</p>
<p>How is the medication taken: (include dose, route, and frequency)</p>	<p>This patient is taking two puffs of 160/4.5 mcg of inhaled budesonide, twice daily.</p>
<p>Specific Directions not included above:</p>	<p>Prior to being used for the first time, the canister should be primed (Jones & Bartlett</p>

	<p>Learning, 2023). This can be done by facing the mouthpiece on top while holding, twisting the base to the right, and then to the left. Once it clicks, it is primed. This same method should be used to load a dose prior to use. A spacer should not be used as the device is made to hold a dose prior to inhalation (Jones & Bartlett Learning, 2023). To take a dose, the patient should exhale deeply, place their lips around the mouthpiece, and then inhale deeply. The device should be removed prior to breathing out. The patient should then rinse their mouth with water and spit it out, being sure not to swallow the water (Jones & Bartlett Learning, 2023).</p>
<p>Does this medication interact with any other medication(s) on this list? (see rubric for further instruction)</p>	<p>Budesonide interacts with other medications on this patient’s list. It interacts with ciprofloxacin, which can cause budesonide to be absorbed at higher levels and lead to adrenal insufficiency. Budesonide also interacts with hydrochlorothiazide (Drugs.com, 2024b). Budesonide can cause potassium depletion when coupled with hydrochlorothiazide, which is a non-potassium sparing diuretic (Drugs.com, 2024b). Budesonide can interact with meloxicam and cause GI distress (Drugs.com, 2024b). Corticosteroids and NSAIDs are both hard on the lining of the stomach and can lead to GI upset, ulceration, or bleeding (Drugs.com, 2024b). Lastly, budesonide minorly interacts with albuterol and when coupled can cause excess potassium to be wasted, leading to hypokalemia (Drugs.com, 2024b).</p>
<p>Lifestyle interactions:</p>	<p>Patients taking budesonide should be cautious to avoid grapefruits and grapefruit juice while</p>

<p>(Daily tobacco use, alcohol, drugs, etc.)</p>	<p>taking the medication. Grapefruit can cause increased levels of budesonide to build up in the blood (Jones & Bartlett Learning, 2023). This will cause worsening side effects, such as intracranial hypertension, adrenal insufficiency, bronchospasms, worsening infections and slow healing, GI distress, and coughs. Daily tobacco use, such as this patient’s smoking habits, should be avoided due to the inflammatory effects on the lungs (Jones & Bartlett Learning, 2023).</p>
<p>Does any of the client’s past medical history contradict the use of this medication?</p>	<p>This patient’s past medical history does not appear to contradict the use of budesonide. However, patients with a current infection should ask their provider if it is safe to use budesonide as it can worsen the infection or slow the healing process (Jones & Bartlett Learning, 2023). This patient has a current pneumonia infection, so she should be cautious to check with her provider to see if she should continue to take the budesonide. While it is not recommended that patients with a current infection use budesonide, studies have found that inhaled budesonide can be effective and beneficial for those with community-acquired pneumonia (Kukhon & Festic, 2021).</p>
<p>What is the indication for use of this medication based on the client’s past medical history? (If unable to determine an indication based on past medical</p>	<p>This patient is using inhaled budesonide to prevent and relieve breathing issues and reduce inflammation in the airway due to her COPD (Jones & Bartlett Learning, 2023). She is a daily smoker, which increases her risk of airway inflammation. As a result of her history, she is at</p>

history, please list potential indications for use of the medication in general)	risk of a compromised airway. Budesonide will help clear mucus, reduce cough, and open the airway for better gas exchange (Jones & Bartlett Learning, 2023).
What would you teach the client about taking this medication? You must prioritize 2 (see rubric)	<ol style="list-style-type: none"><li data-bbox="871 345 2024 816">1. Patients should be educated on the proper use of budesonide. Budesonide is not a rescue inhaler and should not be used as one (Jones & Bartlett Learning, 2023). If respiratory symptoms are worsened or the patient is experiencing severe shortness of breath, a rescue inhaler is needed and the patient should be advised to seek emergency care (Jones & Bartlett Learning, 2023). Patients should be educated on the need to seek emergency care if they are unable to breathe or feel their airway is compromised (Jones & Bartlett Learning, 2023).<li data-bbox="871 857 2024 1321">2. Patients should be taught the importance of rinsing their mouth after inhaling budesonide (Jones & Bartlett Learning, 2023). Corticosteroids suppress the immune system and can lead to opportunistic infections, such as a yeast infection (Jones & Bartlett Learning, 2023). The yeast found naturally in the body is able to grow when budesonide is present. As this patient is taking inhaled budesonide, this infection can be found in the mouth or throat (Jones & Bartlett Learning, 2023). Therefore, she should be taught to rinse her mouth to remove excess budesonide and avoid yeast

	infections.
How much would medication cost per month if paying out of pocket?	The out-of-pocket cost for a 30-day prescription of 160/4.5mcg generic budesonide is around \$235-404 (GoodRx, n.d.-e).
Drug # 5	<p>Drug Name (Generic): Meloxicam</p> <p>Drug Name (Trade): Mobic, Anjeso, Vivlodex, Quiz ODT</p> <p>Drug Class: Nonsteroidal anti-inflammatory</p> <p style="text-align: right;">(Jones & Bartlett Learning, 2023)</p>
How is the medication taken: (include dose, route, and frequency)	This patient is taking 15 mg once daily of meloxicam by mouth. However, meloxicam is a Nonsteroidal anti-inflammatory drug (NSAID), which should not be taken for long periods of time so the provider should clarify for how long this drug is to be taken.
Specific Directions not included above:	It is recommended to take meloxicam with food to prevent GI upset (Jones & Bartlett Learning, 2023). Meloxicam also should not be taken for long periods of time, so the provider should specify for how long the prescription is for (Jones & Bartlett Learning, 2023).
Does this medication interact with any other medication(s) on this list? (see rubric for further instruction)	Meloxicam interacts with ciprofloxacin and may cause central nervous system (CNS) toxicity. The cause of this is unknown, but the patient may experience anxiety, depression, tremors, involuntary movements, confusion, or hallucinations (Drugs.com, 2024d). If the effects on the CNS are severe enough, seizures may occur. Meloxicam also interacts with

	<p>hydrochlorothiazide and can lead to kidney problems. Hydrochlorothiazide is a diuretic that removes excess fluid from the body. As meloxicam is an NSAID and has negative effects on the kidneys, this can cause damage, especially if the patient experiences dehydration (Drugs.com, 2024d). NSAIDs can also reduce the diuretic effect and cause retention, which can increase blood pressure or lead to heart failure (Drugs.com, 2024d). Lastly, meloxicam interacts with both prednisone and budesonide, which may cause GI toxicity. NSAIDs and steroids taken together increase the chance of GI ulceration and bleeding (Drugs.com, 2024d).</p>
<p>Lifestyle interactions: (Daily tobacco use, alcohol, drugs, etc.)</p>	<p>Meloxicam should not be taken with alcohol or tobacco usage (Jones & Bartlett Learning, 2023). This is because alcohol and tobacco can cause an increased risk of GI issues while taking meloxicam (Jones & Bartlett Learning, 2023). This patient should be educated on smoking cessation while taking meloxicam.</p>
<p>Does any of the client’s past medical history contradict the use of this medication?</p>	<p>Meloxicam is contraindicated in this patient due to her history of smoking and hypertension (Jones & Bartlett Learning, 2023). Meloxicam can cause fluid retention, which can increase the total fluid volume in the body and increase blood pressure (Jones & Bartlett Learning, 2023). Due to her history of hypertension, this puts her at an increased risk of stroke and myocardial infarction (Jones & Bartlett Learning, 2023). Smoking also contradicts the use of</p>

	meloxicam, as it can also increase blood pressure as well as cause GI bleeds.
What is the indication for use of this medication based on the client's past medical history? (If unable to determine an indication based on past medical history, please list potential indications for use of the medication in general)	<p>This patient is taking meloxicam due to her arthritis (Jones & Bartlett Learning, 2023).</p> <p>Meloxicam is an NSAID that is used to treat moderate to severe pain and inflammation related to arthritis. It does so by targeting pain transmission and by reducing the inflammatory process, which decreases swelling, pain, and vasodilation (Jones & Bartlett Learning, 2023).</p>
What would you teach the client about taking this medication? You must prioritize 2 (see rubric)	<ol style="list-style-type: none">1. Patients should be educated on the risk of severe cardiovascular reactions when taking meloxicam (Jones & Bartlett Learning, 2023). This medication can cause heart failure or infarction. Signs and symptoms include chest pain, swelling of the extremities, quick weight gain, shortness of breath, or slurred speech (Jones & Bartlett Learning, 2023). The patient should be educated to seek emergency care if these symptoms are noted.2. Meloxicam is an NSAID, which are known to increase the risk of GI issues (Jones & Bartlett Learning, 2023). Patients should be educated on the risk, signs and symptoms, and factors that can increase the chance. Meloxicam can cause GI ulceration and bleeding. The signs and symptoms include abdominal pain, black and tarry stools, heartburn, gnawing stomach pain after eating, and emesis that appears bright red or

	<p>like coffee grounds (Jones & Bartlett Learning, 2023). Patients should know to seek emergency care if these symptoms are noted. Patients should also be aware that they should not take other NSAID products while taking meloxicam as this can lead to an overdose of NSAIDs and increase the risk of GI toxicity (Jones & Bartlett Learning, 2023).</p>
<p>How much would medication cost per month if paying out of pocket?</p>	<p>The out-of-pocket cost for a 30-day prescription of 15mg generic meloxicam is approximately \$12-40 (GoodRx, n.d.-g).</p>
<p>Drug # 6</p>	<p>Drug Name (Generic): zolpidem tartrate</p> <p>Drug Name (Trade): Ambien, Edluar, Zolpimist</p> <p>Drug Class: Sedative-hypnotics</p> <p style="text-align: right;">(Jones & Bartlett Learning, 2023)</p>
<p>How is the medication taken: (include dose, route, and frequency)</p>	<p>This patient is to take a 10mg tablet of zolpidem, orally, once a day. This drug is only meant to be taken for a short period of time; therefore, the physician should also note in the prescription how many doses this patient is allotted.</p>
<p>Specific Directions not included above:</p>	<p>The 10mg dose of zolpidem should be taken at bedtime. Ideally this medication should only be administered if the patient will have 7 to 8 hours of time to sleep (Jones & Bartlett</p>

	Learning, 2023).
Does this medication interact with any other medication(s) on this list? (see rubric for further instruction)	<p>Zolpidem has drug interactions with several of the other medications on this patient's list. First, because zolpidem is a sedative-hypnotic drug, it has a major drug interaction with codeine (Drugs.com, 2023b). Codeine is present in both the Cheratussin and Tylenol #3 that this patient is taking. Codeine is an opioid and therefore also a central nervous system depressant (Drugs.com, 2023b). Taking these central nervous system depressants together could result in potentially very serious adverse effects such as severe sedation, respiratory depression, coma, and even death (Drugs.com, 2023b). This patient is also taking ciprofloxacin, which is an antibiotic that is known to have an interaction with zolpidem. Ciprofloxacin interferes with the body's ability to break down zolpidem which causes higher levels of zolpidem to stay in the body longer (Drugs.com, 2023b). The sustained concentration of zolpidem in the body can lead to impairments the following day such as slowed reaction times and dizziness (Drugs.com, 2023b). Lastly, there is also a moderate drug-drug interaction between zolpidem and hydrochlorothiazide. Hydrochlorothiazide reduces blood pressure and the effects of zolpidem can also lower blood pressure, therefore if the two drugs are taken together, they can have an additive effect lowering blood pressure and</p>

	possibly causing hypotension or orthostatic hypotension (Drugs.com, 2023b).
Lifestyle interactions: (Daily tobacco use, alcohol, drugs, etc.)	Patients taking zolpidem should avoid drinking alcohol because combining the two can have an additive effect as central nervous system depressants and this can lead to impairments in thinking and motor skills (Drugs.com, 2023b). Furthermore, while zolpidem can be taken with or without food, taking it with food can delay the onset of its effects (Drugs.com, 2023b).
Does any of the client's past medical history contradict the use of this medication?	Zolpidem should be used cautiously in patients with respiratory conditions (Jones & Bartlett Learning, 2023). This patient has a medical history that includes COPD and sleep apnea and she is recovering from pneumonia. Because zolpidem is known to potentially aggravate respiratory conditions and cause respiratory depression, it should be used with extreme caution for this patient (Jones & Bartlett, 2023). Furthermore, zolpidem may have greater effects on geriatric patients and because this patient is over the age of 65, she should be closely monitored for adverse effects (Drugs.com, 2023b).
What is the indication for use of this medication based on the client's past medical history? (If unable to determine an indication based on past medical history, please list potential indications for use of the	Zolpidem is meant to be used as a short-term sleep-aid to help treat insomnia (Jones & Bartlett Learning, 2023). In this case, the patient is struggling with anxiety and having increased difficulty sleeping as of late and therefore was prescribed this drug to help treat her

medication in general)	insomnia.
What would you teach the client about taking this medication? You must prioritize 2 (see rubric)	<ol style="list-style-type: none"><li data-bbox="871 266 2026 959">1. Due to the potentially very dangerous interactions of zolpidem with cheratussin, Tylenol #3, and ciprofloxacin, it would be extremely important to educate the patient on the additive effects these drugs have as central nervous system depressants when taken together. It would be important to warn the patient not to take these medications together because severe sedation, respiratory depression, and even death may occur when these drugs are taken in combination. It would be best to speak with a provider about possibly prescribing a sleep aid other than zolpidem that would not interact with the patient's other medications. Furthermore, if the patient must take ciprofloxacin with zolpidem, they should be educated to not drive or engage in activities that require mental alertness (Drugs.com, 2023b)<li data-bbox="871 997 2026 1386">2. After providing teaching about the interactions that can occur between zolpidem and the other drugs this patient is taking, it would be important to teach the patient to only take zolpidem right before bed and only if they will be able to sleep at least 7 to 8 hours that night. Taking zolpidem can result in next-morning drowsiness and mental impairment, especially if the patient is not able to sleep at least 7 to 8 hours the night prior. Therefore, patients should generally avoid driving or other hazardous activities

	<p>in the early morning hours (Jones & Bartlett, 2023).</p> <p>3. This patient should also be told that though it is rare, some individuals experience sleep behaviors like sleepwalking or even sleep-driving. It would be important to tell this patient if she experienced any of these symptoms to stop taking zolpidem right away and tell her provider (Drugs.com, 2023b).</p>
How much would medication cost per month if paying out of pocket?	The out-of-pocket cost for 30, 10mg tablets of generic zolpidem is roughly \$20 (GoodRx, n.d.-e). However, if a patient were to want the brand name, Ambien, the out-of-pocket cost for 30, 10mg is roughly \$650 (GoodRx, n.d.-d).
Drug # 7	<p>Drug Name (Generic): ciprofloxacin</p> <p>Drug Name (Trade): Cipro, Otiprio</p> <p>Drug Class: Antibiotic</p> <p style="text-align: right;">(Jones & Bartlett Learning, 2023)</p>
How is the medication taken: (include dose, route, and frequency)	The patient is to take 750mg of ciprofloxacin by mouth via oral suspension tablets every 12 hours for the next 7 days.
Specific Directions not included above:	<p>This medication should be discontinued after 7 days. Ciprofloxacin should be given with a meal, ideally the patient's breakfast and dinner (Jones & Bartlett Learning, 2023).</p> <p>Furthermore, the patient should not chew the microcapsules that are within the oral</p>

	suspension and instead should swallow them whole (Jones & Bartlett, 2023).
Does this medication interact with any other medication(s) on this list? (see rubric for further instruction)	<p>Ciprofloxacin interacts with several other drugs that this patient is taking. First, ciprofloxacin can interact with the steroid, prednisone and cause possible tendinitis and even rupturing of a tendon (Drugs.com, 2023a) The exact reason why this occurs is unknown, but the achilles tendon is most frequently affected and because this patient is over the age of 60, she is particularly susceptible to this (Drugs.com, 2023a). Additionally, this patient is taking zolpidem. Ciprofloxacin is known to interfere with the body's ability to break down zolpidem which causes higher levels of zolpidem to stay in the body longer (Drugs.com, 2023a). The sustained concentration of zolpidem in the body can lead to impairments the following day such as slowed reaction times and dizziness (Drugs.com, 2023a). This patient is also taking simvastatin and it is known that ciprofloxacin reacts with this drug in a way that causes the blood plasma concentration of simvastatin to increase (Drugs.com, 2023a). This in turn can increase the side effects of simvastatin such as muscle pain and weakness or in more severe cases liver damage or rhabdomyolysis (Drugs.com, 2023a). Similarly, ciprofloxacin can interact with budesonide which also causes an increase in the absorption of this drug into the bloodstream (Drugs.com, 2023a). Side effects of this can include weight gain, high blood pressure, high blood glucose, muscle weakness and more (Drugs.com, 2023a). Another drug</p>

	<p>that ciprofloxacin can have a moderate interaction with is albuterol sulfate in that when the two are taken together it can cause an irregular heart rhythm which could be potentially life threatening (Drugs.com, 2023a). Lastly, ciprofloxacin has the potential to interact with meloxicam, a nonsteroidal anti-inflammatory drug (Drugs.com, 2023a). Though rare, ciprofloxacin when taken alongside meloxicam can increase the risk of central nervous system toxicity which can manifest as delirium, seizures, or even a coma (Drugs.com, 2023a).</p>
<p>Lifestyle interactions: (Daily tobacco use, alcohol, drugs, etc.)</p>	<p>There are no major interactions between alcohol and tobacco with ciprofloxacin; however, oral ciprofloxacin should not be taken with dairy products or calcium-fortified products alone as these can make the medication less effective (Drugs.com, 2023a). Patients should also be warned that taking ciprofloxacin with products containing caffeine will increase the effects of caffeine (Drugs.com, 2023a).</p>
<p>Does any of the client's past medical history contradict the use of this medication?</p>	<p>This patient's past medical history does not appear to contradict the use of ciprofloxacin. However, she is taking prednisone alongside ciprofloxacin and it is known that taking these two medications together can cause tendonitis (Drugs.com, 2023a). Because she has a history of arthritis, she may be more susceptible to increased inflammation of her tendons and therefore it would be important to keep in mind and monitor.</p>
<p>What is the indication for use of this medication</p>	<p>Ciprofloxacin's indicated use for this patient is as an antibiotic to treat her community</p>

<p>based on the client's past medical history? (If unable to determine an indication based on past medical history, please list potential indications for use of the medication in general)</p>	<p>acquired pneumonia (Jones & Bartlett, 2023). Because she is receiving 750 mg dose every 12 hours, her infection is considered severe (Jones & Bartlett, 2023).</p>
<p>What would you teach the client about taking this medication? You must prioritize 2 (see rubric)</p>	<ol style="list-style-type: none"> 1. Considering that this patient has arthritis and is taking both ciprofloxacin and prednisone which can cause tendonitis and even tendon rupture when taken together, it would be important to educate her to promptly report any feelings of increased inflammation, pain, or swelling of her joints. This way her care team can properly monitor possible tendon rupture and place her on appropriate rest if needed. 2. The patient should also be taught to take this medication with a meal, but to make sure not to take it solely with dairy products or calcium-fortified foods because this can lessen the effectiveness of the antibiotic. However, it is okay if their meal has some dairy products (Drugs.com, 2023a).
<p>How much would medication cost per month if paying out of pocket?</p>	<p>Typically, ciprofloxacin is not taken for a whole month and is instead prescribed for 7-14 days. Out of pocket, a standard 7-day treatment of generic 750 mg ciprofloxacin tablets would cost roughly \$16-\$25 and therefore, a 14-day treatment plan would cost about \$32-\$50</p>

	(GoodRx, n.d.-c).
Drug # 8	<p>Drug Name (Generic): codeine phosphate and guaifenesin</p> <p>Drug Name (Trade): Cheratussin AC</p> <p>Drug Class: Antitussive Opioid / Expectorant</p> <p style="text-align: right;">(Jones & Bartlett Learning, 2023)</p>
How is the medication taken: (include dose, route, and frequency)	<p>The patient is to take 1 liquid teaspoon every four hours by mouth as needed. However, the provider forgot to include the exact dose in each teaspoon and this should be clarified.</p> <p>Typically, each teaspoon (5mL) of this drug will contain 10 mg codeine phosphate and 100 mg of guaifenesin (National Institutes of Health, n.d).</p>
Specific Directions not included above:	Do not exceed over 6 doses in a 24-hour period (National Institutes of Health, n.d).
Does this medication interact with any other medication(s) on this list? (see rubric for further instruction)	<p>Cheratussin has a major interaction with both zolpidem and Tylenol with codeine #3.</p> <p>Cheratussin and Tylenol #3 both have codeine as active ingredients and concurrent use of opioids should be avoided as it can result in profound sedation, respiratory depression, or even death (Multum, 2023a). The drug zolpidem is a sedative-hypnotic which means it is also a central nervous system depressant and again should not be taken alongside Cheratussin due to the increased risk of profound sedation and other adverse effects like severe hypotension</p>

	<p>(Multum, 2023a). Cheratussin also has a mild drug interaction with hydrochlorothiazide. The codeine in Cheratussin can cause hypotensive effects and hydrochlorothiazide is a diuretic that also decreases blood pressure so the combined effect of the two drugs can result in orthostatic hypotension or severe hypotension (Multum, 2023a).</p>
<p>Lifestyle interactions: (Daily tobacco use, alcohol, drugs, etc.)</p>	<p>Patients taking Cheratussin should not drink alcohol because combining the two can have an additive effect as central nervous system depressants and this can lead to impairment in thinking and motor skills (Multum, 2023a). It may also be helpful if the patient takes Cheratussin alongside food as sometimes codeine can cause nausea (Jones & Bartlett Learning, 2023).</p>
<p>Does any of the client's past medical history contradict the use of this medication?</p>	<p>It does not appear that the patient's past medical history contradicts the use of this medication. However, opioids like codeine should be used cautiously in patients with a history of respiratory problems. This patient is a smoker, has both COPD and sleep apnea, and is recovering from pneumonia; therefore, she is at greater risk for respiratory depression while taking a medication that contains the CNS depressant, like codeine. Opioids should also be used very cautiously in older adults such as this patient.</p>
<p>What is the indication for use of this medication based on the client's past medical history? (If unable</p>	<p>Cheratussin is used to temporarily relieve a cough associated with bronchial irritation (National Institutes of Health, n.d). It helps to loosen mucus and thin secretions so that it is</p>

to determine an indication based on past medical history, please list potential indications for use of the medication in general)	easier to cough up and clear out the mucus (National Institutes of Health, n.d). It also helps to calm a cough in general (National Institutes of Health, n.d). This patient was recently diagnosed with community acquired pneumonia which can often cause a person to have a lot of thick mucus. This medication would help to thin that mucus and make it easier for the patient to cough it up and clear out the lungs. Also, considering the fact that this patient has a medical history of COPD as well, her lungs are already weaker and this medication would be helpful in relieving the extra irritation on the lungs caused by the pneumonia.
What would you teach the client about taking this medication? You must prioritize 2 (see rubric)	<ol style="list-style-type: none">1. Because this patient is already taking several other medications that are CNS depressants it would be important to educate this patient to avoid taking Cheratussin at the same time as her other central nervous system depressants like zolpidem and Tylenol #3 as this can result in severe respiratory depression and sedation. It would be best to consult with this patient's provider about possibly changing her prescription of Cheratussin to a cough suppressant that does not contain an opioid, this way it would be safer for her to take alongside her other medications. However, if she must take these medications together, she should be educated not to drive or to engage in any activities that require a great deal of mental alertness.2. A common side effect of opioid drugs like codeine is constipation, so this patient should be educated to drink plenty of fluids and eat a high fiber diet to help avoid this adverse effect

	(Jones & Bartlett Learning, 2023).
How much would medication cost per month if paying out of pocket?	A 120mL bottle of Cheratussin AC costs between \$12 and \$16 (GoodRx, n.d.-b). At the prescribed 5mL dose, this patient could get 24 doses from one 120mL bottle. If she needed more than one bottle to get her through a month then the total cost would be \$24-\$32.
Drug # 9	<p>Drug Name (Generic): acetaminophen and codeine</p> <p>Drug Name (Trade): Tylenol #3 (300-30)</p> <p>Drug Class: Antipyretic/Non-opioid analgesic/ opioid</p> <p style="text-align: right;">(Jones & Bartlett Learning, 2023)</p>
How is the medication taken: (include dose, route, and frequency)	The patient is to take one tablet by mouth of Tylenol #3 (300 mg acetaminophen + 30mg codeine) every 4 to 6 hours as needed for pain. The provider should have also included how many doses the prescription provides.
Specific Directions not included above:	This drug should be taken with food and should not exceed over 6 doses in a 24-hour period (Jones & Bartlett Learning, 2023).
Does this medication interact with any other medication(s) on this list? (see rubric for further instruction)	Tylenol #3 interacts with several other drugs on this patient's medication list. First, because Tylenol #3 has codeine in it, it will have a combined effect with Cheratussin AC which also contains codeine. The concurrent use of these opioid-containing medications can lead to

	<p>hypotension, profound sedation, and severe respiratory depression (Multum, 2023b). Tylenol #3 also interacts with zolpidem which is another central nervous system depressant and if taken together can also result in hypotension, sedation, and respiratory depression (Multum, 2023b). Lastly, Tylenol #3 interacts with the drug hydrochlorothiazide. Hydrochlorothiazide is a diuretic used to help lower blood pressure and because Tylenol #3 can also lower blood pressure, the combined effects of the two drugs could result in severe hypotension (Multum, 2023b).</p>
<p>Lifestyle interactions: (Daily tobacco use, alcohol, drugs, etc.)</p>	<p>Patients taking Tylenol #3 should not drink alcohol. The alcohol not only increases the sedative effects of codeine but is also even more toxic to the liver when acetaminophen is also being taken (Multum, 2023b). Because this patient is a smoker, her lungs are damaged and this also puts her at an increased risk for respiratory depression from this drug.</p>
<p>Does any of the client's past medical history contradict the use of this medication?</p>	<p>It does not appear that this patient's past medical history contradicts the use of this medication. However, because this patient has a history of COPD, sleep apnea, is recovering from pneumonia, and she is over the age of 65, opioids should be used with extra caution as there is an increased risk for respiratory depression.</p>
<p>What is the indication for use of this medication based on the client's past medical history? (If unable</p>	<p>This patient was recently diagnosed with pneumonia. Pneumonia is an infection that can cause a fever and therefore acetaminophen would be indicated to be used as an antipyretic to</p>

to determine an indication based on past medical history, please list potential indications for use of the medication in general)	bring down any fevers associated with the infection. Pneumonia can also cause body aches and pains and if accompanied by a cough, can be especially taxing on the body, especially for a person who already has COPD. Therefore, both the acetaminophen and codeine in Tylenol #3 can also help relieve pain associated with her infection.
What would you teach the client about taking this medication? You must prioritize 2 (see rubric)	<ol style="list-style-type: none"><li data-bbox="871 492 2024 1036">1. Due to the potentially very dangerous interactions of Tylenol #3 with zolpidem, cheratussin, and ciprofloxacin, it would be extremely important to educate the patient on the additive effects these drugs have as central nervous system depressants when taken together. It would be important to warn the patient not to take these medications together because severe sedation, respiratory depression, and even death may occur when these drugs are taken in combination. It would be best to speak with a provider about possibly reducing her dose of Tylenol #3 or prescribing just acetaminophen alone.<li data-bbox="871 1076 2024 1390">2. This patient is taking other drugs alongside Tylenol #3 such as Cheratussin and hydrochlorothiazide which also lower blood pressure. Therefore, the patient should be educated to get up slowly from sitting or lying down to avoid orthostatic hypertension (Jones & Bartlett Learning, 2023). They are at an increased risk for syncope and falls as a result of orthostatic hypotension from the combined hypotensive effects of these

	<p>medications.</p> <p>3. This patient should be taught the importance of taking this drug exactly as it is prescribed because misuse of this drug increases the risk for addiction because it contains an opioid. The patient should be educated on the signs and symptoms of developing an addiction such as emotional swings and feeling detached from others (Jones & Bartlett Learning, 2023).</p>
<p>How much would medication cost per month if paying out of pocket?</p>	<p>A one-month supply of 20 tablets of Tylenol #3 (300 mg acetaminophen + 30mg codeine) costs between \$8 and \$16 (GoodRx, n.d.-j).</p>
<p>Drug # 10</p>	<p>Drug Name (Generic): albuterol sulfate</p> <p>Drug Name (Trade): AccuNeb</p> <p>Drug Class: Adrenergic bronchodilator</p> <p style="text-align: right;">(Jones & Bartlett Learning, 2023)</p>
<p>How is the medication taken: (include dose, route, and frequency)</p>	<p>The patient is to take 2.5 mg nebulization via oral inhalation every 4 to 6 hours as needed.</p>
<p>Specific Directions not included above:</p>	<p>To use this medication, the patient should put the 2.5mg inhalation solution into the nebulizer cup on the machine and then connect the nebulizer to the face mask or mouthpiece (Jones & Bartlett Learning, 2023).The patient should then use the facemask to breathe in the medicine</p>

	<p>and do so for about 5 to 15 minutes until the medicine is all gone (Jones & Bartlett Learning, 2023).</p>
<p>Does this medication interact with any other medication(s) on this list? (see rubric for further instruction)</p>	<p>Albuterol has moderate interactions with several other drugs that this patient is taking. First, albuterol may interact with ciprofloxacin because both of these drugs have the potential to prolong the QT interval of the heart and increase the risk of ventricular arrhythmias (Drugs.com, 2024a). Albuterol also has a moderate drug interaction with hydrochlorothiazide, in that as a beta agonist, it can increase the hypokalemic effects of potassium-wasting diuretics like hydrochlorothiazide (Drugs.com, 2024a). This interaction is also more likely to occur with nebulized forms of albuterol like this patient is taking (Drugs.com, 2024a). Hypokalemia, when severe enough, can result in life threatening dysrhythmias. Lastly, albuterol may have some minor interactions with both of the corticosteroids, prednisone and budesonide, that this patient is also taking. Taking these corticosteroids alongside albuterol can again potentiate hypokalemia in patients (Drugs.com, 2024a). Therefore, potassium levels in this patient should be closely monitored.</p>
<p>Lifestyle interactions: (Daily tobacco use, alcohol, drugs, etc.)</p>	<p>This patient should avoid consuming products that contain caffeine such as coffee, tea, soda, and energy drinks as these in combination with albuterol can cause additive effects on the central nervous system and result in adverse effects such as tachycardia, nervousness, and</p>

	irritability (Frandsen et al., 2021). This patient is also a smoker and smoking causes bronchoconstriction and this can interfere with how well the albuterol treatments work.
Does any of the client's past medical history contradict the use of this medication?	It appears that the patient's past medical history does not contradict the use of this medication; however, albuterol should be used cautiously in patients with hypertension, coronary artery disease, and diabetes mellitus as albuterol can worsen these conditions (Frandsen et al., 2021). This patient has a medical history of hypertension and given that she is a smoker and weighs 300 lbs. it is also likely that she has coronary artery disease and possibly diabetes.
What is the indication for use of this medication based on the client's past medical history? (If unable to determine an indication based on past medical history, please list potential indications for use of the medication in general)	Albuterol sulfate is used to help treat bronchoconstriction in people with bronchitis, emphysema, asthma, or other respiratory conditions such as COPD (Frandsen et al., 2021). This nebulizer treatment will help this patient's COPD by dilating the bronchioles in her lungs making it easier for her to breathe and relieving symptoms of shortness of breath.
What would you teach the client about taking this medication? You must prioritize 2 (see rubric)	<ol style="list-style-type: none"> 1. This patient should be educated on how to properly use her albuterol nebulizer so that she can get the most effective use of her medication. She should be taught to hold the nebulizer mask upright and take slow, deep breaths through their mouth so that the medication can go deep into her lungs. Some patients find using a nose-clip helpful to

	<p>ensure they are breathing the medication through their mouth. This for 5-15 minutes until the medication solution is gone (Jones & Bartlett Learning, 2023).</p> <ol style="list-style-type: none"><li data-bbox="871 341 2005 812">2. This patient should be educated on the importance of getting enough potassium in their diet because albuterol combined with the other drugs she is taking like hydrochlorothiazide, prednisone, and budesonide can result in hypokalemia. Foods high in potassium include leafy greens, avocados, bananas, and potatoes. The patient should also be educated on signs of low potassium such as muscle cramps, fatigue, and numbness so that she can promptly seek medical attention because hypokalemia can cause life threatening dysrhythmias.<li data-bbox="871 852 2005 1258">3. This patient should be educated on how to properly clean her nebulizer face mask or mouthpiece because depending on the type of nebulizer the cleaning instructions vary. Some mouth pieces should be washed with just water once a week and left to air dry (Jones & Bartlett Learning, 2023). Other devices should not be put in water and instead should be gently wiped with a dry cloth after use (Jones & Bartlett Learning, 2023).
How much would medication cost per month if paying out of pocket?	A 20mL bottle containing 5 mg per mL of albuterol inhalation solution costs roughly between \$15 and \$40 (GoodRx, n.d.-a). At her prescribed dose she would get 40 uses out of one 20mL

	bottle, if this did not last her a whole month then the monthly cost of two 20mL bottles would be between \$30 and \$80.
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Is there anything about this medication regimen scenario that might indicate a potential difficulty in maintaining compliance with the orders as listed?

There are several things about this medication regime scenario that may cause potential difficulties for this patient maintaining compliance with the orders as listed. First, this patient is being prescribed 10 different medications. This alone can cause difficulty in maintaining compliance because it can be daunting to a patient to have to take so many medications every day. Furthermore, these 10 medications cannot simply be taken all at the same time. Some of the medications like hydrochlorothiazide, budesonide, and ciprofloxacin must be remembered to be taken twice a day. Other medications on this patient's list should only be taken at night like simvastatin and zolpidem. This patient must also remember to taper her dose of prednisone over the next seven days and this can be difficult to keep track of. Additionally, the patient has to be cautious to not take zolpidem, cheratussin, and Tylenol #3 at the same time because all of these medications act as central nervous system depressants and put her at increased risk of profound sedation and respiratory depression. This patient is already non-compliant with using her C-pap for sleep apnea, so it is likely that she would struggle to properly follow this complex medication regimen.

The out-of-pocket costs of these medications must also be considered. The total cost for all 10 of these medications is roughly \$409- \$712. It is unknown if this particular patient has insurance or if insurance would cover the cost of all of these medications. Additionally, given this patients' age and medical condition, it is likely that she is not working. Not only that, but it is also unknown if this patient can easily get to a pharmacy to obtain all of these medications. She may require assistance from her daughter or someone else to transport her to the pharmacy. All of these things would make it difficult to remain compliant with her current medication regimen.

Is there anything about this medication regimen scenario that might assist the client in maintaining the medication regimen as ordered?

While many parts of this medication regimen may be difficult for this patient to maintain, there are also a few aspects of the current regimen that could increase compliance. First, almost all of these medications are taken by mouth or inhaled. This makes it easy for the patient to administer the medications to herself and she does not have to worry about any sort of injections. Also, several of these medications are prescribed only as needed such as her albuterol, Tylenol #3, and cheratussin. This means that there are less medications that she needs to worry about taking at specific times. Thankfully, both her ciprofloxacin and prednisone prescriptions are due to end within 7 days and after that time she is unlikely to need the Tylenol #3 or cheratussin either and this leaves her with 6 medications instead of 10 after a week. Lastly, because this patient lives with her daughter, her daughter may be helpful in reminding Lucy to take her prescribed medications.

What suggestions might you make to the prescriber and/or client (or questions you might ask the prescriber) to help this client scenario? (think about decreasing the potential for interaction(s) through medication reduction, other potential medications, diet changes, lifestyle changes, etc)

There are a couple of suggestions and questions that could be brought to the provider in order to clarify the prescriptions as well as help the patient manage her regimen. First, the provider should be questioned on the dosage for Cheratussin. The prescription does not list the dose, which would be needed prior to the patient taking the medication. Additionally, the provider could be asked if a combination medication like dextromethorphan and guaifenesin such as OTC Mucinex be prescribed instead of Cheratussin since Mucinex does not contain codeine. Next, the provider could be asked if Tylenol alone be used as an analgesic, with the prescription being moved up to Tylenol #3 if needed. This is because the lowest effective dose with the least dangerous means should be tried first, as she may not need an opioid to control pain. Next, the provider should clarify how long the meloxicam prescription should be for. Meloxicam is a nonsteroidal anti-inflammatory drug, which should not be taken for long periods of time due to their potential to cause GI and kidney damage. Therefore, the prescription should have a length of time in which it is taken. The provider should also be asked to clarify how long this patient has a prescription for zolpidem, as this drug is also only meant to be used for a short period of time to aid sleep. The provider should also perform frequent blood testing for electrolyte levels, liver function, and blood count while the patient is taking these medications.

There are many questions the patient should be asked in order to verify her understanding of her medication regimen, as well as evaluate for areas of concern or improvement. First, the patient should be asked about her non-compliance with her CPAP machine. Understanding why she is noncompliant could help with understanding what can be done to increase medication compliance. If it is a matter of discomfort or not enjoying the treatment, education of the importance or finding alternative methods may be beneficial. If it is due to forgetfulness, we could suggest using daily reminders on her phone or creating a highly visible checkbox system in her home. As she is noncompliant with her CPAP during sleep, this could be causing issues with staying asleep due to the apnea awakening her. By promoting CPAP usage and relaxation techniques, the need for zolpidem could be combatted. The patient should be questioned about what she believes would make it easier for her to follow her medication regimen.

The patient would also benefit greatly from diet and exercise education. As she has a history of hypertension and smoking, it is important to educate her on the need to follow a low sodium, low fat diet or the DASH diet. It is also important to educate her on smoking cessation, as smoking and the use of these medications can increase her risk of respiratory distress, hypertension, and atherosclerosis, which can lead to cerebrovascular accidents, myocardial infarction, or respiratory and cardiovascular arrest. She should also be taught to increase her potassium intake, as she is taking many medications that can severely deplete potassium levels. Foods that are rich in sources of potassium include citrus fruits, avocados, bananas, potatoes, and leafy greens.

What would the patients monthly out of pocket expense for all 10 medications? (Total Cost for all 10 meds)?

Listed below are the ranges in price of this patient's medications. Therefore, a rough estimate of her total monthly out-of-pocket costs for these medications is \$409- \$712.

Hydrochlorothiazide: \$14-\$18

Simvastatin: \$60-\$98

Prednisone: \$5-\$19

Budesonide: \$235-\$404

Meloxicam: \$12-\$40

Zolpidem: \$20

Ciprofloxacin: \$16-\$25

Cheratussin: \$24-\$32

Tylenol #3: \$8-\$16

Albuterol sulfate: \$15-\$40

Total Cost: \$409- \$712

Reflective Statement of Experience:

This polypharmacy project provided great insight into how complicated medication regimens can be and how common it is for patients to be taking a great number of different medications. It became clear to me very quickly how easily patients can be prescribed multiple medications with the same active ingredients and similar effects on the body. For instance, in this patient scenario she was prescribed multiple central nervous system depressants such as zolpidem, cheratussin, and Tylenol #3. Within those medications, both cheratussin and Tylenol #3 contain the opioid, codeine and all three can lower blood pressure and reduce respiratory rate. It may not be evident to a patient right away that both of those medications contain codeine since it does not say so specifically in the name of the medication. This goes to show that there are so many things that must be taken into consideration when prescribing patients multiple medications, especially older adults who are more at risk for adverse effects.

Physicians and nurses must truly look at the patient as a whole when giving medications and consider things such as their age, current health status/cognitive level, kidney and liver function, allergies, their environment and support system at home, can the patient afford the medications, and can the patient even get to the pharmacy to pick up their medications. All of these and more must be carefully considered when prescribing medications. This project has also highlighted the crucial role a nurse plays in completing a thorough medication reconciliation. This is so important because nurses can help to ensure patients are not taking potentially dangerous medications or more than one medication to treat the same thing such as taking two beta blockers to help treat heart disease.

Doing a thorough medication reconciliation also helps to ensure that the patient is not taking any over the counter medications or supplements that may interact with their prescribed medications and it also allows the nurse to consider any possible drug-drug interactions within the patient's medication regimen.

Moreover, nurses are responsible for educating patients on what their medications do, how they should be taken, possible side effects, and what to do if a patient does experience side effects. By doing all of this, nurses are extremely important advocates for their patients' health and safety. In all, this project has shown me how complicated and potentially dangerous polypharmacy can be. I now see much more clearly the importance of thoroughly understanding the medications that patients are prescribed and how crucial it is to think about all aspects of a patients lifestyle in relation to their medication regimen.

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N322 Polypharmacy Grading Rubric

Criteria	Excellent 40 points	Acceptable 31-39 points	Unacceptable 0-30 points	Points Earned
Each drug should have a completed breakdown within the tables provided, which includes the following: <ul style="list-style-type: none"> • Drug class • Generic name • Trade name • How is the medication taken (include dose, route, frequency) 	All key components were addressed within the paper and were accurate.	The student provided the required information for some of the medications, but not all and/or the answers provided were inaccurate. (Each individual component for each medication is worth one point)	The student failed to address a sufficient number of the listed components within the paper and/or the components were addressed but were inaccurate. (Each individual	___/40

			component for each medication is worth one point)	
Criteria	Excellent 10 points	Acceptable 8-10 points	Unacceptable 0 - 7 points	Points Earned
Specific Directions not included above: <ul style="list-style-type: none"> Is there any type of medication on the patient list that have specific directions? (before bed, before breakfast, 30 minutes before meals, etc..) 	All key components were addressed within the paper.	The student did list some of the medications that required specific directions, however some of the medications included specific directions that were not addressed and/or were inaccurate. (For each medication this question if worth one point)	Student failed to answer the questions and/or the answers were inaccurate. (For each medication this question is worth one point)	___/10
Criteria	Excellent 0 points	Acceptable 16-19	Unacceptable 0-15 points	Points Earned
Does this medication have any potentially serious interactions with any other medication(s) on this list, and/or potential interactions that should be closely monitored due to co-administration? <ul style="list-style-type: none"> Do any of the medications interact with each other? (Please note: if there is an interaction between two	All medications reviewed and student explained medication interactions.	The student did list some of the potential interactions of the medication(s), but failed to address all potential interactions that are serious and/or need close monitoring. (for each medication listed this question is worth two points)	Student failed to answer question and/or The student did list some of the potential interactions of the medication(s), but failed to address all potential interactions that are serious and/or need close monitoring. (for	___/20

<p>medication, you MUST list that interaction on BOTH medications to receive full credit. You may utilize the same verbiage/wording on each medication, we want to know you are thinking about it when considering each medication)</p>			<p>each medication listed this question is worth two points)</p>	
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Criteria	Excellent 5 points	Acceptable 4 points		Unacceptable 0 -3 points	Points Earned
<p>Lifestyle interactions:</p> <ul style="list-style-type: none"> • What lifestyle factors counteract with the medications? <p>(tobacco user, ETOH use – 3 beers daily)</p>	<p>Student showed knowledge why lifestyle would counteract with medications</p>	<p>The student listed lifestyle interactions for some of the medications, but not all and/or the interactions listed were not priority or were incorrect. (For each medication, this question is worth half a point)</p>	<p>Student failed to answer question or the student listed lifestyle interactions for some of the medications, but not all and/or the interactions listed were not priority or were incorrect. (For each medication, this question is worth half a point)</p>	<p>___/5</p>	

Criteria	Excellent 10 points	Average 8-9	Unacceptable 0-7 points	Points Earned
<ul style="list-style-type: none"> Does any of the client's past medical history contradict the use of this medication? 	Student showed knowledge why the client's past medical history would contradict the use of the medication(s).	Student provided answers to the question(s), but failed to answer all the questions and/or the answers provided were inaccurate. (For each medication this question is worth one point)	Student failed to answer question or Student provided answers to the question(s), but failed to answer all the questions and/or the answers provided were inaccurate. (For each medication this question is worth one point)	___/10
Criteria	Excellent 10 points	Acceptable 8-9 points	Unacceptable 0-7 points	Points Earned
<ul style="list-style-type: none"> What is the indication for use of this medication based on the client's past medical history? (If unable to determine an indication based on past medical history, please list potential indications for use of the medication in general) 	Student showed knowledge of medications and what conditions corresponds with medications	The student provided appropriate indications for some of the medications, but failed to capture all of the appropriate indications for use. (For each medication this question is worth one point)	Student failed to answer the question or The student provided appropriate indications for some of the medications, but failed to capture all of the appropriate indications for use. (For each medication this question is worth one point)	___/10
Criteria	Excellent 20 points	Acceptable 16-19 points	Unacceptable 0-15 points	Points Earned
What would you teach the client about taking this	Student showed the importance of medication education, and	The student provided some appropriate education for	Student failed to answer the question OR The student	___/20

<p>medication?</p> <ul style="list-style-type: none"> • What education is needed for the medication? (For each medication listed the student must prioritize two topics for client education) <p>(You must consider all component(s) of the medication list when answering this question... if there are potential interactions with other medication this may be a priority over general education for this one medication)</p>	<p>appropriate prioritized client education for the scenario provided.</p>	<p>the client, but failed to capture all of the appropriately prioritized education for the client. (Each topic of education is worth one point)</p>	<p>provided some appropriate education for the client, but failed to capture all of the appropriately prioritized education for the client. (Each topic of education is worth one point)</p>	
<p>Criteria</p>	<p>Excellent 10 points</p>	<p>Acceptable 8-9 points</p>	<p>Unacceptable 0-7 points</p>	<p>Points Earned</p>
<p>Is there anything about this medication regimen/ scenario that might indicate a potential difficulty in maintaining compliance with the orders as listed?</p> <ul style="list-style-type: none"> • Why would the patient have difficulty maintaining the medication regiment? 	<p>Student had knowledge on why a patient would have difficulty with medication regiment</p>	<p>The student indicated some potential reasons that the client may have difficulty, however the student failed to indicate a reason OR an appropriate reason for some of the medications (This question is worth one point for each medication)</p>	<p>Student failed to answer the question OR the student indicated some potential reasons that the client may have difficulty, however the student failed to indicate a reason OR an appropriate reason for some of the medications (This question is worth one point for each medication)</p>	<p>___/10</p>

(Please consider all factors in the scenario and all information provided within your chart – including cost, insurance, frequency of administration, etc)				
Criteria	Excellent 10 points	Acceptable 8-9 points	Unacceptable 0-7 points	Points Earned
<p>Is there anything about this medication regimen/ scenario that might assist the client in maintaining the medication regimen as ordered?</p> <ul style="list-style-type: none"> • What factors are present to remain compliant? <p>(Please consider all factors in the scenario and all information provided within your chart – including cost, insurance, frequency of administration, etc.</p>	Student had knowledge on medication compliance	The student answered the question appropriately for some of the medications but failed to indicate all of the factors that are present that assist with compliance. (This question is worth one point for each medication)	Student failed to answer the question OR The student answered the question appropriately for some of the medications but failed to indicate all of the factors that are present that assist with compliance. (This question is worth one point for each medication)	___/10
Criteria	Excellent 15 points	Acceptable 8-9 points	Unacceptable 0 points	Points Earned
<ul style="list-style-type: none"> • How much would this medication cost per month if the patient were to pay for them out of 	Student showed research on medication costs	The student provided accurate research for some of the medications, but failed to provided research for all medications (This	Student failed to answer the question OR The student provided accurate research for some of the medications, but failed to provided	___/15

<p>pocket? (best assessment based off of research)</p> <ul style="list-style-type: none"> • What would the client’s monthly out of pocket expense for all 10 medications? 		<p>question is worth one point for each medication, with the total cost being worth 5 points)</p>	<p>research for all medications (This question is worth one point for each medication, with the total cost being worth 5 points)</p>	
<p>Criteria</p>	<p>Excellent 20 points</p>	<p>Acceptable 16-19 points</p>	<p>Unacceptable 0-15 points</p>	<p>Points Earned</p>
<p>The student must appropriately format the paper and include all of the following:</p> <ul style="list-style-type: none"> • Entire document must include appropriate citations, reference page, title page, page numbers, running head, all with appropriate formatting per APA (10 points – each missing or inaccurate portion per APA is worth one point) • The student provided a rubric attached for grading (3 points) • The student 	<p>The document included a title page, the rubric, the client scenario, a reference page which included five references that were cited within the document. APA formatting was consistent with the APA manual.</p>	<p>The document did not meet all of the criteria for formatting/ referencing. See “criteria” to the left for further breakdown.</p>	<p>The document did not meet all of the criteria for formatting/ referencing. See “criteria” to the left for further breakdown.</p>	<p>___/20</p>

<p>included the provided client scenario on page two of the document (2 points)</p> <ul style="list-style-type: none"> The paper included a minimum of five references which were cited within the document (each reference with one citation is worth 5 points) 				
Criteria	Excellent 20 points	Acceptable 16-19 points	Unacceptable 0-15 points	Points Earned
<p>What suggestions might you make to the prescriber and/or client (or questions you might ask the prescriber) to help this client scenario? (think about decreasing the potential for interaction(s) through medication reduction, other potential medications, diet changes, lifestyle changes, etc)</p> <p>Elaborate on this, explaining why you feel it should be addressed, why it is priority and provide evidence behind your</p>	<p>The student was able to identify one potential idea or question to present to the prescriber or client. This question showed evidence of good critical thinking.</p>	<p>The student was able to identify one potential idea or question to present to the prescriber or client, however there was a much higher priority question/suggestion/issue within the scenario that should have been addressed.</p>	<p>The student failed to answer the question OR the student answered the question, however the students answer was dangerously inaccurate.</p>	<p>____/20</p>

presentation.				
Criteria	Excellent 10 points	Acceptable 8-9 points	Unacceptable 0-7 points	Points Earned
<ul style="list-style-type: none"> • Reflective statement of experience should include the following: -insight into the project itself (a specific example within the project and its implications) -A basic understanding of polypharmacy -A reflection on this student nurses role in this scenario as a client advocate/educator/caregiver 	The students provided reflection showed good insight into the project itself, polypharmacy, and the nurses role in client advocacy	The student provided a reflection, however the reflection lacked one of the following -insight into the project itself (a specific example within the project and its implications). -A basic understanding of polypharmacy -A reflection on this student nurses role in this scenario as a client advocate/educator/caregiver	Student failed to reflect on their project OR the student addressed only of the topics of reflection	___/10
Total Points				___/200