

Polypharmacy Project

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N322 Introduction to Pharmacology

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**Scenario:**

Zeb is a 30-year-old male with multiple health conditions, including non-alcoholic fatty liver disease, hypertension, gastroesophageal reflux disease, morbid obesity, and heart failure. He has a wife and 3 children at home. He is employed as a construction worker in New York City. Zeb has chronic lower back pain due to an accident he had while working several years ago. He is alert and oriented and does not drink alcohol but does enjoy a cigar once a day after work. He recently underwent gastric banding. His current diet consists of low-carb, low-residue, and low-fat diet - that does not exceed 1,000 calories a day. He has allergies to NSAIDS, IV contrast dye, and Penicillin. Zeb has health insurance, Anthem BCBS; however, he is having difficulty covering his medical expenses due to work being slow. He cannot afford all his copays for his medications. His current medications are listed below.

<b>Drug #1</b>	<p><b>Drug Name (Generic):</b> Vitamin E (alpha tocopherol)</p> <p><b>Drug Name (Trade):</b> Aquasol E (Entringer, 2023).</p> <p><b>Drug Class:</b> Vitamin (Jones &amp; Bartlett Learning, 2023).</p>
<b>How is the medication taken: (include dose, route, and frequency)</b>	800 iu PO, once daily
<b>Specific Directions not included above:</b>	Store at room temperature away from heat or moisture. If the client is undergoing a medical procedure (including going to the dentist), he should stop taking this vitamin 2 weeks before the date (Entringer, 2023).
<b>Does this medication interact with any other medication(s) on this list? (see rubric for further instruction)</b>	Vitamin E has a moderate drug interaction with aspirin. Vitamin E may increase the strength of the anticoagulant inhibitors within aspirin. Since this client takes more than 400 units per day, he is at a greater risk for bleeding and should watch for signs of blood in his urine, stool, or bruising. Vitamin E and garlic should not be taken together because they both can affect blood clotting factors (Entringer, 2023).
<b>Lifestyle interactions:</b>	Avoid taking vitamin E with other herbal supplements that affect blood clotting, which include ginger, clove, turmeric, ginkgo, dandelion, horse chestnut, saw palmetto, willow,

<b>(Daily tobacco use, alcohol, drugs, etc. )</b>	capsicum, evening primrose, danshen, and dong quai. Talk to the prescriber before taking an iron supplement because the body has a decreased ability to absorb iron due to vitamin E. Omega-6 fatty acids, selumetinib, and other blood clotting prevention medications such as warfarin, alteplase, clopidogrel, and dipyridamole are all medications that should not be taken with vitamin E without the advice of a prescriber (Entringer, 2023).
<b>Does any of the client's past medical history contradict the use of this medication?</b>	The patient should be considerate of taking this vitamin while he has heart disease. The risk of bleeding is higher, and he should be monitored for signs and symptoms of bleeding (Entringer, 2023).
<b>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)</b>	Vitamin E is commonly used in patients who have vitamin E deficiency. This client has non-alcoholic fatty liver disease, and vitamin E can be taken to aid in treating it (Entringer, 2023).
<b>What would you teach the client about taking this medication? You must prioritize 2 (see rubric)</b>	1. Monitor for signs and symptoms of bleeding. If any blood is noticed in urine or stool, or any unusual bleeding, report this to the physician right away (Entringer, 2023).

	<p>2. Avoid taking more than the prescribed dose or starting new over-the-counter (OTC) supplements or vitamins before speaking to the provider since vitamin E, in combination with other drugs, can affect blood clotting (Entringer, 2023).</p>
<p><b>How much would medication cost per month if paying out of pocket?</b></p>	<p>Vitamin E tablets can be purchased at CVS Pharmacy for \$21.49 (without tax) for 100 capsules that are 400 iu (CVS Pharmacy, 2024). The client can take two and this bottle will last one month and carry over to the next month.</p>

<p><b>Drug #2</b></p>	<p><b>Drug Name (Generic):</b> Multivitamin with minerals (Cerner Multum, 2024).</p> <p><b>Drug Name (Trade):</b> Centrum Adults Chewable Multivitamin</p> <p><b>Drug Class:</b> Multivitamin with minerals (Cerner Multum, 2024).</p>
<p><b>How is the medication taken: (include dose, route, and frequency)</b></p>	<p>One chewable tablet by mouth twice a day</p>
<p><b>Specific Directions not included above:</b></p>	<p>Take exactly as directed on the bottle or as prescribed by a provider. Take it with a full glass of water. Do not crush, chew, or break tablets. Chew the tablet fully. Store at room temperature, away from moisture and heat, and in the original container (Cerner Multum,</p>

	2024).
<b>Does this medication interact with any other medication(s) on this list? (see rubric for further instruction)</b>	This medication interacts with calcium carbonate; calcium can make it harder for certain minerals to be absorbed (Cerner Multum, 2024).
<b>Lifestyle interactions: (Daily tobacco use, alcohol, drugs, etc. )</b>	The client should avoid taking this medication with dairy products or calcium supplements (Cerner Multum, 2024).
<b>Does any of the client's past medical history contradict the use of this medication?</b>	This client has GERD, and multivitamins with minerals can have some side effects, such as an upset stomach or nausea/vomiting, which can cause the GERD symptoms to worsen (Cerner Multum, 2024).
<b>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)</b>	The client had a recent gastric banding procedure and is on a low-carb, low-residue, and low-fat diet. This medication can provide vitamins and minerals he may be missing due to the strict diet (Cerner Multum, 2024).
<b>What would you teach the client about taking this</b>	1. The client should speak to their provider about taking this multivitamin and calcium

<b>medication? You must prioritize 2 (see rubric)</b>	<p>carbonate together due to calcium making it harder for certain minerals to be absorbed (Cerner Multum, 2024).</p> <p>2. The client should take this medication exactly as prescribed and inform their provider before taking other multivitamin products; taking similar products may cause an overdose (Cerner Multum, 2024).</p>
<b>How much would medication cost per month if paying out of pocket?</b>	<p>Centrum Adults Chewable Multivitamins can be purchased over the counter at CVS Pharmacy for \$14.99 (without tax) for one bottle that contains 110 gummies (CVS Pharmacy, 2024). The client takes 2 daily, so this bottle will last over a month and a half.</p>
<b>Drug #3</b>	<p><b>Drug Name (Generic):</b> Garlic powder tablet</p> <p><b>Drug Name (Trade):</b> Garlix (Cerner Multum, 2023).</p> <p><b>Drug Class:</b> Herbal supplement</p>
<b>How is the medication taken: (include dose, route, and frequency)</b>	<p>300 mg 3x daily oral tablet</p>
<b>Specific Directions not included above:</b>	<p>Do not crush or chew this tablet. Take at the same time every day with meals and stop taking</p>

	2 weeks before a medical procedure or dental visit (Cerner Multum, 2023).
<b>Does this medication interact with any other medication(s) on this list? (see rubric for further instruction)</b>	<p>Garlic powder has a moderate drug interaction with aspirin, potentially causing a higher risk of bleeding by increasing the effects of aspirin and anticoagulant factors. Garlic powder has a mild interaction with hydrochlorothiazide, causing hypotension. Garlic powder has a mild interaction with benazepril, causing hypotension as well. Garlic and vitamin E should not be taken together because they both can affect blood clotting factors (Cerner Multum, 2023).</p> <p>Taking garlic powder with hydrochlorothiazide and benazepril could result in hypotension that could potentially become harmful.</p>
<b>Lifestyle interactions: (Daily tobacco use, alcohol, drugs, etc. )</b>	Fish oil and other herbal supplements, such as turmeric, ginger, danshen, clove, horse chestnut, poplar, red clover, dong quai, capsicum, ginkgo, panax ginseng, and willow, should not be taken with garlic due to its effects on blood clotting abilities (Cerner Multum, 2023).
<b>Does any of the client's past medical history contradict the use of this medication?</b>	This client has gastroesophageal reflux disease (GERD), and a side effect of garlic powder can cause heartburn (Cerner Multum, 2023).
<b>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</b>	Garlic powder tablets are commonly used to lower high blood pressure (Cerner Multum, 2023).

<b>history, please list potential indications for use of the medication in general)</b>	
<b>What would you teach the client about taking this medication? You must prioritize 2 (see rubric)</b>	<ol style="list-style-type: none"> <li>1. Do not use different forms of the medication such as oil or cloves in addition to the tablets without the guidance of a prescriber (Cerner Multum, 2023).</li> <li>2. Garlic can increase the risk of bleeding. Monitor for blood in urine, stool, or unusual bruising (Cerner Multum, 2023).</li> </ol>
<b>How much would medication cost per month if paying out of pocket?</b>	This medication can be purchased at Walmart Pharmacy for \$14.50 (without tax) for a quantity of 90 tablets of 600 mg (Walmart, 2024). The client can take ½ tablets per dose using a total of 1 ½ tablets per day, making this quantity last for 2 months.
<b>Drug #4</b>	<p><b>Drug Name (Generic):</b> benazepril hydrochloride (Jones &amp; Bartlett Learning, 2023).</p> <p><b>Drug Name (Trade):</b> Lotensin (Jones &amp; Bartlett Learning, 2023).</p> <p><b>Drug Class:</b> Pharmacological: Angiotensin-converting enzyme (ACE) inhibitor Therapeutic: Antihypertensive (Jones &amp; Bartlett Learning, 2023).</p>
<b>How is the medication taken: (include dose, route, and frequency)</b>	5 mg tablet by mouth twice a day

<b>Specific Directions not included above:</b>	The patient should take this medication at the same time every day. The patient should also monitor blood pressure daily (Jones & Bartlett Learning, 2023). This medication can be taken with or without food (Thornton, 2023). This medication should be stored at room temperature, away from moisture and heat (Thornton, 2023).
<b>Does this medication interact with any other medication(s) on this list? (see rubric for further instruction)</b>	Benazepril has a moderate interaction with hydrochlorothiazide due to the risk of acute hypotension (Thornton, 2023). Benazepril has a moderate interaction with hydrocodone; taking the two together can have an effect on blood pressure, causing acute hypotension (Thornton, 2023). Benazepril has a moderate drug interaction with aspirin. Aspirin can decrease the vasodilator/hypotensive effects of benazepril (Thornton, 2023). Benazepril has a mild drug interaction with calcium carbonate which can cause a decrease in bioavailability of benazepril due to delayed gastric emptying (Thornton, 2023). Benazepril has a minor drug interaction with garlic; garlic may cause an increase in the hypotensive effects (Thornton, 2023).
<b>Lifestyle interactions:</b> <b>(Daily tobacco use, alcohol, drugs, etc. )</b>	Avoid high dietary intake of potassium, like potassium-rich salt substitutes, due to an increased risk of hyperkalemia (Jones & Bartlett Learning, 2023). Taking this medication with alcohol can cause an increase in hypotensive effects (Thornton, 2023).

<b>Does any of the client's past medical history contradict the use of this medication?</b>	The client has liver disease and heart failure, so they should discuss with their provider if this medication and dose is safe for them (Thornton, 2023).
<b>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)</b>	The client is taking this medication to treat his hypertension (Jones & Bartlett Learning, 2023).
<b>What would you teach the client about taking this medication? You must prioritize 2 (see rubric)</b>	<ol style="list-style-type: none"><li>1. This medication has a risk of causing hyperkalemia, so it is important to monitor potassium intake and educate on the signs and symptoms of hyperkalemia (Jones &amp; Bartlett Learning, 2023).</li><li>2. A persistent dry cough may develop and won't stop until the medication is stopped. If it interferes with daily life, the provider will need to be notified (Jones &amp; Bartlett Learning, 2023).</li></ol>
<b>How much would medication cost per month if paying out of pocket?</b>	This medication costs \$25.26 (without tax) for 50 5 mg tablets (Drugs.com, 2024). For one month, the client would need to pay \$50.52 since he takes this medication twice a day. The

	leftover tablets would carry over into the following month.
<b>Drug # 5</b>	<p><b>Drug Name (Generic):</b> Hydrochlorothiazide</p> <p><b>Drug Name (Trade):</b> Microzide (Jones &amp; Bartlett Learning, 2023).</p> <p><b>Drug Class:</b> Diuretic (Jones &amp; Bartlett Learning, 2023).</p>
<b>How is the medication taken: (include dose, route, and frequency)</b>	25 mg PO 2x daily
<b>Specific Directions not included above:</b>	<p>Assess blood pressure at home often while taking this medication. Take it in the morning to avoid nocturia. Take with food or milk to prevent GI upset. Consume a potassium-rich diet.</p> <p>Weigh yourself at the same time daily and keep a log with BP. Protect skin from the sun (Jones &amp; Bartlett Learning, 2023).</p>
<b>Does this medication interact with any other medication(s) on this list? (see rubric for further instruction)</b>	<p>Hydrochlorothiazide has a moderate drug interaction with omeprazole, causing an increased risk of developing hypomagnesemia while taking with a proton pump inhibitor (PPI).</p> <p>Hydrochlorothiazide has a moderate drug interaction with calcium carbonate due to the increased risk of developing hypercalcemia. Hydrochlorothiazide has a moderate interaction with benazepril due to the risk of acute hypotension. Hydrochlorothiazide has a moderate</p>

	interaction with hydrocodone due to the risk of a hypotensive effect. Hydrochlorothiazide has a mild interaction with garlic powder tablets by causing hypotension (Puckey, 2024).
<b>Lifestyle interactions:</b>  (Daily tobacco use, alcohol, drugs, etc. )	Alcohol use could cause orthostatic hypotension with this medication (Jones & Bartlett Learning, 2023).  Avoid sunlight without protection and tanning beds due to the increased risk of skin cancer while taking hydrochlorothiazide. Avoid strenuous exercise in hot weather and consuming too much or little of fluids (Puckey, 2024).
<b>Does any of the client's past medical history contradict the use of this medication?</b>	The client does have liver disease so they should discuss this with their providers to ensure this medication and dose is safe for them (Puckey, 2024).
<b>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)</b>	This medication is prescribed to the client to help treat hypertension and manage his heart failure (Jones & Bartlett Learning, 2023).
<b>What would you teach the client about taking this medication? You must prioritize 2 (see rubric)</b>	1. This medication can result in electrolyte imbalance, they need to know the signs and symptoms of imbalance and what to eat/drink to help this (Jones & Bartlett Learning,

	<p>2023).</p> <p>2. Get frequent checkups to monitor blood pressure, electrolytes, kidney, and liver labs (Jones &amp; Bartlett Learning, 2023).</p>
<b>How much would medication cost per month if paying out of pocket?</b>	This medication costs \$9.61 for 7 25 mg tablets, making a monthly supply of \$38.44 (without tax) (Drugs.com, 2024).
<b>Drug # 6</b>	<p><b>Drug Name (Generic):</b> Omeprazole (Jones &amp; Bartlett Learning, 2023).</p> <p><b>Drug Name (Trade):</b> Prilosec (Jones &amp; Bartlett Learning, 2023).</p> <p><b>Drug Class:</b> Pharmacologic: Proton pump inhibitor (PPI)</p> <p><b>Therapeutic:</b> Antiulcer (Jones &amp; Bartlett Learning, 2023).</p>
<b>How is the medication taken: (include dose, route, and frequency)</b>	20 mg capsule by mouth once a day
<b>Specific Directions not included above:</b>	Omeprazole should be taken in the morning before breakfast. It should also be taken whole and not chewed, crushed, or split (Jones & Bartlett Learning, 2023).
<b>Does this medication interact with any other</b>	Omeprazole has a moderate drug interaction with hydrochlorothiazide, which can increase the

<b>medication(s) on this list? (see rubric for further instruction)</b>	risk of developing hypomagnesemia due to omeprazole being a PPI (Puckey, 2022). It also has a minor drug interaction with aspirin, which can decrease the bioavailability of aspirin (Puckey, 2022).
<b>Lifestyle interactions: (Daily tobacco use, alcohol, drugs, etc. )</b>	The client does not drink alcohol; however, this medication can interact with the use of alcohol due to alcohol increasing gastric secretions (Jones & Bartlett Learning, 2023).
<b>Does any of the client's past medical history contradict the use of this medication?</b>	The client has a liver disease, so he should discuss with his provider if the medication and dose are safe (Puckey, 2022).
<b>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)</b>	The client is taking this medication to help treat gastroesophageal reflux disease and symptoms (Jones & Bartlett Learning, 2023).
<b>What would you teach the client about taking this medication? You must prioritize 2 (see rubric)</b>	<ol style="list-style-type: none"> <li>1. Educate on signs and symptoms of hypomagnesemia due to concurrent use with hydrochlorothiazide (Jones &amp; Bartlett Learning, 2023).</li> <li>2. Monitor for signs of abdominal pain, watery/bloody diarrhea, and a decrease in renal</li> </ol>

	function, such as a decrease in urine output or bloody urine (Jones & Bartlett Learning, 2023).
<b>How much would medication cost per month if paying out of pocket?</b>	This medication costs \$11.04 (without tax) for 30 20 mg capsules, which is enough to cover one month (Drugs.com, 2024). The client may need to purchase this medication twice in one month, costing him \$22.08, to cover the months that have 31 days.
<b>Drug # 7</b>	<p><b>Drug Name (Generic):</b> Hydrocodone</p> <p><b>Drug Name (Trade):</b> Norco (Thornton, 2023).</p> <p><b>Drug Class:</b> Opioid (Jones &amp; Bartlett Learning, 2023).</p>
<b>How is the medication taken: (include dose, route, and frequency)</b>	10 mg PO 2x daily
<b>Specific Directions not included above:</b>	Do not crush or chew, and take it with plenty of water to ensure the pill has been swallowed (Jones & Bartlett Learning, 2023).
<b>Does this medication interact with any other medication(s) on this list? (see rubric for further instruction)</b>	Hydrocodone has a moderate interaction with hydrochlorothiazide due to the risk of a hypotensive effect. Hydrocodone has a moderate interaction with benazepril; taking the two together can have an effect on blood pressure, causing acute hypotension (Thornton, 2023).

	The recommendation for non-narcotic analgesics is taking two at a time; this client takes three: hydrocodone, aspirin, and acetaminophen. It is also recommended that hydrocodone and acetaminophen are not taken together but rather one or the other (Thornton, 2023).
<b>Lifestyle interactions:</b>  <b>(Daily tobacco use, alcohol, drugs, etc. )</b>	There is a major interaction with hydrocodone and alcohol. This client does not drink alcohol, so this should not be a concern, but he needs to be aware that if he did drink, he could have major central nervous system (CNS) depression. Avoid other OTC cold, sleep, allergy, or pain medications until speaking with the provider due to the risk of overdose. Avoid driving or operating machinery until the effects of hydrocodone are known (Thornton, 2023).
<b>Does any of the client's past medical history contradict the use of this medication?</b>	Taking hydrocodone and acetaminophen together can cause injury to the client's liver, which is already a non-alcoholic fatty liver (Thornton, 2023).
<b>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)</b>	Use for pain relief due to the client's history of chronic back pain.
<b>What would you teach the client about taking this</b>	1. Avoid long-term use of this medication due to the risk of addiction, tolerance, and

<b>medication? You must prioritize 2 (see rubric)</b>	<p>abuse (Jones &amp; Bartlett Learning, 2023).</p> <p>2. Consume foods high in fiber to prevent constipation and avoid alcohol (Jones &amp; Bartlett Learning, 2023).</p>
<b>How much would medication cost per month if paying out of pocket?</b>	The cost for 60 10mg tablets is \$22.88 (GoodRx, 2024).
<b>Drug # 8</b>	<p><b>Drug Name (Generic):</b> acetylsalicylic acid (Jones &amp; Bartlett Learning, 2023).</p> <p><b>Drug Name (Trade):</b> Aspirin (Jones &amp; Bartlett Learning, 2023).</p> <p><b>Drug Class:</b> Pharmacologic: Salicylate</p> <p>Therapeutic: NSAID (anti-inflammatory, antiplatelet, antipyretic, nonopioid analgesic) (Jones &amp; Bartlett Learning, 2023).</p>
<b>How is the medication taken: (include dose, route, and frequency)</b>	81 mg tablet by mouth once a day
<b>Specific Directions not included above:</b>	This medication should be taken with food and a full glass of water. Enteric-coated and extended-release forms should be taken whole. Should be taken with food or after meals due to the risk of GI upset (Jones & Bartlett Learning, 2023).
<b>Does this medication interact with any other</b>	Aspirin has a moderate drug interaction with garlic powder tablets, potentially causing a

<b>medication(s) on this list? (see rubric for further instruction)</b>	higher risk of bleeding by increasing the effects of aspirin and anticoagulant factors. Aspirin has a moderate drug interaction with vitamin E. Vitamin E may increase the strength of the anticoagulant inhibitors within aspirin (Puckey, 2024). The recommendation for non-narcotic analgesics is taking two at a time; this client takes three: hydrocodone, aspirin, and acetaminophen (Puckey, 2024). Aspirin has a moderate drug interaction with calcium carbonate, which can decrease the effects of aspirin (Puckey, 2024). Aspirin has a moderate drug interaction with benazepril. Aspirin can decrease the vasodilator/hypotensive effects of benazepril (Puckey, 2024). Aspirin has a minor drug interaction with omeprazole. Omeprazole can cause a decrease in the bioavailability of aspirin (Puckey, 2024).
<b>Lifestyle interactions:</b> <b>(Daily tobacco use, alcohol, drugs, etc. )</b>	The client states that he does not drink alcohol. However, he should still be aware that he should not take aspirin with alcohol due to an increased risk of gastric bleeding and ulcers (Puckey, 2024).
<b>Does any of the client's past medical history contradict the use of this medication?</b>	The client has an allergy to NSAIDs, so he should not be taking this medication.
<b>What is the indication for use of this medication based on the client's past medical history? (If unable</b>	The client can be taking this medication for MI prevention due to having heart failure and for pain relief (Puckey, 2024).

<p><b>to determine an indication based on past medical history, please list potential indications for use of the medication in general)</b></p>	
<p><b>What would you teach the client about taking this medication? You must prioritize 2 (see rubric)</b></p>	<ol style="list-style-type: none"> <li>1. Educate the client on stopping this medication due to his allergy to NSAIDs. However, as a nurse, I would further investigate his allergy symptoms to determine if it is a true allergy to NSAIDs. Educate the client about symptoms of hypersensitivity (Jones &amp; Bartlett Learning, 2023).</li> <li>2. Educate the client on bleeding precautions due to him being on other medications that increase his risk of bleeding and also monitor for signs of bleeding, especially GI bleeding such as bloody stools (Jones &amp; Bartlett Learning, 2023).</li> </ol>
<p><b>How much would medication cost per month if paying out of pocket?</b></p>	<p>Aspirin can be purchased over the counter at CVS pharmacy for \$3.96 (without tax) for 32 81 mg tablets, which is enough to cover one month (CVS Pharmacy, 2024).</p>
<p><b>Drug # 9</b></p>	<p><b>Drug Name (Generic):</b> Acetaminophen</p> <p><b>Drug Name (Trade):</b> Tylenol (Durbin, 2023).</p> <p><b>Drug Class:</b> Nonsalicylate, antipyretic, non-opioid analgesic (Jones &amp; Bartlett Learning,</p>

	2023).
<b>How is the medication taken: (include dose, route, and frequency)</b>	500 mg PO Q4 hrs PRN
<b>Specific Directions not included above:</b>	May be crushed or chewed if it is not extended release, do not exceed prescribed dose (Jones & Bartlett Learning, 2023).
<b>Does this medication interact with any other medication(s) on this list? (see rubric for further instruction)</b>	The recommendation for non-narcotic analgesics is taking two at a time, this client takes three, hydrocodone, aspirin, and acetaminophen. It is also recommended that hydrocodone and acetaminophen are not taken together but rather one or the other (Durbin, 2023).
<b>Lifestyle interactions: (Daily tobacco use, alcohol, drugs, etc. )</b>	Use with alcohol increases risk of hepatotoxicity. Acetaminophen interacts with anticholinergics by causing a decreased onset of action of acetaminophen. Taking with barbiturates increases the risk of hepatotoxicity. Imatinib can cause an increased risk of hepatotoxicity. Lamotrigine and acetaminophen taken together can decrease the therapeutic effects of both. Oral contraceptives can decrease the effects of acetaminophen. Propranolol and probenecid can increase acetaminophen's effects. Acetaminophen can decrease the effects of zidovudine. Acetaminophen can affect warfarin by increasing the international

	normalized ratio (Jones & Bartlett Learning, 2023).
<b>Does any of the client's past medical history contradict the use of this medication?</b>	Taking hydrocodone and acetaminophen together can cause injury to the client's liver, which is already a non-alcoholic fatty liver (Durbin, 2023).
<b>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)</b>	Use for pain relief due to the client's history of chronic back pain.
<b>What would you teach the client about taking this medication? You must prioritize 2 (see rubric)</b>	<ol style="list-style-type: none"> <li>1. This medication can cause hepatotoxicity; baseline liver labs (AST, ALT) need to be drawn, and routine labs need to be performed (Jones &amp; Bartlett Learning, 2023).</li> <li>2. Contact the provider before taking other OTC medications because they may contain acetaminophen (Jones &amp; Bartlett Learning, 2023).</li> </ol>
<b>How much would medication cost per month if paying out of pocket?</b>	The average cost is \$14.59 (without tax) for 40 500 mg capsules (Drugs.com, 2024).
<b>Drug # 10</b>	<b>Drug Name (Generic):</b> Calcium carbonate (Cerner Multum, 2023).

	<p><b>Drug Name (Trade):</b> Tums, Calcium (Cerner Multum, 2023).</p> <p><b>Drug Class:</b> Antacids, Minerals and electrolytes (Cerner Multum, 2023).</p>
<p><b>How is the medication taken: (include dose, route, and frequency)</b></p>	<p>600 mg tablet by mouth three times a day</p>
<p><b>Specific Directions not included above:</b></p>	<p>Take with food to increase absorption and take exactly as prescribed by the provider (Cerner Multum, 2023).</p>
<p><b>Does this medication interact with any other medication(s) on this list? (see rubric for further instruction)</b></p>	<p>Calcium carbonate has a moderate drug interaction with hydrochlorothiazide due to the increased risk of developing hypercalcemia (Cerner Multum, 2023). Calcium carbonate has a moderate drug interaction with aspirin which can decrease the effects of aspirin (Cerner Multum, 2023). Calcium carbonate has a mild drug interaction with benazepril, causing a decrease in the bioavailability of benazepril due to delayed gastric emptying (Cerner Multum, 2023). Calcium carbonate interacts with the multivitamin with minerals, calcium can make it harder for certain minerals to be absorbed (Cerner Multum, 2023).</p>
<p><b>Lifestyle interactions:</b> <b>(Daily tobacco use, alcohol, drugs, etc.)</b></p>	<p>Taking calcium carbonate with foods high in oxalic acid (spinach and rhubarb) or phytic acid (bran and whole grains) can decrease absorption (Cerner Multum, 2023). The client does not drink alcohol but does smoke one cigar a day, so he should know that excessive alcohol and</p>

	tobacco use can decrease effects (Jones & Bartlett Learning, 2023).
<b>Does any of the client's past medical history contradict the use of this medication?</b>	The client is obese, and this medication can cause rapid weight gain (Cerner Multum, 2023). This medication has a common side effect of causing constipation, which doubles the increased risk of developing constipation due to the client also taking Norco (Cerner Multum, 2023).
<b>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)</b>	The client takes this medication as a calcium supplement to help prevent osteoporosis due to omeprazole increasing the risk for development with long-term use and to also help relieve the symptoms of GERD (Cerner Multum, 2023).
<b>What would you teach the client about taking this medication? You must prioritize 2 (see rubric)</b>	<ol style="list-style-type: none"> <li>1. Monitor for signs of hypercalcemia, such as nausea, vomiting, muscle weakness, and confusion, due to the client taking hydrochlorothiazide, which can increase the risk for development (Cerner Multum, 2023).</li> <li>2. Discuss with the provider before taking any additional vitamin, mineral, and herbal supplements (Cerner Multum, 2023).</li> </ol>
<b>How much would medication cost per month if</b>	This medication can be purchased over the counter at CVS pharmacy for \$12.99 (without tax)

<b>paying out of pocket?</b>	for 150 600 mg tablets, which is enough to cover one month (CVS Pharmacy, 2024).
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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?**

With the current medication regimen, the client will have to take 9 medications in the morning, two medications during the day, and 6 medications at night. The client also has a PRN medication, acetaminophen, that can be taken every four hours, which is 6 doses in a 24-hour period. For most of the year, Zeb is working full time as a construction worker and may experience long shifts during the busier seasons of the year. When Zeb is busy with work, he may not remember to take all of his medications, especially the ones that are taken three times a day. Zeb's work life could also cause him to miss doses of medications that need to be taken at the same time every day, such as his blood pressure medication, benazepril. Zeb may also experience some side effects that may affect his work. For example, hydrocodone can cause drowsiness and constipation, and benazepril can cause a persistent cough (Jones & Bartlett Learning, 2023).

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

Nine of Zeb's medications are taken at least once in the morning; this helps minimize the confusion of when to take the medication some clients may feel concerning polypharmacy. Zeb has been struggling to pay for the co-payments of his medications.

However, many of his medications can be purchased in a generic version and over the counter for a lower price. This could help him adhere to his medication regimen by relieving the stress he may be feeling from not being able to afford his medications. Zeb recently had a gastric banding and is on a strict diet now. Because of this strict diet, he may be missing some of the vitamins and minerals he needs, so Zeb would more than likely comply with taking his multivitamin with minerals in order to maintain his health/diet. Zeb also has chronic lower back pain, so compliance with his pain medication is likely since his work and daily living may be affected if the pain is not controlled. Garlic powder tablets and calcium are the medications that are ordered three times daily. Switching these medications to two times daily may increase the likelihood of compliance since he won't have to take any medications in the middle of the day.

**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)**

Zeb has an allergy to NSAIDs and currently takes aspirin, which is an NSAID. This medication should be questioned for the reason of an allergy and the client taking three non-narcotic analgesics when the recommendation is taking two at a time (Puckey, 2024). Aspirin also has many interactions with his other medications, such as increasing his risk of bleeding and lowering the effects of benazepril. Acetaminophen and hydrocodone are not supposed to be prescribed together, but rather one or the other. For this reason, the prescription of acetaminophen should be questioned (Durbin, 2023). Garlic powder tablets should be questioned due to their

interaction with vitamin E. Garlic powder tablets can be used to assist in lowering blood pressure (Cerner Multum, 2023); however, the client is already taking benazepril and hydrochlorothiazide. Taking garlic powder tablets, benazepril, hydrochlorothiazide, and hydrocodone together puts the client at risk for hypotension (Thorton, 2023). Calcium carbonate should also be questioned due to the interaction with his multivitamin. Calcium supplements can decrease the absorption of some minerals (Cerner Multum, 2023). Zeb is also taking the calcium carbonate to help with his GERD. However, he is already taking omeprazole, which also reduces the symptoms he may experience with GERD. If Zeb struggles with constipation from hydrocodone, a stool softener or laxative could be prescribed PRN to help with constipation. Zeb should be educated on monitoring his blood pressure and weight at home due to the medications he is currently prescribed. He should also be educated on the symptoms of electrolyte imbalances due to his medications having the potential to cause electrolyte imbalances such as hyperkalemia and hypomagnesemia.

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

Zeb's monthly out-of-pocket expenses for all 10 medications would be \$216.44, and his yearly out-of-pocket expenses for all 10 medications would be \$2,597.28.

**Reflective Statement of Experience:**

This polypharmacy project gave me a better understanding of polypharmacy in patients. In polypharmacy, patients are taking many medications to help treat various diseases and problems they are experiencing. Because of this, many of the medications they are taking may be interacting with each other. It's important for a nurse to understand what medications interact with each other and how

exactly that interaction may be affecting them. Also, patients have many medications that they need to take, but there are circumstances that may affect their compliance with following their medication regimen. For example, in our scenario, Zeb has been having trouble covering his co-payments for his medications. He isn't being non-compliant simply because he doesn't want to take his medication, but he could be missing doses because he cannot afford to pay for his medications. As a nurse, I need to understand the reasoning behind why some patients may not be compliant and be able to provide them with alternatives and solutions to help them comply. For example, in Zeb's case, I could suggest he try to purchase the generic versions of his medications and use available coupons such as GoodRx to help lower the cost of some of his medications. It is also important to educate the patient on the different side effects they may need to watch for and specific instructions on how to take certain medications. The nurse also advocates for the patient in finding alternatives for some of their medications and working with their provider to ensure that the medications get changed.

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## N322 Polypharmacy Grading Rubric

Criteria	Excellent 40 points	Acceptable 31-39 points	Unacceptable 0-30 points	Points Earned
<p>Each drug should have a completed breakdown within the tables provided, which includes the following:</p> <ul style="list-style-type: none"> <li>● Drug class</li> <li>● Generic name</li> <li>● Trade name</li> <li>● How is the medication taken (include dose, route, frequency)</li> </ul>	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 component for each medication is worth one point)	___/40
Criteria	Excellent 10 points	Acceptable 8-10 points	Unacceptable 0 - 7 points	Points Earned
<p>Specific Directions not included above:</p> <ul style="list-style-type: none"> <li>● Is there any type of medication on the patient list that have specific directions?</li> </ul>	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	Student failed to answer the questions and/or the answers were inaccurate. (For each medication this question is	___/10

<p>(before bed, before breakfast, 30 minutes before meals, etc..)</p>		<p>this question if worth one point)</p>	<p>worth one point)</p>	
<p><b>Criteria</b></p>	<p><b>Excellent</b> <b>0 points</b></p>	<p><b>Acceptable</b> <b>16-19</b></p>	<p><b>Unacceptable</b> <b>0-15 points</b></p>	<p><b>Points Earned</b></p>
<p>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?</p> <ul style="list-style-type: none"> <li>● Do any of the medications interact with each other?</li> </ul> <p>(Please note: if there is an interaction between two 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</p>	<p>All medications reviewed and student explained medication interactions.</p>	<p>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)</p>	<p>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 each medication listed this question is worth two points)</p>	<p>___/20</p>

medication)				
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Criteria	Excellent 5 points	Acceptable 4 points		Unacceptable 0 -3 points	Points Earned
Lifestyle interactions:  ● What lifestyle factors counteract with the medications?  (tobacco user, ETOH use – 3 beers daily)	Student showed knowledge why lifestyle would counteract with medications	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)	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)		___/5

Criteria	Excellent 10 points	Average 8-9	Unacceptable 0-7 points	Points Earned
<ul style="list-style-type: none"> <li>Does any of the client's past medical history contradict the use of this medication?</li> </ul>	<p>Student showed knowledge why the client's past medical history would contradict the use of the medication(s).</p>	<p>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)</p>	<p>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)</p>	<p>___/10</p>
Criteria	Excellent 10 points	Acceptable 8-9 points	Unacceptable 0-7 points	Points Earned
<ul style="list-style-type: none"> <li>What is the indication for use of this medication based on the client's past medical history? (If unable to determine an</li> </ul>	<p>Student showed knowledge of medications and what conditions corresponds with medications</p>	<p>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</p>	<p>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</p>	<p>___/10</p>

<p>indication based on past medical history, please list potential indications for use of the medication in general)</p>		<p>point)</p>	<p>question is worth one point)</p>	
<p><b>Criteria</b></p>	<p><b>Excellent 20 points</b></p>	<p><b>Acceptable 16-19 points</b></p>	<p><b>Unacceptable 0-15 points</b></p>	<p><b>Points Earned</b></p>
<p>What would you teach the client about taking this medication?</p> <ul style="list-style-type: none"> <li>● What education is needed for the medication? (For each medication listed the student must prioritize two topics for client education)</li> </ul> <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</p>	<p>Student showed the importance of medication education, and appropriate prioritized client education for the scenario provided.</p>	<p>The student 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>Student failed to answer the question OR The student 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>___/20</p>

medication)				
<b>Criteria</b>	<b>Excellent 10 points</b>	<b>Acceptable 8-9 points</b>	<b>Unacceptable 0-7 points</b>	<b>Points Earned</b>
<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"> <li>● Why would the patient have difficulty maintaining the medication regimen?</li> </ul> <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 why a patient would have difficulty with medication regimen	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)	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)	___/10
<b>Criteria</b>	<b>Excellent 10 points</b>	<b>Acceptable 8-9 points</b>	<b>Unacceptable 0-7 points</b>	<b>Points Earned</b>
Is there anything about this medication regimen/ scenario that might assist the client in maintaining the medication regimen as	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	Student failed to answer the question OR The student answered the question appropriately for some of the medications but failed to	___/10

<p>ordered?</p> <ul style="list-style-type: none"> <li>● What factors are present to remain compliant?</li> </ul> <p>(Please consider all factors in the scenario and all information provided within your chart – including cost, insurance, frequency of administration, etc.)</p>		<p>assist with compliance. (This question is worth one point for each medication)</p>	<p>indicate all of the factors that are present that assist with compliance. (This question is worth one point for each medication)</p>	
<p><b>Criteria</b></p>	<p><b>Excellent</b> <b>15 points</b></p>	<p><b>Acceptable</b> <b>8-9 points</b></p>	<p><b>Unacceptable</b> <b>0 points</b></p>	<p><b>Points Earned</b></p>
<ul style="list-style-type: none"> <li>● How much would this medication cost per month if the patient were to pay for them out of pocket? (best assessment based off of research)</li> <li>● What would the client's monthly out of pocket expense for all 10</li> </ul>	<p>Student showed research on medication costs</p>	<p>The student provided accurate research for some of the medications, but failed to provided research for all medications (This question is worth one point for each medication, with the total cost being worth 5 points)</p>	<p>Student failed to answer the question OR The student provided accurate research for some of the medications, but failed to provided research for all medications (This question is worth one point for each medication, with the total cost being worth 5 points)</p>	<p>___/15</p>

medications?				
<b>Criteria</b>	<b>Excellent 20 points</b>	<b>Acceptable 16-19 points</b>	<b>Unacceptable 0-15 points</b>	<b>Points Earned</b>
<p>The student must appropriately format the paper and include all of the following:</p> <ul style="list-style-type: none"> <li>● 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)</li> <li>● The student provided a rubric attached for grading (3 points)</li> <li>● The student included the provided client</li> </ul>	<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>scenario on page two of the document (2 points)</p> <ul style="list-style-type: none"> <li>● The paper included a minimum of five references which were cited within the document (each reference with one citation is worth 5 points)</li> </ul>				
<p><b>Criteria</b></p>	<p><b>Excellent</b> <b>20 points</b></p>	<p><b>Acceptable</b> <b>16-19 points</b></p>	<p><b>Unacceptable</b> <b>0-15 points</b></p>	<p><b>Points Earned</b></p>
<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</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>

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

