

Polypharmacy Project

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N322 Introduction to Pharmacology

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3/30/21

Background: Amy is an 87-year-old female that lives in an assisted living facility. Part of the living arrangements in the facility is a pharmacy service that delivers their meds in pre-filled medication packages (accu-pacs) every week. These packages are labeled with the date and time of administration. Amy is expected to take her medications independently. She has no family nearby to assist her. She is followed by her primary care physician as well as an endocrinologist, whom she currently visits monthly as her diabetes is not well controlled. Amy does not have a driver's license, and is experiencing significant difficulty with her vision r/t diabetic retinopathy. Amy does not drink, or use illicit drugs. Amy does have a history of smoking cigarettes (1 pack per day for 26 years). She quit 10 years ago. Amy has good health insurance that covers the cost of her prescription medications with little to no co-pay. Amy is on a controlled carbohydrate diet and is allergic to sulfa and Pepto-Bismol. Amy has type 2 diabetes, diabetic retinopathy, diabetic neuropathy, and osteoporosis. Her current medication list is as follows:

Aspirin 81 mg PO BID

Calcium 500 mg PO BID

Multivitamin with minerals PO once a day

Docusate Sodium 100 mg PO BID

Glyburide 10 mg PO Once a day

Levemir 15 units SC at HS

Novolog per sliding scale SC at AC and HS

Ranibizumab 0.5 mg via intravitreal injection given in doctor's office once a month

Gabapentin 300 mg PO TID

Ibuprofen 400 mg PO Q6H PRN

<p>Drug #1 Aspirin</p> <p>Drug Class: Salicylate/Nonopioid analgesic (Drugs.com, 2021)</p>	<p>Drug Name (Generic): Aspirin</p> <p>Drug Name (Trade): Aspirtab, Zorprin, Disprin</p>
<p>How is the medication taken: (include dose, route, and frequency)</p>	<p>The patient takes 81 mg Aspirin by mouth twice a day.</p>
<p>Specific Directions not included above:</p>	<p>Drink a full glass of water when taking aspirin as well as with food. This will prevent upset stomach (Drugs.com, 2021)</p>
<p>Does this medication interact with any other medication(s) on this list? (see rubric for further instruction)</p>	<p>Calcium supplementation with aspirin may decrease the therapeutic effects of aspirin (Drugs.com, 2021)</p>
<p>Lifestyle interactions: (Daily tobacco use, alcohol, drugs, etc.)</p>	<p>The client is a past smoker which is contraindicated due to decreased therapeutic effects of the drug (Drugs.com, 2021).</p>
<p>Does any of the client's past medical history contradict the use of this medication?</p>	<p>The client is allergic to Pepto-Bismol; therefore, the client should not be taking aspirin since it is a salicylate (Drugs.com, 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 medication is being used for type II diabetes. Taking aspirin reduces the risk of heart attack and stroke in patients with diabetes (Drugs.com, 2021). Aspirin can also be indicated for its antipyretic effects (Drugs.com, 2021)</p>

history, please list potential indications for use of the medication in general)	
What would you teach the client about taking this medication?	Take aspirin with food or milk. Possible side effects include anaphylaxis, tinnitus, and anemia. If the aspirin tabs smell like vinegar, they are no longer effective (Leek, 2017).
How much would medication cost per month if paying out of pocket?	Retail price is \$5.00 and GoodRx price is \$1.57 (GoodRx.com, 2021)

<p>Drug #2 Calcium</p> <p>Drug Class: Calcium Salts (Drugs.com)</p>	<p>Drug Name (Generic): Calcium</p> <p>Drug Name (Trade): Calcitab, Cal-Plus, Biocal, Gencalc, Oyst-cal</p>
<p>How is the medication taken: (include dose, route, and frequency)</p>	<p>The patient takes calcium 500 mg by mouth two times a day in the form of an oral tablet.</p>
<p>Specific Directions not included above:</p>	<p>Do not take more than 500-600 mg at a time because your body can not able to absorb all of it so a good amount is excreted in urine (Jones & Bartlett, 2021).</p>
<p>Does this medication interact with any other medication(s) on this list? (see rubric for further instruction)</p>	<p>Calcium can decrease the therapeutic effects of aspirin (Drugs.com, 2021).</p>
<p>Lifestyle interactions: (Daily tobacco use, alcohol, drugs, etc.)</p>	<p>The patient was a smoker of 26 years. She quit 10 years ago. Smoking decreases calcium absorption and independently influences bone metabolism (Drugs.com, 2021)</p>
<p>Does any of the client's past medical history contradict the use of this medication?</p>	<p>None of the client's past medical history contradicts use of this medication.</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</p>	<p>The patient takes calcium as a mineral and electrolyte replacement since she has osteoporosis, type II diabetes, and a long history of smoking which deplete calcium and change absorption (Drugs.com, 2021).</p>

medication in general)	
What would you teach the client about taking this medication?	Side effects include constipation, gas, and dry mouth. Signs of calcium deficiency include paresthesia, Chvostek's sign, and tremors. Do not eat high oxalate foods such as coffee, beer, cranberries, chocolate, and dark green veggies (Drugs.com, 2021).
How much would medication cost per month if paying out of pocket?	Retail price is \$5.23 and GoodRx price is \$1.81 (GoodRx, 2021).

<p>Drug #3 Multivitamin with minerals</p> <p>Drug Class: Dietary Vitamin Supplement</p>	<p>Drug Name (Generic): Multivitamin</p> <p>Drug Name (Trade): Folgard, Natalins Rx, Nestabs CBF, Nature Made, One-a-Day</p>
<p>How is the medication taken: (include dose, route, and frequency)</p>	<p>Amy takes a multivitamin with minerals by mouth once a day in the morning.</p>
<p>Specific Directions not included above:</p>	<p>Take in the morning and avoid taking with milk or dairy products (Drugs.com).</p>
<p>Does this medication interact with any other medication(s) on this list? (see rubric for further instruction)</p>	<p>Calcium can affect how the body absorbs iron, zinc, and magnesium (Drugs.com).</p>
<p>Lifestyle interactions: (Daily tobacco use, alcohol, drugs, etc.)</p>	<p>Eating a diet high in zinc and magnesium can cause reduced absorption of the calcium supplement Amy is on (Drugs.com, 2021)</p>
<p>Does any of the client's past medical history contradict the use of this medication?</p>	<p>Amy has osteoporosis and needs to take a calcium supplement. Zinc and magnesium from multivitamins can compete for absorption and cause reduced calcium absorption.</p> <p>Risk/Benefit would need to be weighed by the prescriber to ensure the priority is taken (Drugs.com, 2021)</p>
<p>What is the indication for use of this medication based on the clients past medical history? (If unable to determine an indication based on past medical</p>	<p>Amy is 87 years old, has type 2 diabetes, and needs supplementation of vitamins and minerals that she does not get in her normal diet (Drugs.com, 2021).</p>

history, please list potential indications for use of the medication in general)	
What would you teach the client about taking this medication?	Side effects include upset stomach, nausea, and vomiting (Jones & Bartlett, 2020).
How much would medication cost per month if paying out of pocket?	Retail for Life Extension one-a-day multivitamin tablets for older adults costs \$17.25 for 60 tablets (One-Per-Day Life Extension.com, 2021).

Drug #4 Docusate Sodium	Drug Name (Generic): Docusate Sodium
Drug Class: Stool Softener	Drug Name (Trade): Colace, Correctol Docu-Soft, Sosolax, Selax, DOK

How is the medication taken: (include dose, route, and frequency)	Amy takes docusate sodium 100 mg by mouth two times a day in active capsule form.
Specific Directions not included above:	Take at bedtime (Drugs.com, 2021).
Does this medication interact with any other medication(s) on this list? (see rubric for further instruction)	Taking docusate sodium along with multivitamins that have mineral oil can increase the absorption of the mineral oil. Side effects of the interaction include vomiting, diarrhea, and cramps (Drugs.com, 2021).
Lifestyle interactions: (Daily tobacco use, alcohol, drugs, etc.)	No lifestyle interactions.
Does any of the client's past medical history contradict the use of this medication?	A possible contraindication or nursing consideration is that Amy has vision problems related to her diabetes that can affect her ability to get to the toilet if an episode of diarrhea ensues. Fall precautions should be taken (Hinkle & Cheever, 2018).
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)	Amy is 87 and is taking calcium which can cause constipation. Docusate sodium softens the stool to prevent this side effect of taking calcium (Drugs.com, 2021).
What would you teach the client about taking this	This drug prevents constipation. Side effects can include mild cramps and rashes (Drugs.com,

medication?	2021).
How much would medication cost per month if paying out of pocket?	Retail price for 100 mg capsules of docusate sodium is \$4.40 and the GoodRx price is \$2.56 (GoodRx.com, 2021).

Drug #5	Drug Name (Generic): Glyburide
Drug Class: Sulfonylureas/Antidiabetic agent	Drug Name (Trade): DiaBeta, Glynase PresTab, Euglucon
How is the medication taken: (include dose, route,	Amy takes glyburide 10 mg by mouth once per day at bedtime.

and frequency)	
Specific Directions not included above:	Take at bedtime (Leek, 2017).
Does this medication interact with any other medication(s) on this list? (see rubric for further instruction)	This medication interacts with Levemir and Novolog and increases the risk of hypoglycemia when all three are used together (Drugs.com, 2021).
Lifestyle interactions: (Daily tobacco use, alcohol, drugs, etc.)	Nicotine can increase blood sugar, so smoking has a mild interaction with glyburide (Drugs.com, 2021).
Does any of the client's past medical history contradict the use of this medication?	Nothing in Amy's past medical history contradicts use of this drug. Glyburide can have a cross reaction since it is related to sulfonamides. Amy is allergic to sulfa, but glyburide is a drug that can be taken without a reaction like other cross-reactive sulfa drugs (Drugs.com, 2021).
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)	Amy has type 2 diabetes and glyburide is an antidiabetic which can be used in conjunction with insulin to keep glucose levels at a good level. Hypoglycemia is a possible side effect of taking along with Levemir and Novolog (Jones & Bartlett, 2020).
What would you teach the client about taking this	Make sure to monitor yourself for hypoglycemia and its symptoms which include sweating,

medication?	dizziness, tingling lips, palpitations, excessive hunger, anxiety, and blurred vision (Drugs.com, 2021).
How much would medication cost per month if paying out of pocket?	Retail 90 5 mg tablets is \$40.00 and the GoodRx price is \$6.00 (GoodRx.com, 2021).

Drug #6	Drug Name (Generic): Insulin Detemir
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Drug Class: Basal insulin	Drug Name (Trade): Levemir
How is the medication taken: (include dose, route, and frequency)	Amy takes 15 units subcutaneously at bedtime.
Specific Directions not included above:	Administer subcutaneously in the abdomen or other spots that have adipose tissue (Drugs.com, 2021).
Does this medication interact with any other medication(s) on this list? (see rubric for further instruction)	Amy has type 2 diabetes and glyburide is an antidiabetic which can be used in conjunction with insulin to keep glucose levels at a good level. Hypoglycemia is a possible side effect of taking along with Levemir and Novolog (Jones & Bartlett, 2020).
Lifestyle interactions: (Daily tobacco use, alcohol, drugs, etc.)	Amy has smoked for 26 years but quit 10 years ago. Nicotine can increase glucose levels so there is a risk for hyperglycemia (Drugs.com, 2021).
Does any of the client's past medical history contradict the use of this medication?	None of the client's past medical history contradicts use of this medication.
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)	Amy has uncontrolled type 2 diabetes and needs regular insulin to level out her glucose levels (Jones & Bartlett, 2020).

What would you teach the client about taking this medication?	Teach the importance of smoking cessation. Teach how to draw up and administer medication. Teach to rotate sites and choose sites that are plenty in adipose tissue (Drugs.com, 2021).
How much would medication cost per month if paying out of pocket?	Retail for 10 mL vial 100 units/mL is \$404.48 and the GoodRx price is \$308.21 (GoodRx.com, 2021).

Drug #7	Drug Name (Generic): Insulin Aspart
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Drug Class: Rapid-Acting Insulin	Drug Name (Trade): Novolog, NovoRapid
How is the medication taken: (include dose, route, and frequency)	Amy takes Novolog per sliding scale subcutaneously.
Specific Directions not included above:	Take before meals and at bedtime.
Does this medication interact with any other medication(s) on this list? (see rubric for further instruction)	Amy has type 2 diabetes and glyburide is an antidiabetic which can be used in conjunction with insulin to keep glucose levels at a good level. Hypoglycemia is a possible side effect of taking along with Levemir and Novolog (Jones & Bartlett, 2020).
Lifestyle interactions: (Daily tobacco use, alcohol, drugs, etc.)	Amy has smoked for 26 years but quit 10 years ago. Nicotine can increase glucose levels so there is a risk for hyperglycemia (Drugs.com, 2021).
Does any of the client's past medical history contradict the use of this medication?	Amy has no past medical history that contraindicates use of this medication.
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)	Amy has uncontrolled type 2 diabetes and needs rapid-acting insulin to level out her glucose levels after meals and before going to sleep (Jones & Bartlett, 2020).

What would you teach the client about taking this medication?	I would teach how to draw up and administer the insulin, teach how to read the sliding scale, and stress the importance of smoking cessation (Drugs.com, 2021).
How much would medication cost per month if paying out of pocket?	Retail for a 10 mL 100 units/mL is \$181.06 and GoodRx is \$47.84 (GoodRx.com, 2021).

Drug #8	Drug Name (Generic): Ranibizumab
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Drug Class: Monoclonal Antibody	Drug Name (Trade): Lucentis
How is the medication taken: (include dose, route, and frequency)	Amy goes to a doctor's office once a month to get a 0.5 mg intravitreal injection of Ranibizumab.
Specific Directions not included above:	This medication is strictly given in a doctor's office (Drugs.com, 2021).
Does this medication interact with any other medication(s) on this list? (see rubric for further instruction)	This medication does not interact with any of Amy's other medications (Drugs.com, 2021).
Lifestyle interactions: (Daily tobacco use, alcohol, drugs, etc.)	Smoking can dry the eyes out and increase eye vessel pressure (Drugs.com, 2021).
Does any of the client's past medical history contradict the use of this medication?	This client does not have any other contraindications for this drug in her past medical history.
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)	Amy has diabetic retinopathy that is related to her uncontrolled type 2 diabetes. Treatment occurs through the medication binding to vascular receptor sites and preventing the binding of certain endogenous vascular endothelial growth factor sites (Leek, 2017).
What would you teach the client about taking this	Smoking cessation. Symptoms of ocular infection include red eyes, photophobia, and blurry

medication?	vision (Drugs.com, 2021).
How much would medication cost per month if paying out of pocket?	Retail for this medication is \$2,023 per dose and many patients need up to 12 injections a year (\$24,276) (Jennings, 2014).

Drug #9	Drug Name (Generic): Gabapentin
Drug Class: Anticonvulsant	Drug Name (Trade): Gralise, Neurontin, Horizant
How is the medication taken: (include dose, route, and frequency)	Amy takes gabapentin 300 mg by mouth three times a day.
Specific Directions not included above:	Take in the morning, mid-day, and at night (Drugs.com, 2021)
Does this medication interact with any other medication(s) on this list? (see rubric for further instruction)	This medication does not interact with any of Amy's other medications (Drugs.com, 2021).

<p>Lifestyle interactions: (Daily tobacco use, alcohol, drugs, etc.)</p>	<p>She was a smoker of 26 years so that ends up being an indication (see below).</p>
<p>Does any of the client's past medical history contradict the use of this medication?</p>	<p>None of the client's past medical history contradicts the use of this medication.</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>Gabapentin is indicated to treat Amy's past smoking habit (even though she quit 10 years ago) as well as her neuropathic pain that is related to her uncontrolled type 2 diabetes mellitus (Leek, 2017).</p>
<p>What would you teach the client about taking this medication?</p>	<p>Side effects include drowsiness, dizziness, loss of coordination, tiredness, double vision, tremor, and unusual eye movements (Drugs.com, 2021). Older adults can be more sensitive to these side effects. Especially swelling of the hands, ankles, or feet and loss of coordination (Leek, 2017).</p>
<p>How much would medication cost per month if paying out of pocket?</p>	<p>Retail price is \$49.72 and the GoodRx price is \$6.00 (GoodRx.com, 2021).</p>

Drug #10	Drug Name (Generic): Ibuprofen
Drug Class: NSAID	Drug Name (Trade): Advil, Liqui-gels, Motrin, Nuprin, Excedrin IB
How is the medication taken: (include dose, route, and frequency)	Amy takes Ibuprofen 400 mg by mouth every 6 hours as needed.
Specific Directions not included above:	Take as needed when the pain reaches a higher level on the pain scale (Drugs.com, 2021).
Does this medication interact with any other medication(s) on this list? (see rubric for further instruction)	Using this medication can reduce the effectiveness of aspirin in preventing heart attacks or strokes. Using both in conjunction can also increase risk of side effects and development of GI ulcers or bleeding (Drugs.com, 2021).

<p>Lifestyle interactions: (Daily tobacco use, alcohol, drugs, etc.)</p>	<p>You should not drink and take this medication (Drugs.com, 2021).</p>
<p>Does any of the client's past medical history contradict the use of this medication?</p>	<p>Past medical history does not contraindicate use of this medication.</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>Amy takes Ibuprofen for pain and inflammation related to her diagnosis of osteoporosis. This medication works by inhibiting prostaglandin synthesis (Leek, 2017).</p>
<p>What would you teach the client about taking this medication?</p>	<p>Side effects include hemorrhage, vomiting, anemia, hypertension, dizziness, and gastrointestinal ulcers (Drugs.com, 2021). You can take this with food or milk to prevent upset stomach. Take this medication at the same time every day if taking on a regular basis (Leek, 2017).</p>
<p>How much would medication cost per month if paying out of pocket?</p>	<p>Retail is \$13.24 and GoodRx is \$4.00 (GoodRx, 2021).</p>

Is there anything about this medication regimen scenario that might indicate a potential difficulty in maintaining compliance with the orders as listed?

A few of Amy's meds require a certain diet so she would have to cut down on foods high in oxalates such as coffee, cranberries, etc. (Drugs.com, 2021). If Amy has trouble with needles or is not great at administering insulin, her compliance may wane since she may choose to not administer her own insulin. One way to fix this is for the nurse to teach her and discuss what her trouble is with the action (Leek, 2017).

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

The fact that Amy gets personalized accu-pacs is helpful because it says on the pack when to take it as well as what drug is what and the dosage for each of her medications in the pack. A nurse should go over administration of subcutaneous insulin with Amy so she is compliant with her treatment of type 2 diabetes (Leek, 2017).

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.).

The patient is allergic to Pepto-Bismol, so I would ask about the prescription of aspirin for this patient since aspirin is a salicylate and Amy does not have a past medical history of heart attack or stroke (Leek, 2017). I would ask the prescriber about the risk of hypoglycemia while taking glyburide, regular insulin, and rapid acting insulin. Amy has uncontrolled type 2 diabetes so there is a chance it was the needed treatment but to discuss potential risks is always important because patient safety should always be considered (Drugs.com, 2021). I would ask the provider about the Ranibizumab injections. Amy needs them for her diabetic retinopathy and she has good insurance, but the cost is \$2,023 per injection. I would ask the provider if Avastin (bevacizumab) may be a better option instead since it only costs \$55 per injection (Jennings, 2014).

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

Retail: $\$13.24 + \$181.06 + \$404.48 + \$40.00 + \$4.40 + \$5.00 + \$5.23 + \$49.72 + \$17.25 + \$2,023 = \underline{\$2,743.38 \text{ Monthly}}$

GoodRx: $\$4.00 + \$6.00 + \$47.84 + \$308.21 + \$6.00 + \$2.56 + \$1.81 + \$1.57 + \$17.25 + \$2,023 = \underline{\$2,418.24 \text{ Monthly}}$

Reflective Statement of Experience:

Overall, this project was a great way to think about how a patient's medications can interact with each other or their lifestyle. I learned a lot about glucose levels and insulin doing this project. It is important to check the prescriptions, interactions, and the patient's background because the provider may have made a mistake or overlooked something in the patient's medical record.

References

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