

Written critique of drug therapy in nursing practice

[Health & Medicine](#)



**ASSIGN
BUSTER**

According to Wayne K. Anderson, Dean, State University of New York, School of Pharmacy, " statistically, if you take six different drugs, you have an 80% chance of at least one drug-drug interaction. " The drug regimen of Mrs. Brown includes six drugs that may interact with each other if not administered and monitored carefully. This is the reason why healthcare providers should be aware of the possible adverse affects that may happen related to her drug regimen. Necessary precautions should be observed to get the full benefits of the needed drugs and minimize possible drug-drug interactions. NursingManagement Mrs.

Brown has a history of seizure, therefore, necessary measures should be provided to ensure the patient's safety. It is also known that seizure is one of the many side effects of the drug metronidazole (Drugs. com, 2010). To prevent injury to patient, the nurse should provide comfort and safety measures if the CNS effect occurs such as siderails, and assistance with ambulation if dizziness and weakness are present" (Karch, 2006, p. 170).

Since Mrs. Brown has numerous risk factors andhealthconditions, the nurse should " monitor for drug-drug interactions to arrange to adjust dosages appropriately" (Karch, 2006, p. 47). The drug regimen of Mrs. Brown may present several adverse effects that should be observed, the nurse " monitor adverse effects and provide appropriate supportive care as needed to help patient cope with these effects" (Karch, 2006, p. 347). To achieve therapeutic effects, it is also important that the nurse is aware how to " administer the drug as prescribed in appropriate relationship to meals" (Karch, 2006, p. 572). The nurse should provide supportive management to the drug regimen so she should " monitor the patient's clinical status closely

<https://assignbuster.com/written-critique-of-drug-therapy-in-nursing-practice/>

especially during the initial stages of treatment” (Karch, 2006, p. 34). This includes daily monitoring of serum lithium and phenytoin levels, blood glucose, prothrombin time (PT) and hepatic functioning. It is essential to promote compliance to the patient. The nurse should “ provide thorough patient teaching, including drug name and prescribed dosage, as well as measures for avoidance of adverse effects, warning signs that may indicate possible problems and the need for monitoring and evaluation to enhance patient knowledge about drug therapy” (Karch, 2006, p. 347).

Some of the teaching points that should be included are any sign of blood loss (petechiae, bleeding gums, bruises, dark colored stools, dark colored urine) to evaluate the effectiveness of warfarin and symptoms of phenytoin toxicity, including drowsiness, visual disturbances, change in mental status, nausea, or ataxia. Indications and Actions The indications and actions of Mrs. Brown's regimen is presented to help verify the purpose of the drugs and their effects on the overall condition of the patient. Metronidazole (Flagyl, MetroGel, Noritate) Metronidazole is used for the treatment of intestinal amebiasis, trichomoniasis, inflammatory bowel disease, H. pylori infection causing peptic ulcers, bacterial vaginosis, and anaerobic infections and perioperative prophylaxis in colorectal surgery” (Kee & Hayes, 2006, p. 470).

In this case, it is also used to treat abscesses in the pelvis caused by susceptible anaerobic bacteria. It is classified as “ an antiprotozoal agent that acts to inhibit DNA synthesis in susceptible protozoa, leading it to unable to reproduce and subsequent cell death” (Karch, 2006, p. 169).

Paracetamol (Acetaminophen) Acetaminophen is indicated for the treatment of pain and fever associated with a variety of conditions, including influenza;

<https://assignbuster.com/written-critique-of-drug-therapy-in-nursing-practice/>

for the prophylaxis of children receiving diphtheria-pertussis-tetanus (DPT) immunizations; and for the relief of musculoskeletal pain associated with arthritis” (Karch, 2006, p. 241). Paracetamol was prescribed for the presence of pain in the client's perineal area. Metformin (Glucophage) “ Metformin is a biguanide compound used for the management of type 2 diabetes” (Kee & Hayes, 2006, p. 787). In this case, the patient was known to have diabetes.

This medication could be considered as a new mechanism for the management of her type 2 diabetes. This oral diabetic agent “ acts by decreasing hepatic production of glucose from stored glycogen” (Kee & Hayes, 2006, p. 787). It is said to diminish the increase in serum glucose after meals and lessen the degree of postprandial hyperglycemia. Phenytoin (Dilatin) “ Phenytoin is the prototype hydantoin used in the treatment of tonic-clonic seizures and status epilepticus, as well as in the prevention and treatment of seizures after neurosurgery” (Karch, 2006, p. 342).

Since the patient has a history of seizure disorder, this medication was prescribed for maintenance. It acts as “ an anticonvulsant drug that works by suppressing sodium influx through the drug binding to the sodium channel when it is inactivated, thus prolonging the channel inactivation and thereby preventing neuron firing” (Kee & Hayes, 2006, p. 341). Warfarin (Coumadin) “ Warfarin (Coumadin) is an anticoagulant drug in oral form that is used to maintain a state of anticoagulation in situations in which the patient is susceptible to potentially dangerous clot formation” (Karch, 2006, p. 38). The patient was given this medication since she has a history of atrial fibrillation that makes her susceptible to thrombus and embolus formation. The drug Warfarin inhibits the formation of thrombus and embolus formation by

<https://assignbuster.com/written-critique-of-drug-therapy-in-nursing-practice/>

decreasing certain clotting factors. " Warfarin causes a decrease in the production of vitamin K-dependent clotting factors (II [prothrombin], VII, IX and X) in the liver" (Karch, 2006, p. 740). Lithium Carbonate " Lithium is used as a mood stabilizers which is used to treat bipolar affective disorder" (Key & Hayes, 2006, p. 399).

Mrs. Brown has a bipolar mood disorder so this drug was prescribed to control her periods of mania and depression. It is said to function in several ways, " it alters sodium transport in nerve and muscle cells; inhibits the release of norepinephrine and dopamine, but not serotonin, from stimulated neurons; increases the intraneuronal stores of norepinephrine and dopamine slightly; and decreases intraneuronal content of second messengers" (Karch, 2006, p. 330). Common Drug Interactions Drug to Drug Interactions Metronidazole (Flagyl, MetroGel, Noritate)

This drug is known to produce interactions with phenytoin, oral coagulants and lithium. " Coadministration with a nitromidazole may increase the serum concentration of phenytoin" (Drugs. com, 2010). It is known to induce microsomal liver enzyme activity such as phenytoin that may accelerate the elimination of metronidazole resulting in reduced plasma; impaired clearance of phenytoin has been reported" (DailyMed, 2009). In this case, pharmacologic responses and serum phenytoin should be checked frequently whenever metronidazole is being administered to the patient.

The drug dosage should be adjusted as necessary. Another thing to do is to educate the patient the signs and symptoms of phenytoin toxicity for immediate physician notification. " Metronidazole has been reported to

potentiate the anticoagulant effect of warfarin and other oral coumarin anticoagulants, resulting in a prolongation of prothrombin time” (DailyMed, 2009). Mrs. Brown should be advised to report any signs of bleeding to her physician. INR should be checked frequently for adjustments in warfarin dosage, specifically after starting or discontinuing metronidazole.

And lastly, lithium is said to produce interactions when administered with metronidazole. “ Concurrent use of metronidazole with lithium may provoke lithium toxicity due to reduced renal clearance” (Rxlist, 2010). Since Mrs. Brown has a bipolar mood disorder, lithium is a long drug regimen. The serum lithium and creatinine levels should be monitored after the initiation of metronidazole. Phenytoin (Dilantin) Besides the impaired clearance of phenytoin with the use of metronidazole, there are other drug interactions that can happen in reference to Mrs. Brown's drug regimen.

It is said that Phenytoin can increase the effects of anticoagulants. “ The hydantoins displace the anticoagulants and aspirin, causing more free drug and increasing their activity” (Kee & Hayes, 2006, p. 342). Still, it is important to check on the prothrombin time (PT), phenytoin level and prothrombin time of the patient during the administration of both drugs. “ Signs of an active bleed include coughing up blood in the form of coffee grinds (hemoptysis), gum bleeding, nose bleeds, cola- or tea-colored urine (hematuria), and black, tarry stools (hemocult positive)”.

Brown should be observed and notified to the physician. It is also said that the use of phenytoin can lead to “ increased hepatotoxicity with acetaminophen” (Karch, 2007, p. 952). Lithium interacting with Phenytoin “

may either increase or decrease the effectiveness of lithium or increase or decrease the effectiveness of the drug” (Raber, 2010). Phenytoin level and lithium serum level should be checked frequently to monitor the effectiveness of these drugs.

Warfarin (Coumadin). Aside from the drug interactions of warfarin to both Metronidazole and Phenytoin, there is an existing interaction between Metformin and Warfarin. It is said that Metformin “ oral hypoglycemic drugs for diabetes can displace warfarin or dicumarol from the protein-bound site, causing more free-circulating anticoagulant” (Kee & Hayes, 2006, p. 663). Due to this possible interaction, it is important to monitor the blood glucose level and prothrombin time (PT). The patient should be informed of the signs and symptoms of hypoglycemia and bleeding so that she could report it to the health care team immediately.

Warfarin also interacts with paracetamol (acetaminophen); it said that “ some investigators advise that the hypothermic response to warfarin can increase when acetaminophen is taken in a dosage of more than 2 g per day for longer than one week” (Ament, Bertolino & Liszewski, 2000). Since Mrs. Brown has a prescription of 1000mg to be taken four times a day, her dosage is more than 2g per day. “ If acetaminophen therapy is needed, the dosage should be as low as possible, and the drug should be taken for only a short period. In addition, the INR should be monitored closely” (Ament et al. 2000). Metformin (Glucophage) Metformin has moderate drug interaction with the drug Phenytoin. It is said to diminish the efficacy of oral diabetic agents and insulin. “ These drugs may interfere with blood glucose control because they can cause hyperglycemia, glucose intolerance, new-onset diabetes

<https://assignbuster.com/written-critique-of-drug-therapy-in-nursing-practice/>

mellitus, and/or exacerbation of preexisting diabetes” (Drugs. com, 2010).

There should be close monitoring of Mrs. Brown's blood glucose level in order to observe hypoglycemia in the patient. Lithium (Eskalith) Lithium has drug interactions with Metronidazole and Phenytoin.

It is also established that lithium may diminish the therapeutic effects of insulin and oral anti-diabetic agents. “ In one study, 10 psychiatric patients treated with lithium carbonate for 2 weeks demonstrated elevated blood glucose levels and impaired glucose tolerance tests. There have also been isolated case reports of hyperglycemia, impaired glucose tolerance, or diabetes mellitus in patients on lithium, although a causal relationship has not been established” (Drugs. com, 2010). The blood glucose level should be checked frequently after starting or discontinuing lithium therapy.

Drug to Food, Drug to Herbal, Drug to OTC drugs Interactions Metronidazole
Metronidazole has a significant interaction with ethanol. “ Use of alcohol or products containing alcohol during nitroimidazole therapy may result in a disulfiram-like reaction in some patients” (Drugs. com, 2010). Necessary precautions should be made in relation to use of ethanol and ethanol-containing products. Mrs. Brown should be instructed not to take alcohol beverages and alcohol-containing products. It is said that “ alcohol beverages should not be consumed for at least a day after completion of metronidazole therapy” (Drugs. om). Metronidazole has an interaction to the herb milk thistle. “ Milk thistle has been reported to protect the liver from harm caused by some prescription drugs. While milk thistle has not yet been studied directly for protecting people against the known potentially liver-damaging actions of metronidazole, it is often used for this purpose”

<https://assignbuster.com/written-critique-of-drug-therapy-in-nursing-practice/>

(Morazzoni & Bombardelli, 1995). Phenytoin Phenytoin has moderate interaction with alcohol and food. The effects of alcohol on the therapeutic level of Phenytoin depend on the duration of its consumption. “ Acute consumption of alcohol may increase plasma phenytoin levels.

Chronic consumption of alcohol may decrease plasma phenytoin levels” (Drugs. com, 2010). Phenytoin (oral drug) could be given with or without food in a consistent manner. Give with food if patient complains of GI upset (Karch, 2007). The bioavailability of Phenytoin is said “ to decrease to subtherapeutic levels when the suspension is given concomitantly with enteral feedings” (Drugs. com, 2010). Antacids containing calcium may decrease the blood level of phenytoin while aspirin (more than 1500 mg/dl) may increase the blood level of phenytoin (Epilepsy. om, 2010). Phenytoin also will lower the blood levels of other types of medication like acetaminophen (Epilepsy. com, 2010). Warfarin Patients taking Warfarin should not take Vitamin K-rich foods like “ liver, broccoli, brussels sprouts, spinach, Swiss chard, coriander, collards, cabbage, and other green leafy vegetables” (Drugs. com). There are also particular medicines that should not be taken for they may cause serious bleeding problems in the stomach and intestines and alterations in blood clotting.

These particular medicines are as follows: “ acetaminophen (Tylenol), aspirin, and NSAIDs including celecoxib (Celebrex), diclofenac (Voltaren), ibuprofen (Motrin, Advil), indomethacin, naproxen (Aleve, Naprosyn), and others” (Drugs. com, 2010). It is also said that the patient should “ avoid eating cranberries, drinking cranberry juice, or taking cranberry herbal products” (Drugs. com, 2010). Warfarin can interact with the following herbal <https://assignbuster.com/written-critique-of-drug-therapy-in-nursing-practice/>

products: “garlics, ginkgo biloba, ginseng or St. John's wort”. (Drugs. com, 2010). Metformin Drugs that can raise the blood sugar affecting the use of Metformin include medicines to treat colds and allergies while drugs that lower blood sugar include some nonsteroidal anti-inflammatory drugs (NSAIDs), aspirin, and sulfa drugs (Bactrim)” (Drugs. com, 2010). Alcohol should also not be taken concomitantly with this drug. “Alcohol lowers blood sugar and may increase the risk of lactic acidosis while taking this drug” (Drugs. com, 2010).

There could be increased risk for hypoglycemia if the drug is taken with “juniper berries, ginseng, garlic, dandelion root and celery” (Karch, 2007, p. 58). Lithium Patients taking lithium carbonate should “avoid drinking large amounts of coffee, tea, or cola, which can cause dehydration through increased urination” (Drugs. com, 2010). Besides having interactions with other drugs in the patient's regimen, lithium also interacts with over-the-counter drugs. “If Eskalith is taken with certain other drugs, the effects of either could be increased, decreased, or altered such as nonsteroidal anti-inflammatory drugs” (Drugs. com, 2010). “Patients being treated with lithium should be encouraged not to use the herbal therapy psyllium.

If combined with lithium, the absorption of the lithium may be blocked and the patient will not receive therapeutic level” (Karch, 2006, p. 333) Possible Adverse Reactions and Nursing Interventions Metronidazole “Convulsive seizures have been reported in patient treatment with metronidazole” (DailyMed, 2009). Necessary seizure precautions should be implemented.

Mrs. Brown has a history of seizure; this is why the healthcare team should take necessary adjustments to the dosage of metronidazole. Aside from this

<https://assignbuster.com/written-critique-of-drug-therapy-in-nursing-practice/>

major adverse reaction, the patient can develop “ unpleasant metallic taste, nausea, vomiting and diarrhea” (Karch, 2007, p. 86). Nursing care for strange metallic taste should be “ frequent mouth care, sucking sugarless candies”, and for nausea, vomiting and diarrhea, the patient should be advised to “ eat frequent small meals” (Karch, 2007, p. 786). In the case of Mrs. Brown, complains of discomfort in her buttocks, pain in perineal area and offensive odor could mean that she developed candidiasis as “ known or previously unrecognized candidiasis may present more prominent symptoms during therapy with metronidazole” (DailyMed, 2009). Treatment with candidicidal agent should be instituted to the patient.

Other adverse effect can be “ disulfiram-like interaction with alcohol” (Karch, 2007, p. 786). The patient should be always reminded of precautions on ingesting alcohol and alcohol-containing products. Phenytoin “ Nausea, vomiting, diarrhea, constipation and gingival hyperplasia” (Karch, 2009, p. 951) could be present in patients taking Phenytoin. The nurse should “ arrange instruction in proper hygiene technique for long-term patients to prevent development of gum hyperplasia”, “ take drug with food, eat frequent small meals” (Karch, 2007, p. 953).

Among the other common adverse effects are “ dizziness , drowsiness, confusion and headache”. The patient should be advised to “ avoid performing tasks requiring alertness and visual acuity” (Karch, 2007, p. 953). Warfarin The common adverse effects of Warfarin are “ nausea, vomiting, abdominal cramping, diarrhea and hemorrhage” (Karch, 2007, p. 1216). Nurse should advise the patient to “ avoid any situations in which she could

be easily injured. " Necessary care should be provided to avoid bleeding in the patient like " not giving any IM injections" (Karch, 2007, p. 1217).

The patient should also be asked to " report unusual bleeding (from brushing teeth, excessive bruising), black or bloody stools, cloudy or dark urine"

(Karch, 2007, p. 1218). Metformin The most significant possible adverse effects of this drug are " hypoglycemia and lactic acidosis" (Karch, 2007, p.

758). The nurse should " monitor blood for glucose and ketones" or " should ask the client any sign of hypo- or hyperglycemic reactions" (Karch, 2007, p.

758). There could also be " signs of an allergic reaction: hives; difficulty breathing; swelling of your face, lips, tongue, or throat" (Drugs. om, 2010). In

this case, it is necessary to " stop the medication and report to the

physician" (Drugs. com, 2010). Lithium The common side effects of Lithium involves CNS manifestations such as " lethargy, slurred speech, muscle

weakness and fine hand tremor; GI manifestations such as nausea, vomiting , diarrhea, thirst; GU effect is polyuria" (Karch, 2007, p. 704). It is important to

instruct the client to " report any signs of toxicity such as diarrhea, vomiting, tremor, drowsiness, muscle weakness" (Karch, 2007, p. 705).

The patient should also be prohibited or " avoid driving or performing tasks requiring alertness" and should be instructed to " eat frequent small meals"

(Karch, 2007, p. 705). HealthEducationMetronidazole It is important to

instruct the client to " not drink alcohol (beverages or preparations containing alcohol, cough syrups)" (Karch, 2007, p. 786). The nurse should

also mention to the client that she may experience " urine with darker color , dry mouth with strange metallic taste, nausea, vomiting and diarrhea"

(Karch, 2007, p. 786).

<https://assignbuster.com/written-critique-of-drug-therapy-in-nursing-practice/>

Intervention to relieve these side effects should be taught like “ frequent mouth care, sucking sugarless candies for dry mouth; eating frequent small meals for nausea, vomiting and diarrhea” (Karch, 2007, p. 786). Phenytoin Patients taking Phenytoin should be advised to “ take this drug exactly as prescribed with food to reduce GI upset or without food --- but maintain the consistency” (Karch, 2007, p. 953). Mrs. Brown should be advised to “ not discontinue this drug abruptly or change dosage, except on advice of health care provider” (Karch, 2007, p. 953). Since Mrs.

Brown has diabetes, it should be advised that she should “ monitor blood or urine sugar regularly, and report any abnormality to health care provider” (Karch, 2007, p. 953). She should be advised that she should “ maintain good oral hygiene to prevent gum disease and arrange frequent dental checkups” (Karch, 2007, p. 953). Warfarin It should be advised to the patient to “ not start or stop taking any medication without consulting her health care provider” (Karch, 2007, p. 1217). She should “ carry or wear a medical ID tag to alert emergency medical personnel about the drug” (Karch, 2007, p. 218). She should be instructed to “ avoid situations that may cause injury and have periodic blood tests to check on drug action” (Karch, 2007, p. 1218). Lastly, the patient should be instructed to “ report unusual bleeding, black or bloody stools and cloudy or dark urine” (Karch, 2007, p. 1218). Metformin Some of the instructions that should be given to the patient are “ not to discontinue the medication without consulting health care provider and avoid using alcohol while taking the drug” (Karch, 2007, p. 758).

She should also be advised to “ monitor blood for glucose and ketones and report any hypo-or hyperglycemia reactions” (Karch, 2007, p. 758). Lithium <https://assignbuster.com/written-critique-of-drug-therapy-in-nursing-practice/>

Health teaching about this drug should include the following: “ take the drug exactly as prescribed, after meals or with food or milk; eat a normal diet with normal salt intake and maintain adequate fluid intake and arrange for frequent checkups including blood tests” (Karch, 2007, p. 705). Mrs. Brown has numerous risk factors and health conditions that may produce drug interactions that may worsen her health.

It is known that Metronidazole can produce seizures as its side effect. Considering this, safety precautions should be made since she has a history of seizure. This drug can also impair the clearance of the drug Phenytoin in her system and potentiate the anticoagulant effects of Warfarin. These things should be monitored by the healthcare team for them to make necessary adjustments. Phenytoin can also increase the anticoagulant effect of Warfarin and may either increase or decrease the efficacy of lithium. Necessary drug dosage adjustments should be made to minimize these interactions.

Daily blood glucose monitoring should be done and symptoms of hypo- or hyperglycemia should be reported. This is necessary because Warfarin can increase the effects of oral diabetic agents such as Metformin. However, Phenytoin and Lithium can diminish the efficacy of this drug. Thus, it is really important to monitor the client's clinical status and the possible adverse effects of the drug regimen. It is also important to “ offer support and encouragement to help the patient cope with the drug regimen” (Karch, 2006, p. 334).