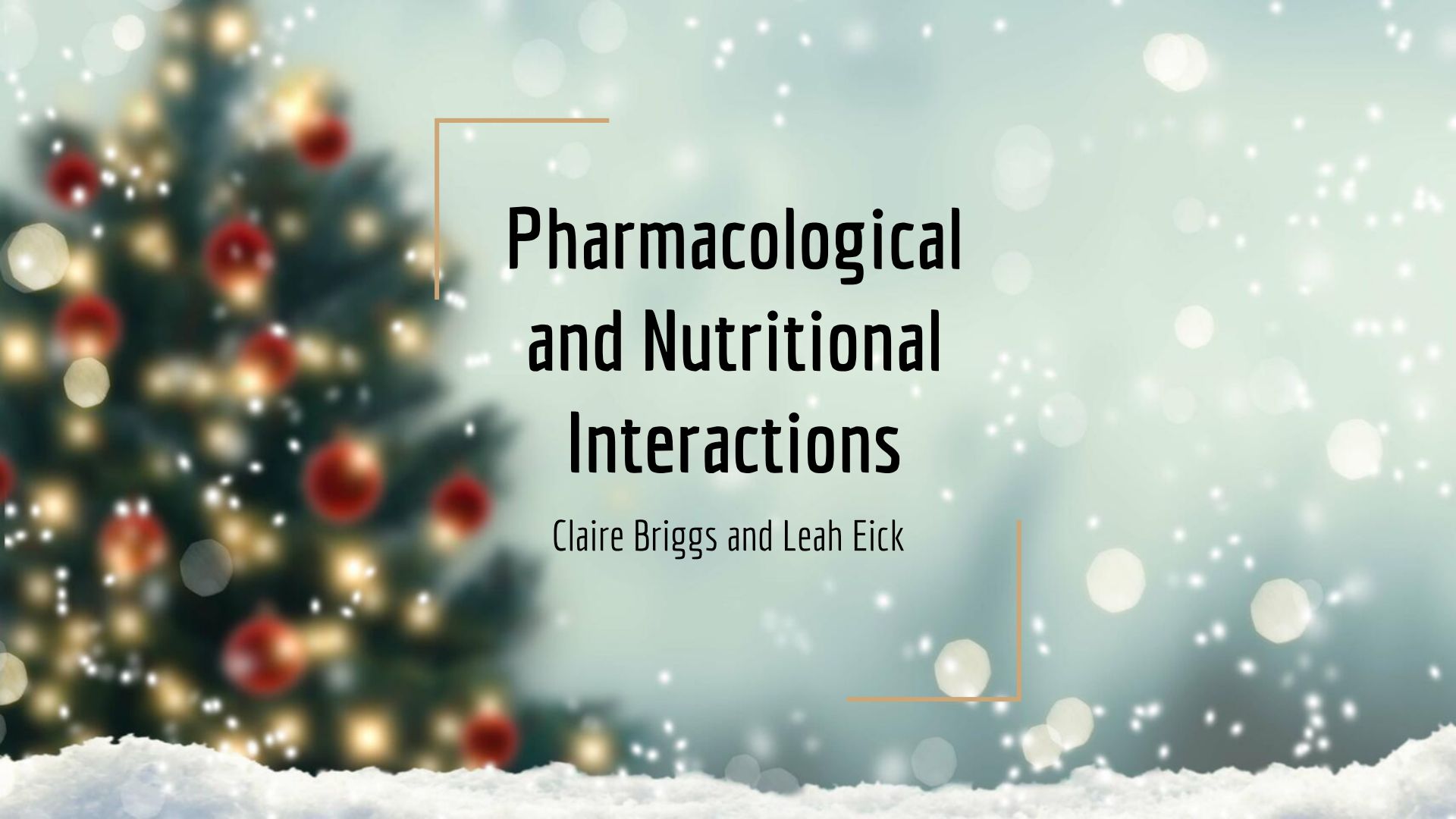

Pharmacological and Nutritional Interactions

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Introduction

Anticoagulants: Warfarin

Cardiac Glycosides: Digoxin

Calcium Channel Blockers: Nifedipine

Statins: Simvastatin

MAO Inhibitors: Phenelzine

Anticoagulants - Warfarin

Action: Warfarin is an oral anticoagulant that inhibits the clotting of blood. Warfarin is usually prescribed in people who have had previous experiences with blood clots including those with deep vein thrombosis or pulmonary embolism.

Food Interactions: Foods high in vitamin K including broccoli, collard greens, soy beans, and spinach; and juices such as grapefruit juice, cranberry juice, and pomegranate juice may negatively react with the function of Warfarin

Pathophysiology: The body uses vitamin K to assist in the production of essential clotting factors. Warfarin greatly interferes with the action of vitamin K in the body to prolong the clotting time and reduce the synthesis of active clotting factors. Increasing one's intake of vitamin K will only work against the intended action of Warfarin (Indiana Hemophilia & THrombosis Center). In addition, juices such as grapefruit or pomegranate juice, have the potential to inhibit the metabolism of Warfarin and in turn cause severe amounts of bleeding (Chock et al., 2009).

Signs and symptoms: increased bleeding time, severe bleeding

Anticoagulants - Warfarin

Patient Experience: A man in his 70's was hospitalized for a GI bleed after being prescribed Warfarin and continuing to consume cranberry juice for over six weeks. Before drinking the cranberry juice, his INR levels were in a healthy range. After the long term consumption of cranberry juice, his INR levels were found to be greater than 50. He later died from hemorrhages (Chock et al., 2009).

Educational Intervention: The healthcare team could have provided auditory education regarding the dangers of consuming foods high in vitamin K and certain fruit juices.

Techniques: This patient in particular may have benefited from the teach back method to ensure his understanding of the education provided and the importance of its implementation before any serious effects had occurred.

Community Resources: Because of his age, this patient may have had more success in implementing these educational topics if he were to have had assistance from home health agencies or other educated family members who could have ensured that he was not ingesting unsafe foods while taking Warfarin.

Cardiac Glycosides - Digoxin

Action: Digoxin is a cardiac glycoside that increases the contraction of the heart and can also slow heart rate. It is primarily used to treat heart failure and dysrhythmias.

Food Interactions: Black licorice, or licorice root and foods high in fiber content such as barley, wheat bran, flax seed, and artichokes may interfere with the action of Digoxin.

Pathophysiology: Diets high in fiber, specifically insoluble fiber, have the potential to greatly slow the absorption of Digoxin and therefore, will lower its effectiveness. In addition, licorice root can decrease the amount of potassium in the body, which can increase the risks of dysrhythmias. This increase in dysrhythmias could reduce the effect that Digoxin has on the heart (Winchester Hospital, 2012).

Signs and symptoms: dysrhythmias, tachycardia, Digoxin toxicity

Cardiac Glycosides - Digoxin

Patient Experience: In one study that was conducted by Canga et al. (2010), patients that ingested Digoxin in combination with a high fiber diet showed a reduction in absorption of the drug by around 18 percent. These patients experienced far more cardiac dysrhythmias than those who were on a low fiber diet (González Canga et al., 2010).

Educational Intervention: The healthcare team could provide handouts on foods that are high in fiber and contain licorice root. In addition, the healthcare team could provide education regarding how to read nutrition labels.

Techniques: Some patients may benefit from the teach back method to ensure that topic covered were understood by those taught. In addition, patients may find it useful to attempt to incorporate low fiber meals into their everyday meal options.

Community Resources: There exists a variety of food delivery services that can cater to certain dietary needs. Especially for patients of older age, ordering low fiber meals that do not contain licorice could be very beneficial.

Calcium Channel Blockers - Nifedipine

Action: Nifedipine blocks the entry of calcium into the muscle cells of the heart and arteries. This reduces the electrical conduction of the heart, which reduces the force of contraction and blood pressure, and corrects dysrhythmias.

Food Interactions: Grapefruit juice

Pathophysiology: Grapefruit juice affects a certain enzyme, which decreases the drug's metabolism. More of the drug is in the blood, which causes more drug bioavailability. (Sica, 2006)

Calcium Channel Blockers - Nifedipine

Signs and Symptoms: bradycardia, hypotension, nausea and vomiting

Patient Experience: Imagine a 76 year old woman taking nifedipine to treat hypertension. Her recent blood pressure was 90/40. She was just recently diagnosed with dementia. Her younger sister found out that she has been drinking grapefruit juice once a week for the last three weeks.

Educational Interventions: teach sister to remove grapefruit juice from the patient's house and explain why it is so important

Techniques: provide the sister with a pamphlet, offer suggestions for other juices the patient can drink

Community Resources: home health nurse, senior living center

Statins - Simvastatin

Action: Simvastatin lowers lipid levels to reduce the risk of cardiovascular disease. It is often prescribed in patients with high cholesterol or following a cardiovascular event.

Food interactions: grapefruit juice

Pathophysiology: Grapefruit juice can lower a specific enzyme and increase the blood levels of Simvastatin by reducing drug metabolism. Patients are more at risk for drug side effects, including myalgia, myopathy, and rhabdomyolysis. (Hulisz & Jakab, 2007).

Statins - Simvastatin

Signs and Symptoms: myalgia, myopathy, rhabdomyolysis (Hulisz & Jakab, 2007)

Patient Experience: Imagine a 60 year old man taking simvastatin drinks a cup of grapefruit juice every morning, despite being told not to by his nurse. Large amounts of protein and electrolytes are found in his blood. He has mild heart and kidney damage.

Educational Interventions: remind the patient of the severity of the food interaction and that his compliance is what will keep him healthy

Techniques: give the patient an easily readable handout, teach his family members as well, suggest other similar tasting juices

Community Resources: involve family, if someone else buy the groceries inform them to not buy grapefruit juice

MAO Inhibitors - Phenelzine

Action: Phenelzine is classified as an antidepressant. It can also treat Parkinson's disease and high blood pressure. It reuptakes serotonin, dopamine, norepinephrine and tyramine in the brain.

Food Interactions: Foods high in tyramine, such as aged cheese, sauerkraut, cured meats, draft beer, soy sauce, tofu, dried fruits (Krans, 2018)

Pathophysiology: High levels of tyramine can cause a sudden increase in blood pressure, called tyramine pressure response. High enough tyramine levels can cause a fatal cerebral hemorrhage. (Laban & Saadabadi, 2021)

MAO Inhibitors - Phenelzine

Signs and Symptoms: elevated blood pressure

Patient Experience: Imagine a 50 year old woman taking an MAO inhibitor to treat depression. She eats a salami and brie sandwich once a week. Her blood pressure is 180/140. She does not usually have high blood pressure and is not sure what happened.

Educational Interventions: a nurse should teach the patient about the serious side effects of tyramine foods on MAO inhibitors and what foods contain tyramine

Techniques: offer her a pamphlet listing foods that contain tyramine and what makes a good substitution

Community Resources: encourage her to get her friends and family involved to help remind her what foods to avoid, suggest certain websites that list out tyramine containing foods

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