**Patient CB has a history of strokes. The patient has been diagnosed with type 2 diabetes, hypertension, and hyperlipidemia. Drugs currently prescribed include the following:**

1. **Glipizide 10 mg po daily**
2. **HCTZ 25 mg daily**
3. **Atenolol 25 mg po daily**
4. **Hydralazine 25 mg QID**
5. **Simvastatin 80 mg daily**
6. **Verapamil 180 mg CD daily**

**In this case study my patient will be an African-American male, aged 63.**

Diabetes is the 7th leading cause of death in the United States that is often associated with co-morbid conditions, that includes hypertension, dyslipidemia, kidney disease, hypo/hyperglycemia, cardiovascular disease, heart attack, and stroke. African-Americans have a higher incidence of obesity, hyperlipidemia, hypertension, diabetes mellitus, stroke, renal and cardiovascular disease than other ethnicities (Lackland, 2014). In this population, high salt intake, salt retention, and/or volume overload is the main culprit in hypertension. Several mediators of salt sensitivity are genetically determined (Woods, Mentes, Cadogan, & Phillips, 2017).

In general, diabetic patients are prescribed more drugs compared to non-diabetics. Pharmacokinetics and pharmacodynamics changes with diabetes has the potential to affect absorption, distribution, metabolism and excretion of various drugs. Additionally; there is a significant reduction of gastric mucosal blood flow in diabetic patients ,which results in delayed gastric emptying. This has the potential to impact the rate of absorption of orally-administered medications in diabetic patients (Tran & Elbarbry, 2016). Furthermore, as the kidney function declines with diabetics, there is a dysfunctional glomerular filtration rate which can alter the renal clearance of the medications.

Ethnopharmacology is “genetic differences among ethnocultural groups that affect drug responses” (Dostalek, Akhlaghi, & Puzanovova, 2012). Genetic and biological variations within these ethnic populations determine drug disposition, metabolism, variants of drug receptors, or protein binding. Factors such as diet and tobacco use can also influence a gene’s expression, which can in turn alter a drug’s effect. “Personalized medicine” may be the pharmacologic treatment plan for the future. It allows the clinician to prescribe appropriately to the patient’s condition and their ethnicity, thereby decreasing adverse drug reactions and interactions.

**Treatment Plan**

Given the ethnic and genetic differences, the age of my patient, the presence of co-existing conditions, such as hypertension, hyperlipidemia, stroke, and multiple medications; my patient has the potential for drug interactions and harmful side effects. Looking at my patient’s medication list and based on his ethnicity, I would apply a different approach. I can now assume that calcium channel blockers and diuretics for African-Americans have responded fairly well. Angiotensin-converting enzyme (ACE) inhibitors and beta blockers have not been shown to be as effective in African-American populations (Lackland, 2014).

Simvastatin combined with Verapamil is a contraindication (drugs.com, n.d.). I would first get baseline lab values, including a fasting blood glucose and obtain a blood pressure. Is my patient compliant with his medication? Is his diabetes under control? Can he afford all of his medications? This will determine what I prescribe, how many I prescribe to take a day, and the strength of the medication to prescribe.

His diabetes and his age are a concern, so watching his renal function and therapeutic drug levels are important. I think being on 3 different blood pressure medications is a bit excessive, so I would discontinue the atenolol and the hydralazine. Because of my patient’s history of strokes, I would keep him on verapamil 180 mg CD po daily, combined with a low dose pravastatin 40 mg QD for his hyperlipidemia. I would educate my patient for adverse reactions to his pravastatin especially in addition to these other medications. Furthermore, I would continue with the glipizide 10 mg po, while being aware of the possible decrease in effectiveness, as it’s being taken with the verapamil. I would also continue with the HCTZ 25 mg po QD for fluid retention (drugs.com, n.d.). Dietary teaching is important, especially with restricting the patient’s salt intake. Finally, I would follow-up with this patient within 3 months to check his symptomatology, lab levels and his compliance.

**Conclusion**

Clinician cultural competence includes knowledge about prescribing and monitoring drugs in association with their patients’ ethnic backgrounds. Clinicians must appreciate the genetic, cultural, and social factors that may create different drug responses (Woods, Mentes, Cadogan, & Phillips, 2017).

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