Ethnopharmacology: Understanding Differences in Drug Response Based on Race/Ethnicity?

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Objectives
Upon completion of this session, the participant should be able to:
• Conceptually differentiate between race, ethnicity and culture in relation to ethnopharmacology.
• Identify at least two ethnic/racial differences in response to medications.
• State at least one strategy to improve clinical practice as a result of heightened awareness of ethnopharmacology.

What is Ethnopharmacology?

Potentially Confusing Terms
• Ethnic pharmacology
• Ethnomedicine
• Transcultural pharmacology
• Culturally competent pharmacology
• Pharmacogenetics
• Pharmacogenomics

Ethnopharmacology: Definitions
• The field of study that investigates the impact culture, environment, genetics, biophysics and psychosocial factors have on prescribing, metabolism of and response to medications
• The field addressing important implications of genetics, environment, and culture, as these relate to pharmacodynamics
• The study of the effect of ethnicity on responses to prescribed medication, drug absorption, metabolism, distribution and secretion
Ethnopharmacology

The study of racial differences in drug metabolism and response.

Ethnopharmacology: Key Concepts

- Race
- Ethnicity
- Culture

Race

- A genetically-based classification usually based on individual physical features
- An ethnic stock or division of humans

Ethnicity

- Pertaining or relating to a group or background
- An affiliation with, or relating to large groups of people classed according to common racial, national, tribal, religious, linguistic or cultural origin or background
- Key to understanding an ethnic group is to at least be aware of the beliefs and traditions that are held to be true, especially as these relate to healthcare

Culture

- Customary beliefs, social forms and material traits of a racial, religious or social group
- Values, beliefs, practices and rules of a group
- Leininger (1995) suggests that culture is learned values, beliefs and pattered life ways that assist, support, facilitate or enable another individual or group to maintain health and well-being, to improve their human condition and life ways, or to deal with illness, handicaps or death.

Which person is Hispanic?
A Diverse American Population: 2000

- 44.3 million Hispanics currently live in the United States.
- Now the largest racial/ethnic group after Caucasians in the country.
- From 2000 to 2006, Hispanics accounted for 1/5 of the nation’s growth rate.
  - Hispanic growth rate (24.3%) was more than 3 times the growth rate of the total general population (6.1%).

Additional Census Findings: Hispanics

- 1 in 4 Americans are of a race other than White.
- 1/3 of American children are African American, Asian, or Hispanic.
- 1 in 10 citizens of the United States are foreign born.
- 2010 census: “Race” and “Ethnicity” were different
  - Ethnic origin was considered to be a separate concept from race.
  - People of Hispanic origin could belong to any racial category.

Pharmacological Differences By Ethnicity/Race: “HEADLINERS”

- Have been studied more than any other ethnic group in relation to differences in drug metabolism and response.
- Underlying hypertension prevalence is among the highest in the world.
- Hypertension occurs at an earlier age than in other races.
- Require a high dosage of angiotensin-converting enzyme (ACE) inhibitors or combined therapy with low-dose diuretics to effectively reduce blood pressure.

Ethnic/Racial Drug Differences: African Americans

- Show less effective monotherapy with beta blocker and ACE inhibitors than Caucasians.
- African American Heart Failure Trial (A-HeFT) demonstrates that adding isosorbide dinitrate (Isochron) and hydralazine (Apresoline) to standard therapy for heart failure increases survival in black patients with advanced failure.
Ethnic/Racial Drug Differences: African Americans

- The United States Food and Drug Administration approves the first drug, BiDil, especially labeled for use by African Americans.
- Require a higher dose of glucocorticoids than Caucasians to control their asthma symptoms, regardless of asthma status or severity.

Ethnic/Racial Drug Differences: Asians

- A lower threshold of antipsychotic medications than Caucasians for both therapeutic and adverse events.
- Need lower doses of lithium and antipsychotic medications.

Ethnic/Racial Drug Differences: Hispanics

- Puerto Ricans have poorer responses to the asthma control drug, Ipratropium Bromide (Atrovent).
- May require lower doses of antidepressants than Caucasians.
- Mexicans are better metabolizers of medications that utilize the CYP 450 2C19 subgroup of liver enzymes when compared to Caucasian and Asian counterparts.
- Require lower dosages of medications metabolized by the CYP 450 subgroup of enzymes.

Ethnic/Racial Drug Differences: Caucasians

- Caucasians benefit more from ACE inhibitors than African Americans do.

Ethnic/Racial Drug Differences: All Patients

- An analysis of a study involving 33,000 patients concludes that low-cost diuretics should be the first step in hypertension treatment for patients of all races.