

University of Hawaii Hilo Presentation

Start: 7:04

- Introduction of Speaker
 - Ambulatory care pharmacist
 - Works in a physician office
 - Meets with patients and the physician trust them to change the medication of patients
 - Also a professor at the university
- What is hypertension?
 - High blood pressure
 - Pressure against artery walls as the heart pumps blood along the body
 - Lots of blood in body, creates more pressure
- How is blood pressure measured?
 - 120/80 mmHg - normal blood pressure
 - 120 - systolic pressure, peak value
 - 80 - diastolic blood pressure
- Components of BP
 - $BP = CO \times TPR$
 - CO - heart, blood flow
 - TPR - vessels, resistance to blood flow
 - Lower heart rate or make vessels bigger can help with lowering BP
 - BP will change throughout the day
 - Change during physical activity and emotional stress
 - Silent killer - your body can't sense small changes that are happening in the BP that can be deadly
- Pathophysiology
 - Many pathways that leads to BP
 - Humoral
 - Neuronal
 - Peripheral
 - Vascular
 - Electrolytes
- Volume-Pressure Relationship
 - Osmotic pressure

- Volume increases when H₂O follows Na to equalize the concentrations on both sides
 - Kidneys will excrete sodium to have water follow it to lower volume to lower BP
- RAAS
 - Largest contributors to homeostatic regulation of blood pressure
 - Refulates
 - Na⁺
 - K⁺
 - Blood volume
 - Renin converts angiotensin to angiotensin I
 - Anywhere in the pathway that gets disrupted and activates RAAS can cause problems
- Different BP medication
- Salt
 - Sodium has an unknown mechanism
 - High salt = can lead to high BP
- Potassium
 - Can help BP
- Why should you care?
 - Silent killer - no warning signs or symptoms
 - Many complications can cause early death
- Complications
 - Tell people to take their meds! To help avoid these complications
 - Aneurysms
 - Blood vessels erupting in the brain
 - Can lead to death
 - Atherosclerosis
 - Plaque build up in the blood vessels
 - High cholesterol
 - Gives higher risk of getting high BP and high blood sugar
 - Over stretched vessels that is stretching and tearing the vessel
 - Blocks the artery and can burst or clot
 - Can lead to a heart attack/stroke
 - Heart attack - clot in the heart
 - Stroke - clot in the brain

- Can be from vessel rupture or clot in the vessel
- Heart failure
 - Heart adapts to the pressure by building more muscle
 - It's bad because the heart is not suppose to expand
 - It expands inward so there's less blood that's being pumped around because there is less space
- Chronic Kidney Disease
 - Harms small blood vessels
 - Kidney can't get the blood flow it needs
- Retinopathy
 - Eye tissue lose blood flow
 - Can lead to blindness
- Cognitive Changes
 - Confusion
 - Memory loss
- Risk Factors:
 - Overweight; BMI > 25
 - Prehypertension
 - Lifestyle choices
 - High sodium
 - Low potassium
 - Sedentary
 - Alcohol (less than 1 drink for females, less than 2 drinks for males)
 - Stress
 - Smoking
 - Age
 - Gender
 - Ethnicity
 - Family History
- How to tell if you have high BP?
 - Can't really tell with symptoms
 - The only way is to just check your BP
 - It's important to get multiple readings to get an accurate BP reading
- Treatment
 - Lifestyle changes and Drug Therapy
 - For prehypertension: mainly just lifestyle changes

- Lifestyle

- Diet, Na Intake, Physical Activity
 - Diet: Fruits and vegetables will give enough potassium
 - Na Intake: 1500 mg/day is optimal, combine with DASH diet
 - Physical activity: 150 minutes per week, has to be moderate activity

- Drug Treatment

- Pharmacists use a guideline, JNC8
- Not all the drugs are related to lowering chances of death
- Only specific drugs that lower BP and decreases chances of death
- Certain medication only works well on certain races
- Could start with one or two drugs
- If BP still too high with drug treatment, have to go to a hypertension specialist (usually a pharmacist)
- Different medications have different dosages and how many times it's taken in a day
- Some treatments can have adverse side effects
 - Black Box Warning: can cause death
 - Drug interactions
 - Hyperkalemia-associated
 - Lithium
 - RAAS agents
 - Allopurinol
- Monitoring medication after prescribing
 - Test after 4 weeks of start date
 - Need to test
 - BP
 - Electrolytes
 - Scr
 - Renal Function

- Q&A

- Can you describe a typical day in the life as an ambulatory pharmacist?
 - Have a set schedule for patients
 - Have complete conditions of the patient
 - Will be optimizing the medication and changing it

- Clinical pharmacists will not be prescribing medication
- Talking to patients and explain to them what is happening and their new medication
- Talking to insurance and why they need certain medication
- Also do random tasks, calling pharmacies, ordering refills etc.
- Why are many of the meds nonspecific to use? Or are there differences in treatment within different meds?
 - It actually is specific
 - Historically when drug is first discovered, it works but can cause side effects, so over time people will try to refine it to be better
 - Improvements of the drug
- Regarding how hypertension can lead to vision loss, is it possible to recover your vision with treatment?
 - It is irreversible because you can't grow your vessels back
 - Want to focus on prevention
- End results of learning their curriculum: To pass the NAPLEX
- All this information would be learned over about a month and with deeper detail
- How the curriculum is covered differs from school to school
- **About the School**
 - Only college of pharmacy in Hawaii
 - Located on the Big Island in Hilo
 - Student Population of ~4,000
 - College of Pharmacy: Accepts about 50 students per year

End: 8:06