


Diabetes Double Jeopardy – What do Minorities and Senior Citizens Have in Common?

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DIABETES DOUBLE JEOPARDY – WHAT DO MINORITIES AND SENIOR CITIZENS HAVE IN COMMON


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Accreditation: Pharmacist: 0798-0000-10-040-L01-P
Pharmacy Technicians: 0798-0000-10-040-L01-T
Nursing: N-609

CE Credits: 1.0 contact hour

Target Audience: Pharmacists, Technicians & Nurses

Program Overview:
This program promotes the need for increased awareness of diabetes in minorities and the elderly. The program will focus on the pharmacist's role in identifying patients with diabetes (minorities and the elderly in particular), reducing the risk factors for developing diabetes through life style changes, and managing the disease. Pharmacists are often the medical professional that patients reach out to for the latest in drug information. With all the new products available for diabetes it is very difficult for the pharmacist to keep up with the latest advances in medication. In addition, the newer medications require more explanation than in the past. This continuing education course gives the pharmacist a solid knowledge base to enlighten the patients on these new therapies with an emphasis on methods to help the patient control postprandial glucose, provide counseling about managing comorbidities, drug contraindications, and general safety issues.

Objectives:

- Describe the challenges associated with diabetes in the minority and elderly population incorporating information on the prevalence, complications and economic costs of diabetes.
- Review the pharmacological approaches to the management of Type 2 diabetes and their therapeutic mechanisms of action
- Identify the strategies for pharmacists to educate and counsel patients on life style changes (such as weight loss), medications and dosing to reduce patient blood sugar levels and improve the overall health of the patient.

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Speaker: Dr. Scott Stolte joined the faculty of the Bernard J. Dunn School of Pharmacy at Shenandoah University in 1998. Scott served as a faculty member and as Chair of the Department of Pharmacy Practice prior to assuming his position as Associate Dean for Academic Affairs. Dr. Stolte earned his Doctor of Pharmacy degree from Purdue University in West Lafayette, IN in 1987. After graduation, Dr. Stolte was the initial community pharmacy resident at Family PharmaCare Center, Inc. and Purdue University.

Speaker Disclosure: Dr. Stolte has no actual or potential conflicts of interest in relation to this program



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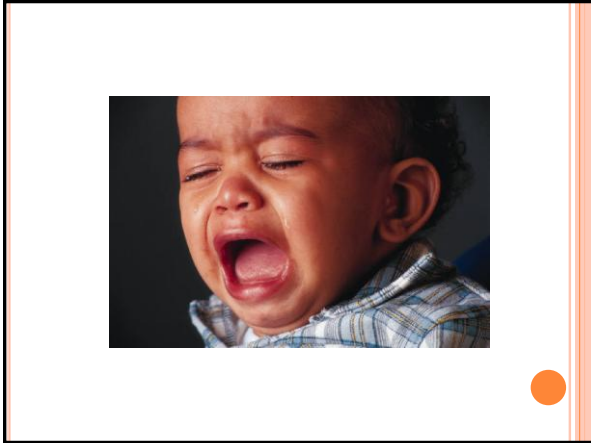
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LEARNING OBJECTIVES

- Describe the challenges associated with diabetes in the minority and elderly population incorporating information on the prevalence, complications, and economic costs of diabetes.
- Review the pharmacological approaches to the management of type 2 diabetes and their therapeutic mechanisms of action
- Identify strategies for pharmacists to educate and counsel patients on lifestyle changes (such as weight loss), medications and dosing to reduce patient blood sugar levels and improve the overall health of the patient.

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QUESTION

- Which of the following is true regarding diabetes in elderly adults compared to younger patients?
 - a. Non-insulin mediated glucose uptake is greater in elderly patients with diabetes.
 - b. Hepatic glucose production is greater in elderly patients with diabetes
 - c. Lean elderly patients with diabetes have greatly reduced insulin-mediated glucose disposal
 - d. Higher testosterone levels in elderly women increase risk for diabetes development

GENERAL EPIDEMIOLOGY OF DIABETES

- NHANES III – 20% develop diabetes by 75 yo
- Approximately 50% unaware of disease
- Prevalence higher in some ethnic groups:
 - Native Americans
 - Latinos
 - African Americans
 - Micronesians
- Diabetes is an epidemic in aged adults

PATHOGENESIS IN ELDERLY


- Strong genetic predisposition
 - Elderly patients with family history of DM more likely to develop DM as they age
- Age related changes in CHO metabolism – discussed later
- Obesity – esp. central
- Diet
 - High in saturated fat
 - Low in complex CHO

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PATHOGENESIS IN ELDERLY CONTINUED

- Testosterone and risk for DM development in elderly
 - Mechanism uncertain
 - Individuals with following appear to be at increased risk for developing DM:
 - Men with lower testosterone levels
 - Women with higher testosterone levels




PATHOGENESIS IN ELDERLY CONTINUED

- Glucose metabolism
 - Middle aged patients with DM
 - Increased fasting hepatic glucose production
 - Altered glucose-induced insulin release
 - Marked insulin receptor resistance
 - Lean, elderly patients with DM
 - Marked impairment in glucose-induced insulin release
 - Fairly normal insulin receptor activity
 - **What does this look like?**
 - Autoimmune factors may also be involved
 - Obese, elderly patients with DM
 - Normal glucose-induced insulin release
 - Marked insulin receptor resistance
 - TNF- α levels correlated to resistance




PATHOGENESIS IN ELDERLY CONTINUED

- Non-Insulin-Mediated Glucose Uptake (NIMGU)
 - Normal subjects – 50% of glucose uptake after meal is non-insulin mediated
 - Younger subjects with insulin resistance - % is even greater
 - Elderly patients with diabetes – significantly impaired
- Insulin and Blood Flow
 - Insulin stimulates blood flow
 - Insulin vasodilation impaired in younger patients with insulin resistance
 - Great impairment in insulin-mediated blood flow in elderly patients with diabetes



CLINICAL PRESENTATION IN ELDERLY

- Approximately 50% of elderly unaware they have condition. **WHY?**
 - Symptoms of hyperglycemia often absent
 - Renal threshold for glucose increases with age
 - Thirst is impaired with normal aging
 - Nonspecific symptoms are common
 - Incontinence
 - Confusion
 - Failure to thrive
 - DM often presents when patient hospitalized for a DM-related complication
 - MI
 - Stroke



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CLINICAL PRESENTATION IN ELDERLY CONTINUED

- Elderly patients who dwell in the community:
 - Less likely to be obese than younger pts with DM
 - More likely to be hypertensive than younger pts with DM
- Elderly nursing home patients with diabetes:
 - More likely to be treated with diet than elderly community pts.
 - Less obese than elderly community pts.
 - Less likely to be treated with insulin than elderly community pts.
 - Higher incidence of macro- and microvascular complications
 - Higher incidence of skin infections



COMPLICATIONS IN ELDERLY

- Sixth most common cause of death in elderly adults
- Main cause of death for elderly pts with DM is CV disease
- In pts who develop DM over the age of 65, life expectancy is shortened by at least 4 years.
- Poorer QOL
- Higher frequency of chronic disease
- Use 2x as many inpatient and outpatient resources as elderly people without DM



MACROVASCULAR EVENTS

- Includes: CV disease, Cerebrovascular disease, Peripheral vascular disease
- Doubled in elderly pts with DM
- Risk related to:
 - Diabetes duration
 - HbA1c values
 - Smoking
 - Dyslipidemia
 - HTN
- Risk factor reduction and better glycemic control improve outcomes



MICROVASCULAR COMPLICATIONS

- Risk also increased in elderly pts.
- Risk also related to:
 - Duration of diabetes
 - HbA1c
 - HTN
 - Dyslipidemia



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HYPOGLYCEMIA IN ELDERLY

- Risk of severe or fatal hypoglycemia increases greatly with age
- Why?
 - Reduced response of glucagon – glucagon deficiency
- Elderly pts rely on epi. to prevent hypoglycemia
- Other factors:
 - Lack of knowledge of warning sx.
 - Reduced awareness of warning sx.
 - Sx. tend to be less intense
 - Sx. are less specific



OTHER COMPLICATIONS IN ELDERLY

- Higher incidence of depression
 - Strong predictor of hospitalization and death
- Higher incidence of impaired cognitive function
 - Both correlated with:
 - Dyslipidemia
 - HTN
 - HbA1c
 - Improved glycemic control may improve cognition and mood
- Risk factor for vascular dementia and possible Alzheimer's disease



SCREENING IN ELDERLY

- Fasting glucose every 3 years for patients at low risk
- Fasting glucose every 1 year for patients at high risk:
 - Obesity
 - HTN
 - Ethnicity
 - Family history
 - Diabetes-related complication
- **This is an area where pharmacists need to be more involved!**



TREATMENT GOALS IN ELDERLY

- Definitely control BG closely enough to prevent symptoms of hyperglycemia
- Most elderly patients should not be placed on tight control
- Hypoglycemia risks outweigh complication benefits:
 - Fall risk
 - Hypoglycemia may lead to MI and stroke
- **Goals for most patients:**
 - **“Healthy” elderly pt. with DM**
 - Fasting plasma glucose <130 mg/dL
 - HbA1c <15% above upper limit of normal - <≈8
 - **Frail elderly pt. with DM**
 - Fasting plasma glucose <180 mg/dL
 - HbA1c <40% above upper limit of normal - < 9.8



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THERAPEUTIC OPTIONS FOR ELDERLY

- General
 - DM in elderly pts is undertreated
 - Multidisciplinary programs that also involve family improve adherence and increase glycemic control
 - LTCF generally have few guidelines and poor knowledge of the care of this patient population
 - **Educational programs for staff improve care**
 - Risk factor modification important:
 - Control HTN
 - Treat dyslipidemias
 - ACE-inhibitors – reduce macrovascular complications
 - Effect independent of BP



DIET AND EXERCISE FOR ELDERLY

- Very few studies – role of exercise not assessed
- What do elderly patients with DM eat?
 - Avoid simple sugars
 - Do not comply with dietary recommendations for:
 - Fat composition
 - Fiber composition
- Weight loss improves glycemic control in obese, elderly patients
- Diabetic diets not shown to improve glycemic control in this population
- Mg and Zn supplementation improves glycemic control
- Vitamin C and E supplementation may improve glycemic control – conflicting evidence



PHARMACOTHERAPY FOR ELDERLY

- Metformin (Glucophage®)
 - Increases insulin receptor sensitivity, assists with weight loss
 - Aging does not increase risk for LA (watch contraindications!)
 - Safe and effective for monotherapy in obese, elderly people
 - Can be used in combination with glyburide (HbA1c ↓ 1.6%)
 - First-line therapy for obese, older patients



PHARMACOTHERAPY FOR ELDERLY

- Sulfonylureas
 - Glyburide
 - Absorption and elimination impaired with age
 - Enhanced insulin response
 - Greatly increased hypoglycemia with increasing age
 - Chlorpropamide – **DO NOT USE!**
 - Other risk factors for hypoglycemia with SFU's in elderly include:
 - Black race
 - Male gender
 - Ethanol consumption
 - Multiple medications
 - Renal dysfunction
 - First-line therapy for lean, elderly patients with DM




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PHARMACOTHERAPY FOR ELDERLY

- Rosiglitazone (Avandia®)
 - As effective in elderly as in younger patients
 - Hepatic toxicity not reported
 - Incidence of edema and anemia higher in elderly patients
 - Should be closely monitored in this population
 - Good alternative for patients who have a contraindication to or cannot tolerate metformin




PHARMACOTHERAPY FOR ELDERLY

- Repaglinide (Prandin®)
 - PK not altered with age
 - Similar efficacy in elderly patients
 - Lower incidence of hypoglycemia than conventional SFUs
 - Adherence lower due to three daily doses
 - May be used as an alternative to SFUs




PHARMACOTHERAPY FOR ELDERLY

- Insulin
 - Premixed insulins should be used in this population
 - Once daily insulin use leads to increased hypoglycemia and should not be used
 - Combining insulin with oral therapy may be best for this population
 - Example
 - BID insulin regimen with metformin for obese patients
 - Reduces insulin requirements
 - Minimizes insulin weight gain
 - Improves glycemic control



QUESTION

- Which of the following related to diabetes in racial and ethnic minorities is true?
 - A. Japanese Americans have a lower prevalence of diabetes than white persons.
 - B. African Americans have a higher rate of diabetes-related neuropathy than white persons.
 - C. Latino patients tend to place the needs of family members above their personal needs.
 - D. Mexican-Americans have the same prevalence of diabetes as native Mexican persons.



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DIABETES IN RACIAL AND ETHNIC MINORITIES

- DM increasing in prevalence among minority groups in US
- Odds ratios compared to white persons
 - Asian Americans – 1.6
 - African Americans – 1.9
 - Hispanic Americans – 1.9
 - Native Americans – 1.8
 - Pacific Islanders – 3.0
- Strong association between DM development and visceral adiposity
 - Development of obesity begins earlier in minority groups
- Will focus on African- and Hispanic-Americans

DIABETES IN AFRICAN-AMERICANS

- Compared with white persons:
 - AA men – 20-50% more likely to develop DM
 - AA women – 100% more likely to develop DM
- Why?
 - Probably not related to intrinsic biological factors
 - Worse risk factor profile
 - More family history
 - Greater adiposity (BMI, waist-to-hip ratio) – women only
 - Less physical activity
 - Fewer years of formal education

DIABETES IN AFRICAN-AMERICANS

- Outcomes
 - Diabetic retinopathy – slightly higher prevalence?
 - Clinical Proteinuria – 14 vs. 5%
 - Lower extremity amputation rate – 2X
 - Self-monitored blood glucose
 - 27 vs. 44%
 - Cholesterol checks
 - 62 vs. 81%
 - Worse glucose control (HbA1c \geq 7%) – 66 vs. 55%
 - Not related to SES or HC access in any minority group
 - Worse BP control (\geq 140/90 mm Hg) – 65% vs. 55%

ACCESS MISCONCEPTIONS


- From NHANES III study
 - All of the following were statistically similar for each racial and ethnic group
 - Single primary source of ambulatory medical care (95%)
 - Single physician at this source (88%)
 - Semiannual physician visits (87%)
 - For patients \geq 65 yo:
 - 99-100% had health insurance for each racial and ethnic group
 - For patients < 65 yo:
 - Whites and African Americans (91 and 89%, respectively) had higher coverage rate than Mexican Americans (66%)

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TREATMENT SIMILARITIES FOR AFRICAN AMERICANS


- Rate or treatment with insulin or oral agents
- Eye exam in the previous year
- BP check in previous 6 months
- Percentage of HTN diagnosed
- Rates of visits to specialists for DM complications
- Physician testing of BG
- Screening for HTN
- Screening for retinopathy
- Screening for foot problems



TREATMENT DIFFERENCES FOR AFRICAN AMERICANS


- More likely to be treated with insulin (52 vs. 36%)
- Less likely to use multiple daily insulin injections (35% vs. 54%)
- Less likely to SMBG at least once daily (14 vs. 30%)
- Number of hours of patient education significantly less

- Poor outcomes associated with minority status for most chronic diseases
- The same is not true for acute medical problems.




KEY POINT: OPTIMAL DIABETES OUTCOMES ARE DEPENDENT ON THE DEVELOPMENT OF EFFECTIVE SELF-CARE STRATEGIES

PHARMACISTS CAN HAVE A LARGE ROLE!



WHAT CAN WE DO?

- DM requires significant behavior changes
- Establish link between diabetes and obesity
 - 50% of physicians who care for DM patients treat obesity
 - 4.5% of family practitioners have specific obesity training
 - 36% of endocrinologists
- Focus on effective communication



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SPECIFIC COMMUNICATION APPROACHES

- Patient self-esteem is easily hurt!
- A hurt or resentful patient will NEVER cooperate.
- Never call a patient by first name! Do not ask a patient if you can use his/her first name.
 - Do this only if they specifically ask you to do so
- Make sure you are at the same level as the patient whether seated or standing
- Smile but do NOT joke
- Use specific examples and stories
- Set specific goals
- Keep records of whether goals are accomplished and cite/celebrate accomplishments
- Be patient

REMEMBER...

- Most patients are not deliberately non-adherent.
- Poor planning skills lead to failure.
- Don't focus on the "why" things are not working
- Focus on the "how" can we make it work? "What" can "we" do to make it work for you?
- Most situations recur. Discuss specific better plans to cope better the next time.
- Again, be specific with details
 - What time will you do it?
 - Where will you keep it so you can find it?
 - What food do you plan to throw away?
 - What behavior are you going to change today?

DIABETES IN HISPANICS

- Eight percent of Hispanic adults in the US and Puerto Rico have diabetes (2x prevalence of whites)
- For every 2 Mexican-Americans diagnosed with DM, 1 has undiagnosed DM
- Prevalence varies among geographic region:
 - 10.7% - Puerto Rico, 2.9x whites
 - 5.8% - West/Southwest, 2x whites
 - 4.1% - Northeast/Midwest, 1.4x whites
- Some possible gene candidates for increased susceptibility. Nothing conclusive.

SPECIFIC INITIATIVES

- CDC/NIH targeted campaign
 - Part of the National Diabetes Education Program (NDEP)
 - Increase public awareness
 - Promote self-management
- National Hispanic/Latino Diabetes Initiative for Action – interdisciplinary and culturally appropriate
 - Supported by CDC
 - Diabetes prevention
 - Prevention of DM complications
 - "Take Charge of Your Diabetes" in Spanish
 - (877) 232-3422 for copy
- Other Local Programs – AZ, CA, TX
 - Supported by CDC

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KEY POINT: THE MOST IMPORTANT FACTOR FOR SUCCESS IN MANAGING DIABETES IN THE HISPANIC POPULATION IS THE PERSONAL INTERACTION BETWEEN PATIENTS AND HEALTHCARE PROVIDERS!

SPECIFIC POINTS FOR HISPANIC PATIENTS

- Overcoming the language barrier helps
 - Take advantage of translation lines
 - Take inventory of skills of pharmacy staff
- Cultural Issues
 - Obesity considered a sign of prosperity among older Mexican-Americans
 - Focus on obesity as a sign of poor nutrition
 - Some Hispanics believe that insulin causes blindness
 - Blindness is a large fear in this population
 - Fear developed because blindness came while on insulin
 - Tip: Use insulin pens and refer to them as "medicine pens"
 - Belief that nopales (cactus plant flowers) treat diabetes
 - High fiber, low caloric content

SPECIFIC POINTS FOR HISPANIC PATIENTS

- Be sensitive to financial issues
 - Tortillas are dietary staple are inexpensive but very high in starches
 - Have patient substitute vegetables for starches
 - Higher protein diets may be too expensive
 - Beans should be encouraged – high fiber, high protein
- The Family
 - Hispanics raised to believe that role in life is to care for others
 - Do not prioritize themselves
 - Healthcare providers should seek to become part of the "family"

AREAS FOR FUTURE DEVELOPMENT

- Additional studies of medications in these populations
- Documentation of effectiveness of interventions
- Pharmacists are going to have an enhanced role in the care of these patients
 - Healthcare reform
 - The "Medical Home" model
- Are we ready to accept this challenge?
- What do we need to do to get ready?

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QUESTIONS?



NOTES



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