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***Our Mission:*** Helping to prepare Iowa's health practitioners to care for our growing population of elders. *E-NEWS* is one of our methods of teaching through technology.

Each month, *E-NEWS* delivers abstracts from current multidisciplinary healthcare journal articles related to a specific geriatric topic. This month's *E-NEWS* focuses on DIABETES MANAGEMENT.

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## UPDATE ON DIABETES MANAGEMENT

**In this issue of the *E-NEWS*, you will find abstracts for:**

- An article that discusses individualizing therapy for older adults with diabetes.
  - A study that investigates the efficacy and safety of colesevelam in adults with type 2 diabetes mellitus and inadequate glycemic control receiving insulin-based therapy.
  - A study that compares the combination of oral antidiabetic agents with basal insulin versus premixed insulin alone in older adults with diabetes.
  - A study that develops a diabetes management intervention specific to the cultural and age-related needs of older, rural African American women.
  - A study that examines whether implementing a multicomponent organizational intervention improves diabetes care in practice.
  - An article that evaluates oral diabetic medications and older adults.
  - A study that assesses improvement in diabetes self-efficacy and glycemic control using telemedicine in older adults.
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- [Cayea D, Boyd C, Durso SC. Individualizing therapy for older adults with diabetes mellitus. \*Drugs Aging\*. 2007;24\(10\):851-63.](#)

The goal when treating patients with diabetes mellitus is to achieve the maximum longevity consistent with an optimal quality of life. To achieve this goal, treatment is typically focused on management of hyperglycemic symptoms and prevention of microvascular and macrovascular complications. While appropriate for most individuals, including many older adults with robust health, this focus is often too limited for older adults facing diminished life expectancy and co-existing medical illness, frailty and disability. Creating a treatment plan that optimizes health and function, and reduces the risk for morbidity and mortality, requires individualized therapy that judiciously manages symptoms and multiple competing health risks while remaining consistent with the patient's or his/her caregiver's healthcare preferences. Physicians caring for older adults with diabetes must be adept at recognizing conditions commonly associated with diabetes, including the interplay with co-morbid illness, and be able to assess the patient's health status and use this information to recommend a treatment plan that is consistent with the patient's personal goals for care. The majority of older adults with diabetes will benefit from management of cardiovascular risk, including intensive management of hypertension, lipids, use of aspirin (acetylsalicylic acid) and smoking cessation, and screening for common geriatric syndromes. For a significant minority of older adults with life expectancy of  $\geq 10$  years, it is reasonable to consider intensive management of hyperglycemia (glycosylated hemoglobin [HbA1c] target  $\leq 7\%$ ). For frail older adults with life expectancy of  $< 5$  years, strategies for reducing medical burden, improving function and moderate glucose control (HbA1c approximately 8%) is reasonable and sufficient to control hyperglycemic symptoms.



- [Goldberg RB, Fonseca VA, Truitt KE, Jones MR. Efficacy and safety of colesevelam in patients with type 2 diabetes mellitus and inadequate glycemic control receiving insulin-based therapy. \*Arch Intern Med\*. 2008 Jul 28;168\(14\):1531-40.](#)

BACKGROUND: Poor glycemic control is a risk factor for microvascular complications in patients with type 2 diabetes mellitus. Achieving glycemic control safely with insulin therapy can be challenging. METHODS: A prospective, 16-week, multicenter, randomized, double-blind, placebo-controlled, parallel-group study conducted at 50 sites in the United States and 1 site in Mexico between August 12, 2004, and December 28, 2005. Subjects had type 2 diabetes mellitus that was not adequately controlled (glycated hemoglobin level, 7.5%-9.5%, inclusive) receiving insulin therapy alone or in combination with oral antidiabetes agents. In total 287 subjects (52% men; mean age, 57 years; with a mean baseline glycated hemoglobin level of 8.3%) were randomized: 147 to receive colesevelam hydrochloride, 3.75 g/d, and 140 to receive placebo. RESULTS: Using the least squares method, the mean (SE) change in glycated hemoglobin level from baseline to week 16 was -0.41% (0.07%) for the colesevelam-treated group and 0.09% (0.07%) for the placebo group (treatment difference, -0.50% [0.09%]; 95% confidence interval, -0.68% to -0.32%;  $P < .001$ ). Consistent reductions in fasting plasma glucose and fructosamine levels, glycemic-control response rate, and lipid control measures were observed with colesevelam. As expected, the colesevelam-treated group had a 12.8% reduction in low-density lipoprotein cholesterol concentration relative to placebo ( $P < .001$ ). Of recipients of colesevelam and placebo, respectively, 30 and 26 discontinued the study prematurely; 7 and 9 withdrew because of protocol-specified hyperglycemia, and 10 and 4 withdrew because of adverse events. Both treatments were generally well tolerated. CONCLUSIONS: Colesevelam treatment seems to be safe and effective for improving glycemic control and lipid management in patients with type 2 diabetes mellitus receiving insulin-based therapy, and it may provide a novel treatment for improving dual cardiovascular risk factors.



- [Janka HU, Plewe G, Busch K. Combination of oral antidiabetic agents with basal insulin versus premixed insulin alone in randomized elderly patients with type 2 diabetes mellitus. \*J Am Geriatr Soc\*. 2007 Feb;55\(2\):182-8.](#)

OBJECTIVES: To compare initiation of insulin therapy by adding once-daily insulin glargine to oral antidiabetic agents (OADs) with switching patients to premixed 30% regular, 70% human neutral protamine hagedorn insulin (70/30) without OADs. DESIGN: A 24-week, multicenter, open, randomized (1:1), parallel study. SETTING: Three hundred sixty-four poorly controlled patients with type 2 diabetes mellitus were treated with once-daily morning insulin glargine with continued OADs (glimepiride+metformin) (glargine+OAD) or twice-daily 70/30 alone. Insulin dosage in each group was titrated to target fasting blood glucose (FBG) of 100

mg/dL or less ( $\leq 5.6$  mmol/L) using a weekly titration algorithm. PARTICIPANTS: This planned subgroup analysis of the original study was based on 130 insulin-naïve patients aged 65 and older with FBG of 120 mg/dL or greater ( $\geq 6.7$  mmol/L) and hemoglobin (Hb)A(1c) levels between 7.5% and 10.5% on OADs (glargine+OAD, n=67; 70/30, n=63). MEASUREMENTS: HbA(1c), FBG, hypoglycemia, insulin dose, and adverse events were recorded. RESULTS: HbA(1c) decreased from baseline to endpoint for both glargine+OAD (from 8.8% to 7.0%) and 70/30 (from 8.9% to 7.4%); adjusted mean HbA(1c) decrease for glargine+OAD and 70/30 was -1.9% and -1.4%, respectively (P=.003). More patients reached HbA(1c) of 7.0% or less without confirmed nocturnal hypoglycemia with glargine+OAD (n=37, 55.2%) than with 70/30 (n=19, 30.2%) (P=.006). FBG decreased significantly more with glargine+OAD (-57 mg/dL (-3.2 mmol/L)) than with 70/30 (-40 mg/dL (-2.2 mmol/L)) (P=.002). Patients treated with glargine+OAD experienced fewer episodes of any hypoglycemia (3.68/patient-year) than did those treated with 70/30 (9.09/patient-year) (P=.008). CONCLUSION: In elderly patients, addition of once-daily morning glargine+OAD is a simple regimen to initiate insulin therapy, restoring glycemic control more effectively and with less hypoglycemia than twice-daily 70/30 alone.



- Leeman J, Skelly AH, Burns D, Carlson J, Soward A. Tailoring a diabetes self-care intervention for use with older, rural African American women. *Diabetes Educ.* 2008 Mar-Apr;34(2):310-7.

PURPOSE: The purpose of this study was to tailor a diabetes management intervention to the cultural and age-related needs and preferences of older, rural African American women. METHODS: Findings from exploratory research, clinical experience, and review of the literature were used to inform the development of a culture- and function-specific intervention. Findings informed the design of the intervention, format of intervention delivery, format of intervention materials, and training provided to interventionists. Intervention materials were reviewed by a community advisory board, and the intervention was pilot tested with 43 women. RESULTS: The intervention's delivery was tailored to the needs of older African American women through the use of 1-hour, in-home sessions that used a storytelling format to share information. The design of the intervention individualized its content to each woman's symptom experience, self-care practices, and coping strategies. Extensive training sensitized intervention nurses to coping strategies (spirituality, church, family) and barriers to self-care (functional limitations, stress, the multi-caregiver role) that are common among older African American women. Intervention materials were culturally sensitive and in large-print format. CONCLUSIONS: African American women's cultural background may have a strong influence on health behaviors and beliefs. Older women's health behaviors are further influenced by changes in their functional abilities. Therefore, the authors tailored a diabetes self-care management intervention to be specific to older African American women's cultural and functional differences. An initial pilot of the intervention found high levels of participant satisfaction with the intervention, improvements in diabetes self-care practices, and a trend toward greater metabolic control.



- Peterson KA, Radosevich DM, O'Connor PJ, Nyman JA, Prineas RJ, Smith SA, Arneson TJ, Corbett VA, Weinhandl JC, Lange CJ, Hannan PJ. Improving Diabetes Care in Practice: findings from the TRANSLATE trial. *Diabetes Care.* 2008 Dec;31(12):2238-43.

OBJECTIVE: The purpose of this study was to determine whether implementation of a multicomponent organizational intervention can produce significant change in diabetes care and outcomes in community primary care practices. RESEARCH DESIGN AND METHODS: This was a group-randomized, controlled clinical trial evaluating the practical effectiveness of a multicomponent intervention (TRANSLATE) in 24 practices. The intervention included implementation of an electronic diabetes registry, visit reminders, and patient-specific physician alerts. A site coordinator facilitated previsit planning and a monthly review of performance with a local physician champion. The principle outcomes were the percentage of patients achieving target values for the composite of systolic blood pressure (SBP)  $< 130$  mmHg, LDL cholesterol  $< 100$  mg/dl, and A1C  $< 7.0\%$  at baseline and 12 months. Six process measures were also followed. RESULTS: Over 24 months, 69,965 visits from 8,405 adult patients with type 2 diabetes were recorded from 238 health care providers in 24 practices from 17 health systems. Diabetes process measures increased significantly more in intervention than in control practices, giving net increases as follows: foot examinations 35.0% (P  $< 0.001$ ); annual eye examinations 25.9% (P  $< 0.001$ ); renal testing 28.5% (P  $< 0.001$ ); A1C testing 8.1% (P  $< 0.001$ ); blood pressure monitoring 3.5% (P = 0.05); and LDL testing 8.6% (P  $< 0.001$ ). Mean A1C adjusted for age, sex, and comorbidity decreased significantly in intervention practices (P  $< 0.02$ ). At 12 months, intervention

practices had significantly greater improvement in achieving recommended clinical values for SBP, A1C, and LDL than control clinics ( $P = 0.002$ ). CONCLUSIONS: Introduction of a multicomponent organizational intervention in the primary care setting significantly increases the percentage of type 2 diabetic patients achieving recommended clinical outcomes.



- Silverberg AB, Ligaray KP. Oral diabetic medications and the geriatric patient. *Clin Geriatr Med.* 2008 Aug;24(3):541-9, viii.

Current medications for management of diabetes mellitus in older individuals include first and second generation sulfonylurea medications, meglitinides, incretin medications, alpha glucosidase inhibitors, metformin, and thiazolidinediones. This article discusses indications for their usage, along with their beneficial and adverse effects.



- Trief PM, Teresi JA, Eimicke JP, Shea S, Weinstock RS. Improvement in diabetes self-efficacy and glycemic control using telemedicine in a sample of older, ethnically diverse individuals who have diabetes: the IDEATel project. *Age Ageing.* 2009 Mar;38(2):219-25.

BACKGROUND: with increasing prevalence of diabetes in older people, it is important to understand factors that affect their outcomes. The Informatics for Diabetes Education and Telemedicine (IDEATel) project is a demonstration project to evaluate the feasibility and effectiveness of telemedicine with diverse, medically underserved, older diabetes patients. Subjects were randomized to telemedicine case management or usual care. This intervention has been shown to result in improved medical outcomes and self-efficacy. Self-efficacy refers to one's belief that (s)he can successfully engage in a behavior. Self-efficacy has been shown to relate to behavior change and glycemic control in middle-aged individuals, but not studied in older individuals. OBJECTIVES: to assess whether (a) diabetes self-efficacy relates to the primary medical outcome of glycemic control, and to secondary outcomes (blood pressure and cholesterol), and (b) whether, after an intervention, change in diabetes self-efficacy relates to change in these medical outcomes in a group of older, ethnically diverse individuals. METHODS: three waves of longitudinal data from participants in IDEATel were analyzed. RESULTS: diabetes self-efficacy at baseline correlated with glycemic control, blood pressure and cholesterol. An increase in diabetes self-efficacy over time was related to an improvement in glycemic control ( $P < 0.0001$ ), but not in blood pressure and lipid levels. The intervention was significantly related to improved self-efficacy over time ( $P < 0.0001$ ), and both directly ( $P = 0.022$ ) and indirectly through self-efficacy ( $P < 0.001$ ) to improved glycemic control. The mediation effect of self-efficacy was also significant ( $P < 0.004$ ). CONCLUSIONS: diabetes self-efficacy is a relevant construct for older diabetes patients. Thus, interventions that target enhanced self-efficacy may also result in improved glycemic control.



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*Next Month's Issue:*

Non-pharmacologic Approaches to the Management of Behavior  
in People with Dementia

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