Effective Health Care

Management of Diabetic Proteinuria and Kidney Disease
Nomination Summary Document

Results of Topic Selection Process & Next Steps

- The topic, *Management of Diabetic Proteinuria and Kidney Disease*, was found to be addressed by two AHRQ products, three Cochrane systematic reviews, and seven clinical practice guidelines. Given that the existing guidelines, some of which are currently being updated, and other evidence found cover this nomination, no further activity will be undertaken on this topic.

AHRQ Products

- Applicability of the evidence regarding intensive glycemic control and self-monitored blood glucose to Medicare patients with type 2 diabetes. Health Technology Assessment. (Prepared for the Agency for Healthcare Research and Quality by the Tufts New England Medical Center Evidence-based Practice Center under contract # 290-02-0023). Rockville, MD: Agency for Healthcare Research and Quality. 2011.
- Fink HA, Ishani A, Taylor BC, et al. Chronic Kidney Disease Stages 1–3: Screening, Monitoring, and Treatment. Comparative Effectiveness Review No. 37. (Prepared by the Minnesota Evidence-based Practice Center under Contract No. HHSA 290-2007-10064-I.) AHRQ Publication No. 11(12)-EHC075-EF. Rockville, MD: Agency for Healthcare Research and Quality. 2012.

Cochrane Systematic Reviews

- Bolignano D, Palmer SC, Navaneethan SD, Strippoli GFM. Aldosterone antagonists for preventing the progression of chronic kidney disease. Cochrane Database of Systematic Reviews 2014, Issue 4. Art. No.: CD007004. DOI: 10.1002/14651858.CD007004.pub3.
- Wang H, Deng JL, Yue J, et al. Prostaglandin E1 for preventing the progression of diabetic kidney disease. Cochrane Database of Systematic Reviews 2010, Issue 5. Art. No.: CD006872. DOI: 10.1002/14651858.CD006872.pub2.
- Shan D, Wu HM, Yuan QY, et al. Pentoxifylline for diabetic kidney disease. Cochrane Database of Systematic Reviews 2012, Issue 2. Art. No.: CD006800. DOI: 10.1002/14651858.CD006800.pub2 - See more at: http://summaries.cochrane.org/CD006800/pentoxifylline-for-diabetic-kidney-disease#sthash.oYs7wdqA.dpuf.

Clinical Practice Guidelines

- Handelsman Y, Mechanick JI, Blonde L, et al. AACE Task Force for Developing Diabetes Comprehensive Care Plan. American Association of Clinical Endocrinologists medical guidelines for clinical practice for developing a diabetes mellitus comprehensive care plan. Endocr Pract, 2011;17(Suppl 2):1-53.
- KDIGO 2012 clinical practice guideline for the evaluation and management of chronic kidney disease. Kidney Int Suppl. 2013 Jan;3(1):1-150.
- National Kidney Foundation. KDOQI clinical practice guideline for diabetes and CKD: 2012 update. Am J Kidney Dis, 2012; 60(5):850-86.

- Chronic kidney disease. NICE Clinical Guideline 182. National Institute for Health and Care Excellence, 2014. Accessed September 19, 2014. http://www.nice.org.uk/nicemedia/live/12069/42117/42117.pdf (Currently being updated)
- Type 2 diabetes. NICE Clinical Guideline 87. Royal College of Physicians, 2009. Accessed September 19, 2014.
- Department of Veteran Affairs and Department of Defense (VA/DoD) clinical practice guideline for management of chronic kidney disease in primary care. Department of Veterans Affairs and Department of Defense, 2007. Accessed July 2, 2014. http://www.healthquality.va.gov/ckd/ckd_v478.pdf. Currently being updated.
- VA/DoD clinical practice guideline for the management of diabetes mellitus. Washington (DC): Department of Veteran Affairs, Department of Defense, 2010. Accessed July 2, 2014. http://www.guideline.gov/content.aspx?id=24192&search=Diabetes+mellitus+type+2.

Topic Description

Nominator(s): Individual

Nomination Summary: The nominator is interested in the best treatment options for proteinuria; in particular, the nominator would like to know if pharmacotherapy is more effective than diet and exercise for treatment of proteinuria, a sign of kidney disease, in individuals with diabetes mellitus .

Staff-Generated PICO

Population(s): Adults with type 1 or 2 diabetes mellitus (DM) and proteinuria

Intervention(s): Interventions for optimizing diabetes management, including diabetes medication, behavioral modification using diet and or exercise, and drug therapies that impact proteinuria levels (e.g., angiotensin converting enzymes inhibitors [ACEi], angiotensin receptor blockers [ARBs])

Comparator(s): Comparison of the above treatment and management options

Outcome(s): Delayed progression of chronic kidney disease (CKD), as indicated by proteinuria (e.g., urinary albumin concentration [UAC], albumin to creatinine ratio [ACR]), and glomerular filtration rate (GFR)); and reduced risk of CKD and end stage renal disease (ESRD)

Key Questions from Nominator:

1. What is the best treatment for 2.18 mg/dl of protein in the urine?
2. Is nutrition an option for treatment?

Considerations

- The topic meets EHC Program appropriateness and importance criteria. (For more information, see http://effectivehealthcare.ahrq.gov/index.cfm/submit-a-suggestion-for-research/how-are-research-topics-chosen/.)
- Diabetic kidney disease (DKD) is one of the major microvascular complications in patients with DM. Proteinuria (protein in urine) is one of the first signs of diabetic kidney damage. DKD is the major cause of end-stage renal disease (ESRD) in most western countries and affects 1 in 8 adults globally. Individuals with Type 1 and type 2 Diabetes Mellitus have similar implications for kidney damage.

- The vast majority of CKD is associated with medical conditions, such as DM and hypertension. The major impact on progression of CKD and the incidence of ESRD has been through the treatment of DM and reduction in blood pressure.
- This topic was addressed by seven guidelines, the majority of which indicate glucose control reduces the risk of DKD. Only the Kidney Disease Improving Global Outcomes (KDIGO) guideline recommends lowering protein intake as an additional treatment option.
  - The American Association of Clinical Endocrinologists (AACE) guideline, *Guideline for Clinical Practice for developing a diabetes mellitus comprehensive care plan (2011)*, reported that prevention of progression of diabetic nephropathy includes optimal control of plasma glucose (HbA1c goal <7%) and BP (BP <130/80 mm Hg), and modification of other risk factors such as smoking and hyperlipidemia. The guideline also states that ACE inhibitors (ACEi) provide additional nephroprotective benefits in addition to their blood pressure–lowering effects.
  - The Kidney Disease Outcomes Quality Initiative (KDOQI) guideline, *KDOQI clinical practice guideline for diabetes and CKD (2012)*, recommended a target HbA1c of 7.0% to prevent or delay progression of the microvascular complications of diabetes, including DKD.
  - The KDIGO guideline, *KDIGO 2012 clinical practice guideline for the evaluation and management of chronic kidney disease*, presented the same recommendations as the KDOQI guideline and the following additional recommendations:
    - In people with CKD and diabetes, glycemic control should be part of a multifactorial intervention strategy addressing blood pressure control and cardiovascular risk, promoting the use of ACEi or ARBs, statins, and antiplatelet therapy where clinically indicated.
    - Lower protein intake to 0.8 g/kg/day in adults with diabetes or without diabetes and GFR <30 ml/min/1.73 m^2, with appropriate education and avoid high protein intake (>1.3 g/kg/day) in adults with CKD at risk of progression.
  - The two NICE guidelines on Type 2 Diabetes Mellitus and CKD agree that ACEi and ARBs are effective therapies for treating albuminuria. The NICE guideline on CKD did not recommend low-protein diet for individuals with CKD.
  - The VA/DoD clinical practice guidelines on *Management of Chronic Kidney Disease* and *Management of Diabetes Mellitus* provide recommendations for managing chronic diseases in primary care and agree that glycemic control can reduce the risk of kidney disease. One of the guidelines addressed dietary treatments and found insufficient evidence to recommend routine treatment with a low protein diet.
- Topic was also found to be addressed by an existing 2011 health technology assessment and 2012 comparative effectiveness review completed for AHRQ, as well as three Cochrane reviews published in 2010, 2012, and 2014.