Effective Health Care

Vitamin D Supplementation in the Prevention and Treatment of Chronic Kidney Disease

Results of Topic Selection Process & Next Steps

- Vitamin D supplementation for the prevention of chronic kidney diseases is not feasible for a full systematic review due to the limited data available for a review at this time.

- Ongoing research or activities focused on vitamin D supplementation as therapy for slowing chronic kidney disease progression are underway that impact the timing for developing this portion of the topic. Therefore, vitamin D supplementation as therapy for slowing chronic kidney disease progression will be revisited in the future when more data become available.

Topic Description

Nominator: Organization

Nomination Summary: The nominator is interested in the comparative effectiveness of vitamin D supplementation primarily for the prevention of chronic kidney disease (CKD), but also as therapy for slowing CKD progression. Comparison of the effectiveness of all forms of vitamin D therapy is of interest, including active and nutritional forms of vitamin D. Whether vitamin D insufficiency or deficiency is associated with the development of CKD or the progression of CKD to end stage renal disease (ESRD) needs to be established before optimal levels of vitamin D for CKD prevention and progression can be examined.

Staff-Generated PICO
Population(s): For prevention, patients at risk for CKD; for therapy, patients with CKD
Intervention(s): Active and nutritional vitamin D therapy
Comparator(s): No therapy, vitamin D compounds [ergocalciferol (D2); cholecalciferal (D3); alfacalcidol (1α-hydroxyvitamin D3); 25α-hydroxyvitamin D3; 24,25 dihydroxyvitamin D3; 1,25 dihydroxyvitamin D3 (calcitriol); dihydrotachysterol; maxacalcitol (22-oxacalcitriol); doxercalciferol (1α-hydroxyvitamin D2); falecalcitriol (26,27-hexa-fluorocalcitriol); paricalcitol (19-nor-1,25-dyhydroxyvitamin D2)]
Outcome(s): For prevention, incidence of CKD; for therapy, changes in kidney function (e.g., estimated glomerular filtration rate (GFR) or creatinine) or albuminuria, incidence of ESRD)

Key Questions from Nominator:

1. Are low levels of serum vitamin D associated with the development of CKD?
   a. What is the optimal level of serum Vitamin D to prevent CKD in the general population?
   b. Does the optimal level differ by race, age, sex or the presence of comorbidities

(e.g., diabetes or hypertension)?

2. What is the comparative effectiveness of supplementation with nutritional forms of vitamin D in preventing CKD?
3. Among patients with CKD, are low levels of serum vitamin D associated with faster progression of CKD to ESRD?
   a. What is the optimal level of serum Vitamin D to prevent or slow CKD progression? Does the optimal level differ by race, age, sex or the presence of hypertension, diabetes, or proteinuria?
4. What is the comparative effectiveness of supplementation with nutritional or active forms of vitamin D in reducing albuminuria or slowing CKD progression?

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/.)

- There are no randomized controlled trials evaluating the effectiveness of nutritional vitamin D in preventing chronic kidney disease. Therefore, this topic is not feasible for a full systematic review due to the limited data available for a review at this time.

- There is currently insufficient evidence to draw conclusions about vitamin D supplementation as therapy to slow progression of chronic kidney disease. However, there is considerable clinical trial activity on the effectiveness of nutritional or active vitamin D therapy to slow progression of chronic kidney disease. Publications from these studies will likely be available within the next three years; therefore, this topic will be reconsidered when these trial results are available.

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