Title

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Journal

American Journal of Kidney Diseases, 73(5)

ISSN

0272-6386

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Publication Date

2019-05-01

DOI

10.1053/j.ajkd.2019.03.356

AJKD

735 - 736 *AJKD* Vol 73 | Iss 5 | May 2019

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THE COST-EFFECTIVENESS OF EXTENDED-RELEASE CALCIFEDIOL VERSUS DOXERCALCIFEROL, CALCITRIOL, PARICALCITOL AND ERGOCALCIFEROL FOR THE TREATMENT OF SECONDARY HYPERPARATHYROIDISM AND CKD STAGES 3-4:

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Many patients with chronic kidney disease (CKD) not on dialysis have vitamin D insufficiency (VDI), as well as secondary hyperparathyroidism (SHPT), which can contribute to increased risk of fracture, cardiovascular (CV) disease, CKD progression and death. We evaluated the cost-effectiveness of extended-release calcifediol versus doxercalciferol, calcitriol, paricalcitol, and ergocalciferol for the treatment SHPT and VDI in CKD Stage 3-4 patients.

A cost-effectiveness analysis using a Markov structure with a 5-year time horizon across a 1,000-person cohort from a Medicare perspective was developed. The model is based on changes in 25(OH)D and iPTH levels for each treatment. Peer-reviewed literature is used to estimate the rates of CV events, fractures, and CKD progression as a result of changes in the biochemical levels. Mortality, CKD stage, clinical events, and health-state utilities by CKD stage are used to estimate life expectancy and quality-adjusted life years (QALYs). The primary outcome was the incremental cost-effectiveness ratio (ICER) defined as the incremental cost per QALY gained of extended-release calcifediol versus standard of care. Sensitivity and scenario analyses were conducted.

Extended-release calcifediol was the dominant treatment strategy (less costly and more effective) when compared with doxercalciferol, calcitriol, and paricalcitol. Total cost and QALYs with extended-release calcifediol were $230.7M and 9,842, resulting in cost savings of $22.6M, $5.4M, and $15.1M and incremental gains in effectiveness of 674, 516, and 914 QALYs for doxercalciferol, calcitriol, and paricalcitol, respectively. When compared to ergocalciferol, extended-release calcifediol resulted in an ICER of $21,160 per QALY gained.

Extended-release calcifediol is a cost-effective treatment for stage 3-4 CKD patients with SHPT and VDI.