

## Vitamin D Level Screening and Supplementation During Hospital Stay

### Abstract

**Purpose:** Vitamin D is crucial for skeletal health and calcium balance, but deficiency is linked to risks such as low bone density, diabetes, multiple sclerosis, rheumatoid arthritis, and common cancers. There is lack of sufficient evidence and guidance on routine screening and supplementation for vitamin D deficiency in hospitalized patients. This study aims to understand why vitamin D levels were drawn in hospitalized patients to ensure targeted testing for conditions that often have low vitamin D levels. Additionally, to evaluate the vitamin D replacement based on laboratory value and explore the impact of the patient's race on vitamin D deficiency.

**Methods:** The institutional review board approved this cross-sectional retrospective chart review study. Data was collected using the electronic health record of patients admitted to a 500-bed teaching hospital located in Springfield, Illinois. Hospitalized adults aged 18-year-old or older who obtained a serum 25-hydroxyvitamin D level and were admitted between 10/1/2021 to 11/15/2021 were included. Patients were excluded if in hospice, and end-of-life care. The primary objective of this study aims to assess hospitalized patients screened for vitamin D deficiencies and subsequently the prescribing patterns observed based on the vitamin D levels. Secondary objectives include evaluating medications and diseases that are known to have low vitamin D levels as well as a patient demographic's impact on vitamin D level. Patient's demographics, vitamin D level, calcium level, albumin level, eGFR, parathyroid level, vitamin D drug orders were collected. Patients were also screened for medications and disease states that could increase the risk of vitamin D deficiency, including COVID-19.

**Results:** Out of 134 patient charts accessed, 100 were included in the study. Among these patients, 27 exhibited vitamin D deficiency, 26 had insufficient levels, 41 had normal levels, and 6 had high levels. Notably, a higher proportion of African American patients were found in the deficient and insufficient vitamin D groups, despite comprising only 13% of the study population. Depression was the most common comorbidity associated with low vitamin D levels, and smokers were at higher risk of deficiency. Despite the prevalence of deficiencies, 25% of patients with low vitamin D levels did not receive supplementation. Ergocalciferol was the most commonly prescribed supplement.

**Conclusion:** The study highlights the importance of addressing vitamin D deficiencies in hospitalized patients, especially among African American populations. Further investigations, including randomized controlled trials, are necessary to fully understand the impact of vitamin D supplementation on patient outcomes.

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