Vitamin D Prescribing and Monitoring Trends within the Durham VA Medical Center

Veterans Health Administration
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Background

- Vitamin D has benefits on bone health, cardiovascular health, cancer, diabetes, and other disease states[1]
- Recent data estimates 20-100% of Americans, Canadians, and Europeans are vitamin D deficient (25(OH)D <20 ng/mL)[1]
- Wide spectrum of vitamin D dosing and vague recommendations for monitoring (listed below) can lead to inappropriate prescribing and treatment leading to health-related consequences, such as falls, fractures, and poor cardiovascular health[2]
- Guideline-directed treatment and monitoring of vitamin D deficiency at the Durham VA Medical Center (DVAMC) have not been evaluated

Vitamin D Therapy Recommendations[1]

Indication	Repletion Dose	Length of Repletion	Maintenance Dose
Obesity	6,000-10,000 units daily	To goal	3,000-6,000 units daily
Malabsorption Disorder	50,000 units 2-3 times weekly OR 6,000-10,000 units daily	To goal	50,000 units weekly OR 3,000-6,000 units daily
Chronic Kidney Disease Stage 2-3	50,000 units weekly	8-12 weeks	1,000 units daily
Pregnancy/Lactation	50,000 units weekly	8 weeks	1,000-2,000 units daily
Nephrotic Syndrome	50,000 units twice weekly	8-12 weeks	1,000-2,000 units daily
Other Deficient Patient	50,000 units weekly	8-12 weeks	1,500-2,000 units daily

Objectives

Primary

- Determine if patients screened for vitamin D deficiency at DVAMC are receiving repletion therapy and monitoring in accordance with guidelines and local expert opinion

Secondary

- Determine the percentage of patients screened who achieved a 25-hydroxyvitamin D (25(OH)D) level ≥ 30 ng/ml within a year
- Determine if those screened for vitamin D deficiency represent at-risk groups recommended for screening
- Evaluate the incidence of laboratory and clinical vitamin D toxicity

Methods

A retrospective chart review was performed to evaluate patients at the DVAMC for quality improvement

Inclusion Criteria	Exclusion Criteria
• 25(OH)D level less than 20 ng/ml between July 1, 2013 and June 30, 2014	• Inpatient stay at time of screening • Chronic kidney disease stage 4 or 5 and/or are on dialysis • History of bariatric surgery or chronic TPN use • Chronic granuloma forming disorders • History of hyperparathyroidism • Hypercalcemia (serum calcium >10.2mg/dL) at screening

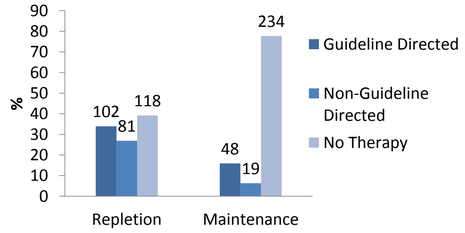
Results

- 301 patients were included
  - 115 (38.2%) received no therapy
  - 26 (8.6%) received both guideline recommended repletion and maintenance

Percentage of Patients with Repleted 25(OH)D Levels by Time from Index Screening

25 (OH) D	8-12 weeks, (n = 21)	6 months, (n = 51)	1 year, (n = 87)
> 30 ng/ml, no (%)	13 (61.9)	21 (41.2)	9 (10.3)
20-30 ng/ml, no (%)	5 (23.8)	11 (21.6)	20 (23.0)

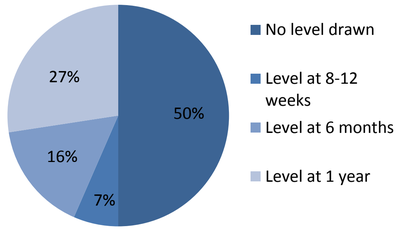
Percentage of Patients Receiving Vitamin D Therapy



Baseline Demographics

Characteristic	Total N = 301
Average age, years (range)	55.4 (22-96)
Male, n (%)	242 (80.4)
Average BMI, kg/m2 (range)	30.9 (15-61)
Vitamin D in last 3 months	
Repletion therapy, n (%)	37 (12.3)
Maintenance therapy, n (%)	11 (3.7)
Vitamin D level < 10 , n (%)	30 (10.0)

Vitamin D Follow-up Timing



Discussion

- Low rates of adherence to guidelines for the management of vitamin D deficiency were found at DVAMC, possibly due to lack of familiarity with the guidelines or difficulty with implementing them into clinical practice
- Patients treated with guideline-directed repletion and maintenance therapy had follow-up within 1 year, but the majority did not reach therapeutic vitamin D levels, indicating closer follow-up may be necessary
- Of the 186 patients who received treatment, 4 patients (2%) had follow-up vitamin D levels greater than 100 ng/mL, one developing hypercalcemia, demonstrating the low risk for toxicity with supplementation of vitamin D
- It appears that appropriate repletion therapy is the most important factor in achieving repletion levels, but closer follow-up and appropriate maintenance therapy is necessary to maintain adequate vitamin D levels
- As a result of this MUE, implementation of primary care provider education tools and a vitamin D order set will be created to ensure increased familiarity and compliance with The Endocrine Society Vitamin D Supplementation Guidelines at our medical center

Disclosures

Authors of this presentation have the following to disclose concerning possible financial or personal relationships with commercial entities that may have a direct or indirect interest in the subject matter of this presentation:

Sara Britnell, Juliana Lipetzky, Haley Parker: Nothing to disclose.

References

1. Holick MF, Binkley NC, Bischoff-Ferrari HA, et al. Evaluation, treatment, and prevention of vitamin D deficiency: an endocrine society clinical practice guideline. J Clin Endocrinol Metab. 2011; 96: 1911-30.
2. Atterado S, Ono G, Kanehira-Mar S, et al. Evaluating Vitamin D Repletion Regimens and Effects in Veteran Patients. Ann Pharmacother. 2015;49(9): 969-977.