Vitamin D Supplementation to Decrease Respiratory Infections in Adults

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Practice Concern

- Vitamin D regulates the activity of immune cells such as monocytes, dendritic cells and T and B lymphocytes. Low vitamin D status reduces the capacity of these cells to function thus leading to increased respiratory infections[1].
- Acute respiratory tract infections (RTIs) account for 10% of all ambulatory care/outpatient visits.[2]
- 20 to 90 % of older adults in the U.S.A. suffer from vitamin D deficiency due to reduced nutritional intake of vitamin D, increasing adiposity, decreased cutaneous synthesis of vitamin D, and less time spent outdoors.[3]

Needs Assessment

- Approximately 1 billion people worldwide are vitamin D deficient.[1]
- Non-Hispanic African Americans have the highest prevalence of vitamin D deficiency, with blood serum concentrations of 25(OH)D less than 30 nmol/L[3]

PICOT Question

Inquiry

- In African Americans 60 years and older, does daily vitamin D supplementation over a period of 6 months preceding flu season decrease the incidence of acute respiratory infections during peak flu transmission?

Literature Review

- **Databases:** Cochrane, CINAHL Complete, PUBMed and DynaMed.
- **Keywords:** Vitamin D, vitamin D deficiency, adults, respiratory infections, acute respiratory infection, upper respiratory infection and lower respiratory infections.
- **Results:** Thirty-nine articles published between 2009 and 2017 were found, with 10 selected based on inclusion and exclusion criteria. Three Level I articles and seven Level II articles were utilized.
- **Summary:** Vitamin D supplementation significantly reduces respiratory tract infections.

Inclusion and Exclusion Criteria

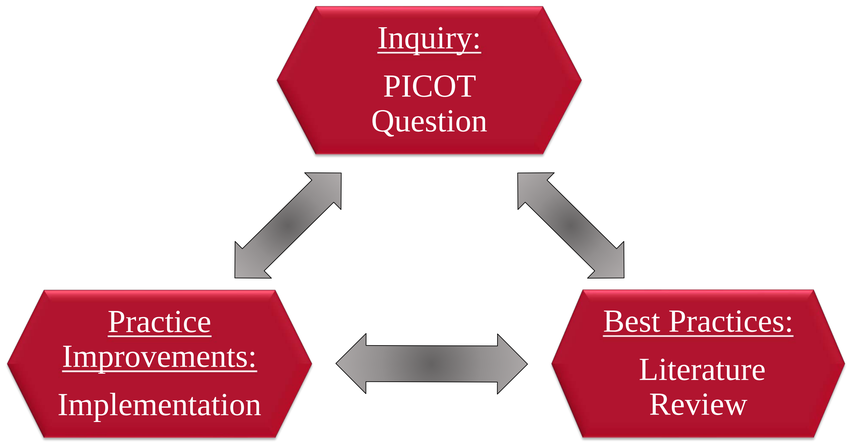
Inclusion	• Role of vitamin D on respiratory health, RTIs in adults and children • RTIs as primary or secondary outcomes of low vitamin D intake or administration
Exclusion	• Non-human subjects • Role of vitamin D in the treatment of other health disorders

EBP Guidelines

- The Endocrine Society recommends screening for Vitamin D deficiency in individuals at risk such as African American adults.
- The Institute of Medicine (IOM) defines vitamin D deficiency as 25(OH)D below 20 ng/ml.[3]
- The Institute of Medicine (IOM) has established 4,000 IU/d as the tolerable upper level of intake for adults.[3]

Theoretical Framework

The Johns Hopkins Nursing Evidence-Based Practice (JHNEBP)



(Dearholt & Dang, 2012)

Implementation

Best Practices

- Benefits of vitamin D supplementation, and pathophysiology of vitamin D deficiency, will be explained to participants.

Practice Improvements

- Baseline vitamin D levels will be obtained.
- 4000IU of vitamin D daily for 6 months preceding flu season.

Evaluation

- Serum levels of 25(OH)D will be rechecked after 3 months of consistent daily supplementation with 4000IU of vitamin D and compared to the baseline Serum levels of 25(OH)D.
- Number of RTIs during the 6 months of supplementation and the upcoming flu season will be reviewed.
- Number of reported RTIs will be compared with RTIs reported in the previous year to evaluate the reduction of RTIs due to Vitamin D supplementation.

References

Available Upon Request

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