Title: Identification and management of vitamin D deficiency in inpatients Trust-wide

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Nottinghamshire Healthcare NHS Foundation Trust

Identification and Management of Vitamin D Deficiency in Inpatients Trust-wide

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Introduction

Vitamin D is an important micro-nutrient, necessary to maintain bones, muscle, and teeth[1]. It is usually acquired from the sun and through diet[2], although sunlight isn't sufficient in autumn and winter in the UK[1] . In addition, being housebound/institutionalized is a key risk factor[3]. Vitamin D deficiency is associated with both physical health complications (e.g. osteomalacia, worsening asthma, and osteoporosis)[1-3], as well as mental health complications (e.g. depression and schizophrenia)[4]. Our patients may be more prone to vitamin D deficiency due to reasons such as social withdrawal or detention in a mental health hospital, hence it is vital to ensure our patients are being monitored and treated appropriately for vitamin D deficiency.

Aims and Objectives

To assess whether vitamin D deficiency is being identified and managed correctly, according to the trust approved guidelines[2].

Objectives are:

- Assess adherence to guidelines.
- Identify common themes and key issues with the identification and management of vitamin D deficiency.
- Make recommendations following the results of the audit.

Methods and Design

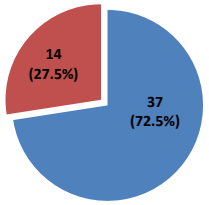
A quantitative data collection form was generated. This was distributed to the pharmacists in all adult inpatient areas, who collected the data using every 3rd patient via ascending bed number. Data was collected as a snapshot on a single day within a 4 week data collection period. This data was then collated and analysed in an Excel spreadsheet. All adult inpatients were included. Patients who refused blood tests were excluded.

Standards

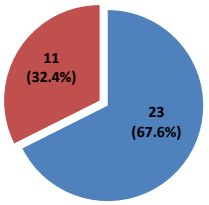
- 100% of patients who are on colecalciferol daily should be on a dose of 800-2000 units.
- 100% of patients who have risk factors or signs of having vitamin D deficiency should have their vitamin D levels assessed.
- 100% of patients who have serum vitamin D levels <30nmol/L should be on replacement therapy.
- 100% of patients who have serum vitamin D levels <50nmol/L and have risk factors should be on replacement therapy.

Results

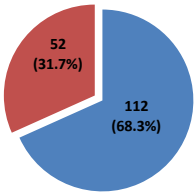
Patients with vitamin D levels <50nmol alongside risk factors should be on treatment.



Patients with vitamin D levels <30nmol should be treated with vitamin D replacement therapy.



Patients with risk factors should have a serum vitamin D level assessed.



- **63/63 (100%) of patients on colecalciferol are on doses between 800-2000 units/day.**
- **15/15 (100%) of patients with signs of vitamin D deficiency have had their serum vitamin D level assessed.**

Adherent

Non-adherent

Discussion and Conclusion

There are areas for improvement regarding the identification and management of vitamin D deficiency in patients with risk factors. The issue of patients not being sufficiently monitored may be around the subjectiveness of risk factors (e.g. does detention in a secure hospital automatically mean housebound, and differing opinions between each person). Issues around treatment may be due to lack of awareness of trust accepted guidance, and the threshold for prescribing vitamin D replacement therapy. However, the monitoring of vitamin D deficiency in patients exhibiting signs of vitamin D deficiency was in line with the trust-approved guidelines, as was the dose of treatment when prescribed. Several limitations were noted. Lifestyle interventions are considered first line management from the trust approved guidance. This was not audited, due to the difficulty in finding the information in patient notes. There was no exclusion criteria for newly admitted patients; therefore, patients who had not yet had admission bloods may have been included. The quantitative data collection form was open to subjective bias (e.g. all patients in a secure hospital are at risk of vitamin D deficiency, despite the fact they have daily access outside), and so this may cause misleading results.

Recommendations

- Vitamin D serum levels should be a routine admission blood investigation.
- Qualitative information should be included (e.g. GP discussions with patients as to whether colecalciferol is indicated, or whether there's plans to initiate vitamin D replacement following a blood test). Medication is not necessarily prescribed on the day of a test/consultation, and including this type of qualitative question would give a clearer picture about the management of vitamin D deficiency.
- A re-audit should be completed, in order to assess whether the recommendations have positively impacted the identification and management of vitamin D deficiency.

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(1) National Health Service (NHS). *Vitamin D*. Available from https://www.nhs.uk [Accessed 28th June 2019].
(2) Nottinghamshire Area Prescribing Committee. *Vitamin D management in adults.* Available from https://www.nottsapc.nhs.uk [Accessed 28th June 2019].
(3) National Institute for Health and Care Excellence (NICE), *Vitamin D deficiency in adults - treatment and prevention.* 2018. Available from https://cks.nice.org.uk/vitamin-d-deficiency-in-adults-treatment-and-prevention [Accessed 28th June 2019].
(4) Lerner PP, Sharony L, Miodownik C. *Association between mental disorders, cognitive disturbances and vitamin D serum level: Current state*. Clinical Nutrition ESPEN . 2018 Feb;23:89–102. Available from: http://dx.doi.org/10.1016/j.clnesp.2017.11.011 [Accessed 12th September 2019].