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ABSTRACT

Setting: Based at a busy city hospital, the Alcohol Care Team (ACT) is a drug and alcohol specialist service, taking referrals for a wide range of patients with substance use disorders.

Objectives: Patients receiving addictions treatments are at high risk of vitamin D deficiency; this relates to frequent fractures and proximal myopathy. The coronavirus pandemic brought vitamin D into focus. Local guidelines advise that patients at high risk of vitamin D deficiency are offered replacement. There were no local data on vitamin D deficiency prevalence or any mention of addictions patients in local vitamin D guidelines. The main aim of this project was to offer vitamin D checks and replacement to all appropriate patients.

Method: We carried out a pilot study (n=50) followed by a second round (n=95) and third round (n=62) of data collection and intervention (e.g. prescribing vitamin D replacement).

Results: We collected data on 207 patients in total, [pilot study (n=50) and two subsequent samples (n=95 and n=62)].

Our pilot study showed that no patients were offered vitamin D testing or replacement. We then offered vitamin D checks to 95 patients. Most had low vitamin D (30 deficient and 26 insufficient). We provided vitamin D replacement and follow-up advice.

Quality improvement was demonstrated six months later. We collected data on 62 patients. Following exclusions, nearly half (48%) of patients had a vitamin D check. Sixty percent of these results fell into the vitamin D deficiency range, with a further 33% of patients vitamin D insufficient.

Conclusions: Patients had not been offered vitamin D replacement despite often having multiple risk factors for vitamin D deficiency. Hospital admission provides a rich opportunity to offer this simple intervention to patients who are often poorly engaged with community services.

INTRODUCTION

The coronavirus pandemic brought vitamin D into focus due to its potential role in reducing severity of respiratory tract infections.¹⁻⁴ We found that there was evidence to support vitamin D deficiency being prevalent in patients with substance use disorders.

Recent results from a US study suggest that individuals with substance use disorders are both more at risk of becoming infected with COVID-19 (odds ratio of 8.7 with confidence interval of 8.4-9.0) AND more at risk of worse outcomes after becoming infected (e.g. being hospitalised or dying of COVID-19 infection) when compared to the general population.⁵

As evidence surrounding vitamin D's relevance to the coronavirus pandemic emerges, it is clear that vitamin D is vital for maintaining bones and muscle function. Complications of low vitamin D in adults result in increased risk of fractures, secondary to osteomalacia and proximal muscle weakness (an independent risk factor for frailty, falls and fractures).⁶ In theory, this could contribute to frequent attendance at emergency departments and hospital admissions.

METHODS

We defined vitamin D status within the limits stated in Table 1.

Vitamin D Level	Status
>20nmol/L	Severe Deficiency
>30nmol/L	Deficient
30nmol/L to <50nmol/L	Insufficient
50nmol/L to <125nmol/L	Sufficient/Normal/Adequate
>125nmol/L	High
375nmol/L	Toxic

Table 1 – Vitamin D Ranges

To establish a baseline measurement of current practice around vitamin D level checks and replacement, we carried out a pilot project of 50 patients, all of whom had been referred to the ACT. This allowed us to ascertain whether patients were already being offered vitamin D checks or replacement in line with local hospital guidelines.

After our pilot study, we began testing vitamin D levels in patients who had been referred to our team. We extracted patient data and recorded vitamin D levels. We used the patient total number of 145 as an arbitrary cut-off point to analyse our results. Six months later, we collected data on 62 patients.

Data collection was carried out over a three month period (June - August 2020) and a final round of data collection between November 2020 and January 2021.

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Conflicts of Interests: None declared.

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RESULTS

Only 22 patients (23% of the sample) had a 'normal' vitamin D result, and only one patient (1% of the sample) had a high vitamin D level (and, at 181nmol/L, still well below the range for vitamin D toxicity, this patient did **not** have hypercalcaemia). Sixteen patients (17% of sample) were discharged before their requested vitamin D check could be carried out. These results are illustrated in Figure 1.

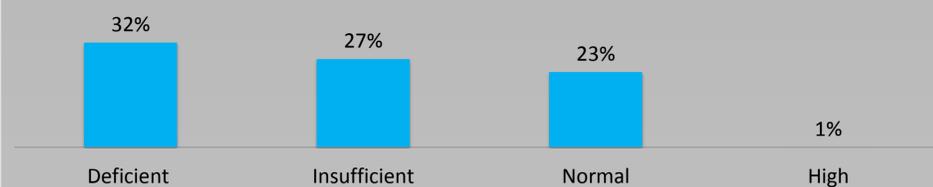


Figure 1 – Second Round of Vitamin D Results Breakdown as Percentages of Patients (n=95)

We found vitamin D levels were abnormal in the majority of patients checked: 60% of patients (57/95) had a vitamin D level outside normal limits, 26 patients with vitamin D insufficiency and 30 patients with vitamin D deficiency (Figure 1).

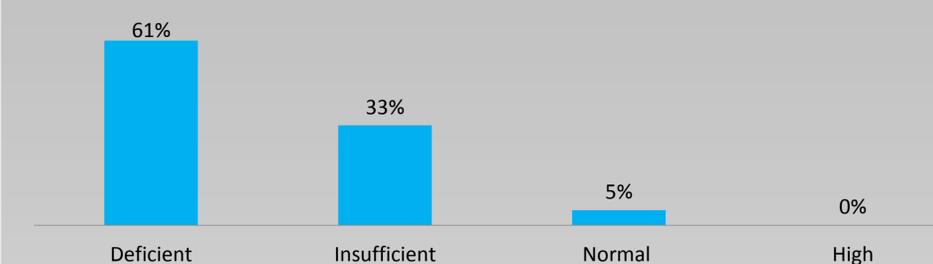


Figure 2 – Third Round of Vitamin D Results Breakdown as Percentages of Patients (n=62)

Six months later, a third round of data collection was carried out (Figure 2). With exclusions removed, this most recent sample showed that almost half of patients (48%) were offered a vitamin D level check. This is an improvement, compared to our pilot study, which showed that 0/50 patients were offered a vitamin D level check (Figure 3).

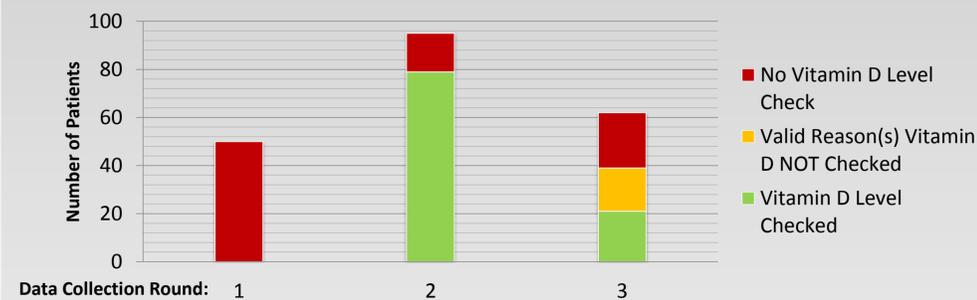


Figure 3 – Comparison of Vitamin D Level Checks Between Data Collection Rounds (Round 1 = Pilot Study)

CONCLUSIONS

This project considered international evidence and examined local data, identifying that vitamin D is indeed low in our patient group. A large number of our patients are severely low in vitamin D, which can have serious implications for current and future health and quality of life.

Vitamin D deficiency is straightforward to treat. The potential for lowering patients' risk of serious medical complications and prolonged hospital stays is likely to outweigh the low cost of offering testing and replacement of vitamin D routinely to our patients, in line with local guidelines.

Our project highlights that patients are not being offered vitamin D level checks or vitamin D replacement, even when they do meet local criteria for this test and important treatment. There was an improvement in vitamin D level checks (and subsequent replacement when deficient or insufficient) on our six-month follow-up data.

It is of note that patients with substance use disorder are not mentioned in our local guidelines on vitamin D, despite significant evidence to suggest this population is particularly at risk. We are currently negotiating with local prescribing governance structures to change this.

We conclude that acute hospital admission provides an important opportunity to provide holistic care, identify and offer treatment to our patient population, who are very often vitamin D deficient and poorly engaged with non-acute services. Addressing vitamin D deficiency and initiation of prophylaxis need to be recognised as essential element of good clinical care. We advocate for this simple intervention to be incorporated into clinical practice.

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