

# Ensuring universal assessment and management of vitamin D status in melanoma patients at secondary care level: a service improvement project

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## Abstract

**Background/Aims** Melanoma is the most aggressive skin malignancy with an ever-increasing caseload, especially in the western world. Recently developed immunotherapeutic modalities have substantially improved the prognosis of advanced melanoma. The association between serum levels of vitamin D and prognosis of melanoma has been a focus of ongoing research, with some evidence of vitamin D's potential as an adjunctive modality to immunotherapy. The National Institute for Health and Care Excellence guidelines clearly recommend that assessment of vitamin D levels and relevant advice should be an inherent aspect of the management of patients with melanoma at the secondary care level.

**Method** A service improvement project was conducted to ensure full compliance of practice in the authors' skin unit with the current National Institute for Health and Care Excellence guidelines on the management of vitamin D status in patients with melanoma.

**Results** After two reaudits the unit's practice complied with National Institute for Health and Care Excellence guidelines by using a multidisciplinary team approach.

**Conclusions** The authors propose that the simple and reliable pathway used to achieve and sustain the results could be easily adopted to ensure universal adherence to these guidelines.

**Key words:** Melanoma; National Institute for Health and Care Excellence guidelines; Vitamin D

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## Introduction

The relationship between vitamin D and melanoma is a matter of ongoing research and debate (Jensen et al, 2010; Reddy and Gilchrest, 2014; Tong and Young, 2014). The apparently contradictory finding that controlled sun exposure may be associated with increased survival in patients who have melanoma (Berwick et al, 2005) could be attributed to a protective role of vitamin D (Egan et al, 2005).

A landmark study has shown that vitamin D–vitamin D receptor interaction contributes to controlling Wnt/ $\beta$ -catenin pathway in patients with melanoma and boosts stronger host immune responses (Muralidhar et al, 2019).

The National Institute for Health and Care Excellence (2015) melanoma guideline advises measurement of vitamin D levels at diagnosis in secondary care in all people with melanoma. It advocates giving advice on vitamin D supplementation and monitoring, in line with local policies and National Institute for Health and Care Excellence's (2017) guideline on vitamin D, to people whose vitamin D levels are thought to be suboptimal. Levels are considered 'insufficient' when between 25 and 50 nmol/litre and 'deficient' if less than 25 nmol/litre.

## Aims of the project

This project aimed to determine whether current practice in the authors' Trust was compliant with the National Institute for Health and Care Excellence (2015) melanoma guidelines regarding management of vitamin D status and also to suggest ways to implement necessary changes to achieve this goal. The authors assessed compliance with the following recommendations:

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- Measurement of vitamin D levels at diagnosis in secondary care in all people with melanoma
- Giving people whose vitamin D levels are suboptimal advice on vitamin D supplementation and monitoring in line with local policies and National Institute for Health and Care Excellence (2017) guideline on vitamin D.  
The specific objectives were to:
  - Measure vitamin D level at first consultation with diagnosis
  - Provide information on the importance of vitamin D to patients with melanoma
  - Provide advice on vitamin D supplementation and monitoring
  - Ensure that the vitamin D level results were regularly checked and communicated to patients and their GPs for further action.

## Methods

The project was undertaken in three stages in the skin unit of the University Hospitals of North Midlands NHS Trust.

### Stage one: audit

Records of all new patients with melanoma who had been treated from 1 November 2018 to 30 April 2019 were assessed retrospectively for compliance with the National Institute for Health and Care Excellence (2015) melanoma guidelines. The results were presented to all plastic surgeons, dermatologists, oncologists, skin cancer nurse specialists and medical secretaries at the University Hospitals of North Midlands NHS Trust skin cancer multidisciplinary study day in June 2019. Steps to improve compliance of practice with the National Institute for Health and Care Excellence (2015) melanoma guidelines were suggested and subsequently implemented.

### Stage two: reaudit round one

Practice from 11 June to 31 October 2019 was reaudited. The results were reviewed at the November 2019 University Hospitals of North Midlands NHS Trust skin cancer multidisciplinary study day and further recommendations suggested.

### Stage three: reaudit round two

A loop completion audit was carried out between 1 December 2019 and 31 May 2020. The results were analysed to assess whether the changed practice complied with the National Institute for Health and Care Excellence (2015) guidelines regarding management of vitamin D status at the secondary care level.

## Results and analysis

### Stage one: audit

A total of 47 new patients with melanoma were treated over the 6-month period (age range 23–90 years; mean 63 years); 43 of them had a skin cancer nurse specialist present at the first consultation following diagnosis. The rest were subsequently seen by the cancer nurse specialist team. All patients received adequate advice regarding sun protection. However, no specific information was given regarding the importance of vitamin D in their management. Only five out of the 47 patients (10.6%) had their vitamin D levels checked, and none of these checks were performed on diagnosis at the hospital (four checked at first follow-up visit, one checked by GP). Of the five tested, four had insufficient vitamin D levels (28.6–48.4 nmol/litre) and only one had an adequate level of vitamin D. There was no documented communication of the results to either the patient or their GP.

This audit showed that practice was not compliant with the National Institute for Health and Care Excellence (2015) guidelines. The team now aimed to measure vitamin D level at first consultation with diagnosis, provide information on the importance of vitamin D to patients with melanoma, and ensure that the vitamin D level results were regularly checked and communicated to patients and their GPs for further action.

### Stage two: reaudit round one

Over the next 4.5 months, 72 new patients received a diagnosis of melanoma in the authors trust (31 men, 41 women; age range 25–87 years; mean 62 years). Of these, 66 had a skin cancer nurse specialist present at the consultation or were subsequently seen by a skin cancer nurse specialist. In addition to sun protection advice, patients now also received information about the role of vitamin D in melanoma and were encouraged to take regular supplements (400 IU/day). Of these 72 patients, 52 (72%) had their vitamin D levels checked at diagnosis. Of the 20 who did not have their vitamin D levels checked, 17 had thin melanomas (Breslow thickness  $\leq 1$  mm). Of the 17 with thin melanomas, six received their results without the presence of a skin cancer nurse specialist at the consultation. Levels were suboptimal in 38.5% (20/52) of cases (insufficient in 19; range 30.9–49.5 nmol/litre and deficient in one). Results were communicated to the GP via individualised letters from respective consultants in nine cases (eight with insufficiency, one with a normal level) with no documented communication to the patient.

This first reaudit showed a substantial improvement in assessment of vitamin D level at diagnosis. However, those with thinner melanomas, and in particular those where a skin cancer nurse specialist was not present at the consultation, usually missed having their vitamin D level assessed at diagnosis. The authors concluded that always having a skin cancer nurse specialist present at diagnosis as well as involving them in the complete care pathway is vital in achieving full compliance with all the points mentioned in the National Institute for Health and Care Excellence (2015) guidelines regarding management of vitamin D status in patients with melanoma at the secondary care level. A substantial improvement was required in reviewing and communicating the results. The authors believed that this could be achieved by introducing a pathway (Figure 1) with the collaboration of consultants, skin cancer nurse specialists and medical secretaries. This pathway involved adding all new patients with melanoma to a designated shared patient list on the hospital intranet. To avoid missed communication, a member of the skin cancer nurse specialist team was put in charge of screening all vitamin D results weekly. Patients with suboptimal vitamin D levels would have a template letter from their respective consultant sent out by the medical secretaries (Figure 2). This letter is addressed to the patient and copied to their GP (with enclosure of blood report).

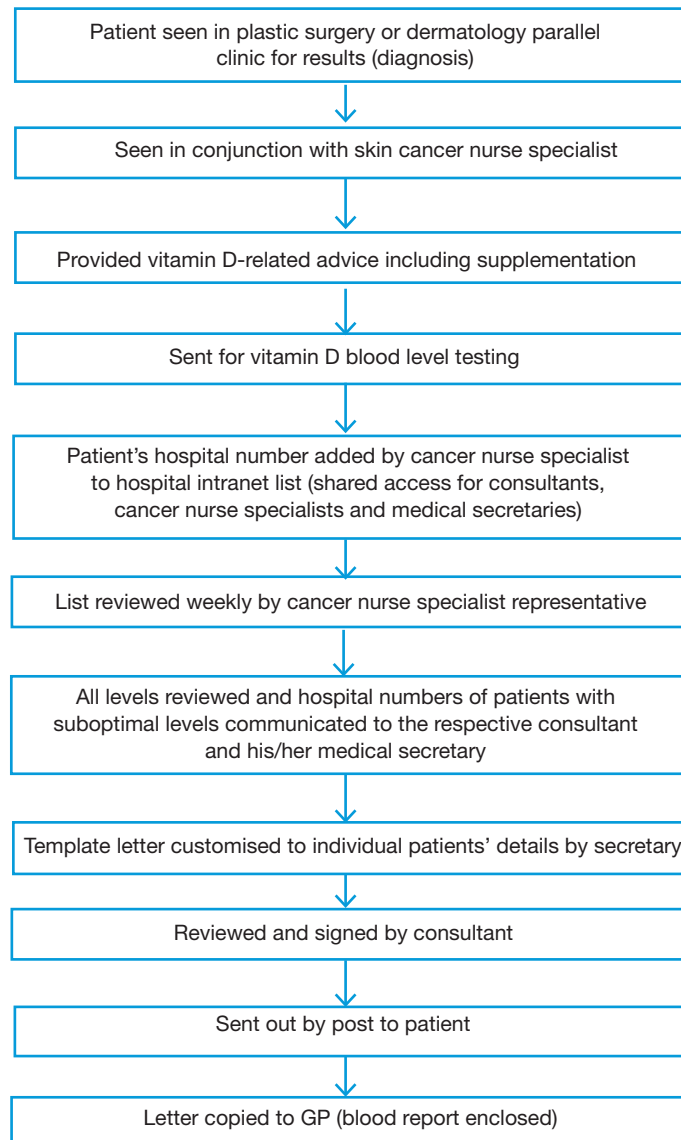
### Stage three: reaudit round two

Over the following 6 months, 84 new patients with melanoma were diagnosed by the team (five opted for telephone consultation to receive results as they were self-isolating during the COVID-19 pandemic, so assessment of their vitamin D level has been kept pending for them). Of the remaining 79 patients, 45 were men and 34 women (age range 31–88 years; mean 58 years), and they all had a skin cancer nurse specialist present for the consultation. There was a continued uniformity (100% of cases) in providing relevant vitamin D-related information and advice, and all patients had their vitamin D serum levels checked at diagnosis. Overall, 33 patients (41.8%) had suboptimal levels (insufficient in 31 (range 25.9–48 nmol/litre) and deficient in two). The results were communicated to the patients and their GPs via customised template letters in all 33 cases.

The second reaudit confirmed full compliance with the National Institute for Health and Care Excellence melanoma guidelines with respect to management of the vitamin D status at secondary care level. The results are also routinely communicated to primary care for further action as needed (Figure 3).

## Conclusions

A three-staged audit loop was completed at the Skin Unit of the University Hospitals of North Midlands NHS Trust, Stoke on Trent to ensure the compliance of practice with the National Institute for Health and Care Excellence (2015) guidelines for vitamin D level assessment and management in melanoma patients. This has successfully achieved and sustained its goals through the active involvement of various clinical and administrative members of a multidisciplinary team and continuous communication between them. The authors plan to reaudit the compliance status on a yearly basis to ensure consistency in service provision. This project has produced a simple, reproducible and reliable multidisciplinary



**Figure 1.** University Hospitals of North Midlands NHS Trust Skin Unit pathway for vitamin D level assessment and management in melanoma patients.

Dear Mr/Ms/Mrs

Thank you for attending the UHNM Skin Unit Clinic recently. From the blood tests carried out in your last visit, your Vitamin D level has been reported to be low.

Accordingly, we would advise that you make an appointment with your doctor at your earliest convenience. As per National Institute for Health and Care Excellence guidelines for melanoma patients, you would require appropriate supplementation and future monitoring of vitamin D level.

For further information please check the following links:

<https://www.nice.org.uk/guidance/ng14/chapter/1-Recommendations#managing-suboptimal-vitamin-d-levels-2>

<http://genomel.org/info-for-patients/%EF%BF%BCsun-protection-and-vitamin-d-after-a-diagnosis>

Kind regards

Consultant responsible for patient care

**Figure 2.** University Hospitals of North Midlands NHS Trust Skin Unit vitamin D template result letter for patients with melanoma.

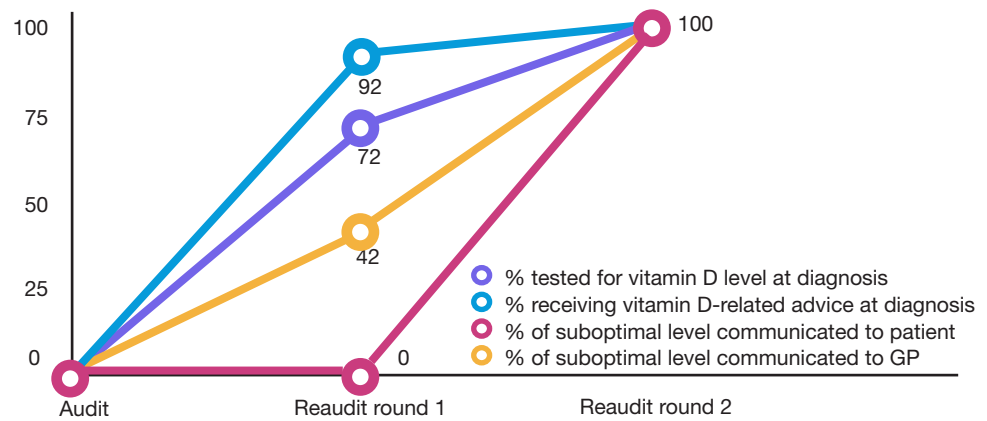


Figure 3. Graphical representation of results.

### Key points

- The National Institute for Health and Care Excellence guidelines give specific recommendations for assessment and management of vitamin D levels in patients with melanoma.
- A service improvement project was carried out to assess compliance of practice with these guidelines.
- Introduction of a pathway for assessment and management of vitamin D levels in patients with melanoma led to improved and consistent service provision.

protocol to ensure collaboration with primary care with respect to management of vitamin D status in patients with melanoma. This could easily be incorporated into the care pathway of such patients in other hospitals, if needed, to help achieve universal compliance with the National Institute for Health and Care Excellence (2015) guidelines.

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#### Conflicts of interest

The authors declare no conflicts of interest.

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