Julia Newton-Bishop
University of Leeds
NHS Bradford and Airedale launches awareness campaign over rise in rickets

Shirley Brierley, consultant in public health for NHS Bradford and Airedale
Vitamin D has probably been an issue for man for millions of years.
Sources of vitamin D

Sunshine, not food, is where most of your vitamin D comes from. So even a healthy, well balanced diet, that provides all the other vitamins and goodness you need, is unlikely to provide enough vitamin D. Read on to find out the best ways to get enough vitamin D safely.

What is vitamin D?

You make vitamin D under your skin when you are outside in daylight, which is the reason vitamin D is sometimes called the ‘sunshine vitamin’. A vitamin is something that helps our body function – a ‘nutrient’ – that we cannot make in our body. Vitamin D is different because even though we call it a vitamin, it is actually a hormone and we can make it in our body.

Sun safety

It is the sun’s ultraviolet rays that allow vitamin D to be made in the body. You do not have to sunbathe to make vitamin D.

In the UK ultraviolet light is only strong enough to make vitamin D on exposed skin (on the hands, face and arms or legs) in the middle of the day (around 11am - 3pm) during April to September.

If you go out in the sun two or three times a week for at least 15 minutes (before applying sunscreen) in this period, your body will make enough vitamin D. During the winter, we get vitamin D from our body’s stores and from food sources. People over 65 or with darker skin would need more exposure. You can also make a smaller amount of vitamin D when the skin is covered by fine material.

If you are concerned about the risk of skin cancer, and always use a high factor sunscreen or cover your skin when outside, the only way to ensure a healthy vitamin D status is to take a supplement.

At risk groups for low vitamin D
Hypponen and Power Am J Clin Nutr 2007

25-hydroxyvitamin D [25(OH)D] measured in 7437 whites from the 1958 British birth cohort when they were 45 y old.
Overall suboptimal levels (<60nmol/L) were common, being observed in 63% of cases and 55% of controls

<table>
<thead>
<tr>
<th>Factor</th>
<th>Effect on vitamin D level</th>
<th>Significance (p value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sun-sensitivity</td>
<td>-2.61 nmol/L</td>
<td>p=0.03</td>
</tr>
<tr>
<td>Inheritance variant SNP in the gene coding for vitamin D binding protein</td>
<td>-5.79 nmol/L for HZ vs WT</td>
<td>p&lt;0.0001</td>
</tr>
<tr>
<td>Sun exposure at the weekends</td>
<td>+4.71 nmol/L per tertile</td>
<td>p&lt;0.0001</td>
</tr>
<tr>
<td>Hot holidays</td>
<td>+4.17nmol/L per tertile</td>
<td>p&lt;0.0001</td>
</tr>
<tr>
<td>Supplements</td>
<td>Average + 11.0 nmol/L</td>
<td>p&lt;0.0001</td>
</tr>
<tr>
<td>BMI</td>
<td>-0.52 nmol/L /unit BMI</td>
<td>p&lt;0.0001</td>
</tr>
</tbody>
</table>
Cases without VitD supplement

VitD23 level (nmol/L)

Average weekend exposure (warmer months)
Why are we particularly concerned about vitamin D for melanoma patients (and their families)?

- Because if vitamin D is a health issue for everyone in the UK, it is likely to be a more significant issue for melanoma patients
  - Because they tend to be fair skinned and we know that fair skinned people have lower levels generally
  - And because melanoma patients usually further protect their skin to reduce the risk of further primaries
- As melanoma patients generally protect their children very carefully then it is an issue for them
  - Actually parents often take much more care to protect their children than themselves
- Because we have some data which suggest that vitamin D may be important in determining how aggressive melanoma can be
- And we don’t want to make things worse if health care professionals advise melanoma patients to avoid the sun without considering vitamin D
**Vitamin D and survival**

In the Leeds Cohort, thinner tumors were associated with higher vitamin D levels at diagnosis. JCO Newton-Bishop et al 2009

<table>
<thead>
<tr>
<th>Breslow thickness</th>
<th>N</th>
<th>Crude mean (95% CI)</th>
<th>Adjusted mean (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 0.75 mm</td>
<td>152</td>
<td>57.2 (53.5, 61.0)</td>
<td>55.8 (52.5, 59.0)</td>
</tr>
<tr>
<td>0.75 – 1 mm</td>
<td>259</td>
<td>54.1 (51.3, 56.9)</td>
<td>54.9 (52.0, 57.8)</td>
</tr>
<tr>
<td>1 – 2 mm</td>
<td>381</td>
<td>52.4 (50.2, 54.5)</td>
<td>53.7 (51.3, 56.2)</td>
</tr>
<tr>
<td>2 – 3 mm</td>
<td>156</td>
<td>50.8 (47.1, 54.4)</td>
<td>51.6 (47.8, 55.4)</td>
</tr>
<tr>
<td>&gt; 3 mm</td>
<td>182</td>
<td>49.6 (46.3, 52.9)</td>
<td>48.5 (44.8, 52.2)</td>
</tr>
</tbody>
</table>

Adjusted for age, sex, BMI, month blood taken using a general linear model. P-value for trend was 0.002

J Newton Bishop
Kaplan-Meier curves of different serum vitamin D levels at interview (categorized based on tertile cutoff points) on relapse-free survival from melanoma in the cohort study.

Newton-Bishop J A et al. JCO 2009;27:5439-5444

Median follow up 7.9 years

©2009 by American Society of Clinical Oncology
Gambichler et al

- AJCC 2002 staging system
  Vit D ng/L
  (median/range)
- (A) Stage 0, n=61 (81%) 16 (5.6–37.8)
- (B) Stage I, 387 (51.3%) 14.3 (4–56.4)
- (C) Stage II, 113 (15%) 10.7 (4–49.7)
- (D) Stage III, 126 (16.7%) 10.3 (4–37.2)
- (E) Stage IV, 67 (8.9%) 8.5 (4–28.9)

- Significantly lower levels in the melanoma patients than "German norms"
- 764 patients where vitamin D was measured at baseline
Low vitamin D levels are very common in the UK
What is the evidence that this matters for things other than bone health?

Hypponen and Power Am J Clin Nutr 2007

25-hydroxyvitamin D [25(OH)D] measured in 7437 whites from the 1958 British birth cohort when they were 45 y old.
The role of Vitamin D in health other than for bone health is controversial

- Vitamin D is also correlated with lifestyle and social status..

Simply put fitter, richer people live longer and have higher vitamin D levels.

Could vitamin D even be harmful?
Guardian April 2015

Vitamin supplements can increase risk of cancer and heart disease

Researchers reviewing trials involving thousands of patients say taking extra vitamins and minerals does more harm than good
Work we are doing now

• Looking for evidence that vitamin D levels have a real effect on inhibiting melanoma growth. We do have evidence for this
  • From cell culture experiments
  • Studies on the tumours themselves

• Identifying who might benefit from supplements

• Understanding what blood levels are crucial
SO WHAT ADVICE SHOULD WE GIVE ABOUT VITAMIN D IN CANCER IN THE MEANIME?

And melanoma patients in particular, given that we advise them to avoid the sun on holiday?

Let us not allow melanoma patients to become depleted of vitamin D
400IU per day irrespective of skin types

Britain not sunny enough for healthy vitamin D levels, say experts

Intake should be boosted with supplements, say official health Advisors in draft recommendations that could lead to new guidance.

People in Britain should boost their vitamin D intake with supplements because of a lack of bright sunshine to provide it naturally, government health advisers have suggested. The British weather prevents much of the population from receiving healthy amounts of the essential vitamin from sunlight, and natural food sources alone are not enough to boost levels, according to the scientific advisory committee on nutrition (SACN).

The SACN, an independent advisory body to the government, said the recommendation after studying the links between vitamin D levels and a range of health problems, including musculoskeletal health, heart disease, type 1 diabetes, cancer and multiple sclerosis.

Current government advice is that at-risk groups, including pregnant women, children up to the age of five, adults over 65 and people with darker skin as well as those who do not expose their skin to sunlight should take a daily vitamin D supplement. But if SACN’s draft recommendations are adopted, it could lead to new guidance affecting the whole population.
• Hence the NICE advice to measure vitamin D levels at diagnosis and supplement (in Northern Europe at least) according to national guidelines
• If the SACN draft document is approved this would be by 10µg vitamin D₃ (400iu) per day if levels are suboptimal for most patients
Welcome to GenoMEL

We are a world leader in familial melanoma research. Our website contains information about our research consortium and includes interactive materials for medical professionals, melanoma patients and their families, and the general public.

We are updating this currently: let us know what you would like to see.

News | December 2015 |
Option Grids: Information for melanoma patients

NICE has worked with Option Grid and UK dermatologists Jason Thomson and Jane McGregor, to produce information for melanoma patients and their medical teams. The information is provided in the form of Option Grids which allow consideration of the potential advantages and disadvantages of given medical procedures or treatments.

Read More

News | October 2015 |
BAP1: a newly recognised melanoma gene

GenoMEL has some new information in the Information for Patients section, on a rare inherited genetic mutation which increases the risk of melanoma in some families. The appearance of the moles and the melanomas in these families can be unusual and affected families are also at increased risk of

Read More

News | August 2015 |
NICE Clinical Melanoma Guideline

NICE published the Clinical Melanoma Guideline in July 2015. This Guideline is directed at secondary and tertiary care (hospital treatment) in the UK and considers the role of treatments such as sentinel node biopsy. This is a link to the guideline http://www.nice.org.uk/guidance/ng14

The Guideline addressed the role of sentinel node.