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Shunning the sun may be killing you in more ways than you think

15 June 2015 by [Richard Weller](#)

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It's time to rethink our exposure to sunlight and ultraviolet rays. Its health benefits go way beyond vitamin D



"Vitamin D cannot account for all of the health benefits of sunshine" (*Image: Massimo Vitali/Gallerystock*)

UNLESS you've been living under a stone, it would be hard not to have heard that sunlight is bad for you. In fact if you are living under a stone, it is probably because of all the messages we get about sunlight and the risks of skin cancer.

This is, of course, quite correct. A vast body of evidence links [sun exposure](#) to skin cancer. What is lacking, however, is any evidence that sunlight is bad for you, if by "bad for you" we mean it shortens life. Ask a dermatologist about the evidence that sunshine raises your risk of dying and there will be an embarrassing silence. After a century of knowing the link between sunshine and skin cancer, this is not good enough. In fact, there is increasing evidence that keeping out of the sun may be killing you – and in more ways than you think.

Even the most ardent sun-phobes acknowledge that sunlight has health benefits, but these have largely been put down to [Vitamin D](#). People with the highest vitamin D levels tend to be healthier. They are less likely to have high blood pressure, diabetes, strokes or heart attacks – in fact, they are less likely to die prematurely of any cause. This raised hopes that a simple [vitamin supplement](#) could reduce lots of major causes of death.

Many studies have now tested the effects of vitamin D supplements on health, but the results have been disappointing. The incidences of cardiovascular and metabolic diseases are not reduced by these tablets, and although they can boost bone health and possibly be of benefit against some forms of bowel cancer, vitamin D is not the panacea that many believe. It accounts for some of the sun's health benefits, but not all. I believe that it is often a marker of sun exposure, and sunlight has other benefits unrelated to vitamin D.

My group has found another mediator that brings us benefits from sunlight: nitric oxide. Its apparent simplicity belies its importance. Nitric oxide has many roles, but a major one is the Nobel prizewinning discovery that it dilates blood vessels and controls blood pressure. In 1996, we discovered that [the skin produces this gas](#). This is because the skin contains large stores of nitrate, which the ultraviolet (UV) radiation in sunshine converts into nitric oxide. When this gas enters the circulatory system, it lowers blood pressure by a small amount. This can make a big difference.

High blood pressure is the world's leading cause of premature death and disease, because it leads to stroke and heart disease. Even a small reduction of blood pressure across the whole population will reduce overall rates of stroke and heart attack, and sunlight may well do this, by getting the skin to release nitric oxide into the blood.

Sun-produced nitric oxide may also help explain some blood pressure puzzles – why the average blood pressure of the UK population is lower in summer than winter, for example, and the correlation between latitude and blood pressure, with people living closer to the equator having lower blood pressure than those at higher latitudes.

We are still building up the whole picture of the nitric oxide and sunshine story. For example, last year, my colleagues and I investigated whether [irradiation with UVA light could enhance the performance of cyclists](#) in time trials. We found that their performance was significantly faster after irradiation, but only if they took nitrate supplements beforehand. We think this is because of an increase in nitric oxide in the circulation, which dilates blood vessels and allows more oxygen to get to the muscles. I am now starting a British Heart Foundation-funded study to see whether daily UVA can treat increased blood pressure. My work has concentrated on UVA wavelengths of light, in part because this doesn't cause the synthesis of vitamin D, but my group is currently identifying the optimal wavelengths for nitric oxide release.

The dermatology community is hesitant about changing their cautious approach to sunlight exposure, but the wider benefits of sunlight should no longer be ignored. Sunlight is about more than just vitamin D, and nitric oxide may well turn out to be a more important mediator of sunlight's health benefits. Other mechanisms probably also exist.

Too little sun will kill you

But what about skin cancer? How do the risks of developing this disease from sun exposure weigh up against the benefits of UV rays? (See "[A life-extending diagnosis](#)") The results of epidemiological studies set up quarter of a century ago to measure the risks of sunlight are now becoming available. The findings have been surprising.

A survey of 30,000 Swedish women recruited in 1990 and questioned about their sun-seeking behaviour found that the more they had sunbathed, the less likely they were to have died 20 years later. In fact those who did the most sunbathing were half as likely to be dead as those who had avoided the sun entirely. The authors calculate that [3 per cent of deaths in Sweden are due to insufficient sun exposure](#). Other research backs this up. Another Scandinavian study of 40,000 women found that [those who went on the most sunbathing holidays were least likely to have died](#) 15 years later.

The primary duty of a doctor is to extend healthy life, not narrowly avoid one disease. In dermatology we have been distracted by what we see – skin cancer – and have forgotten what matters most. Vitamin D is often used as a euphemism for "healthy sunlight", but an increasing number of supplementation studies show that the benefits of sunlight cannot all be put down to it. Nitric oxide may be at least as important.

Sun has benefits as well as risks, and our public health advice needs to reflect this.

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A life-extending diagnosis

The sun's rays are known to cause skin cancer, but the picture is more complicated than that. Skin cancer comes in two main forms, melanoma and non-melanoma.

Melanoma is the most serious skin cancer, and its incidence is rising. Between 10 and 20 per cent of cases are ultimately fatal. The disease is more common in Australia than in the UK, but it is also more common in indoor workers than outdoor, and in the untanned than the

tanned. Episodic sun exposure and sunburn are probably a greater risk factor than continual exposure.

For non-melanoma skin cancer, continual sun exposure is the major risk factor. There are more cases of it in the UK than of all other cancers put together, but it is almost never fatal. In fact, a study of the over-40s in Denmark found that those with non-melanoma skin cancer were less likely to die than healthy controls, and much less likely to have a heart attack. So when I diagnose it in my patients, the first thing I do is congratulate them. How many other diagnoses mean you leave your doctor's office with a life expectancy greater than when you entered it?

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