

Vitamin D deficiency

Understanding its essential role in the Covid-19 crisis

With over 30 years researching vitamin D in the UK, Dr David Grimes presents the weight of evidence for vitamin D supplementation at the necessary optimum level to boost the immune system against any virus

It is so important to understand the power of the Sun in controlling our lives and health. Remember that all the food we eat is captured energy from the Sun. Cattle and sheep convert energy into meat, milk, wool, energy from the Sun that has been captured by grass. The energy from the Sun drives our immunity. Figure 1 shows how vitamin D production has controlled life and death in the UK population during the year of the Covid-19 pandemic.

Before the Covid-19 pandemic arrived a great deal of knowledge had developed during the previous 40 years concerning the importance of vitamin D in defensive immunity, but the knowledge was not widespread. Unfortunately, it had not reached the UK Scientific Advisory Group for Emergencies (SAGE).

The Covid-19 pandemic

At the start of 2020 there was a great deal of understanding about the potential of vitamin D at a time of infection. However, in our world in which health is far better than it has ever been, there have not been the opportunities to put vitamin D to the test to protect against a micro-organism new to our defensive immunity. It had been considered that vitamin D would have a powerful, preventative action against uncommon or new infections, but a clinical trial would involve very large numbers of people and probably a long timescale. A major problem would be the funding necessary to support the administration of such a trial. As vitamin D is natural, it cannot be patented and in the absence of anticipated, commercial profits, investment in a trial could not be assumed.

The Covid-19 pandemic that appeared at the onset of 2020 involved a novel corona virus, generally of quite low, intrinsic pathogenicity. There was no natural human immunity and so the imperative must have been for an optimal, innate immune process, otherwise serious or even fatal disease must have been anticipated.

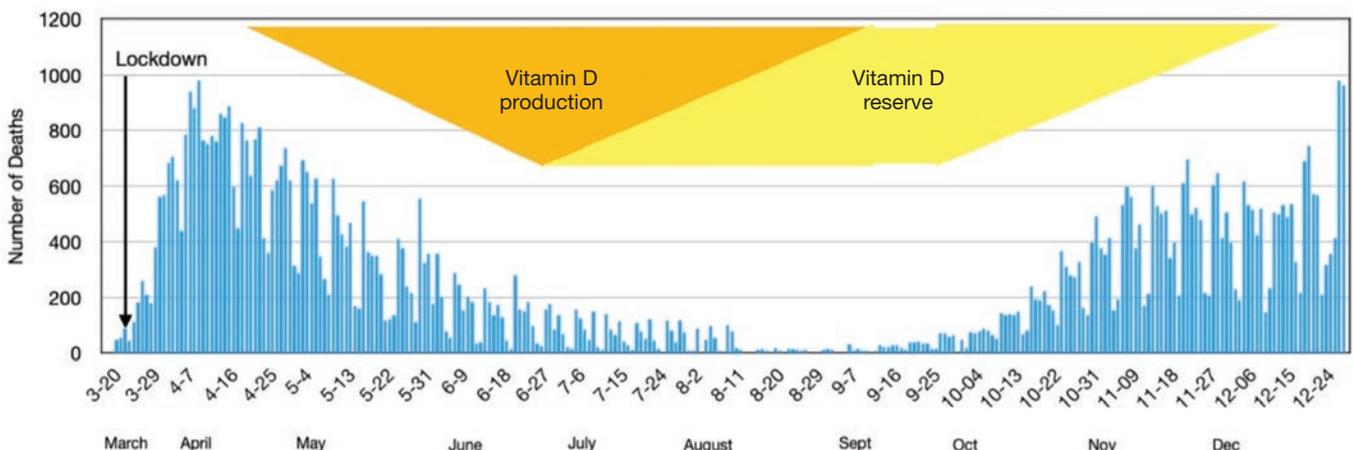
Ineffectiveness of lockdown

One approach during the pandemic has been to protect the population physically from the virus. Protection against an invisible virus causing respiratory infection was always going to be a major challenge or of doubtful effectiveness, and so it has proved. Closing down education, worship, family lives, public transport, and much of the economy has been the result, not of the virus itself, but of our attempts to contain it. When we emerge from lockdown, the virus will still be waiting for us. It will not have gone away like the bombers in the blitz. Despite all that has been done, the UK has one of the highest death rates per million in the world. At the end of 2020 the outcome from the pandemic could not have been worse.

Inadequacy of vaccines

Another approach was to identify the virus in structural detail and produce several vaccines to protect the population. This is both very expensive and time-consuming. It was never expected that a vaccine could be produced and tested for initial safety within a year. Testing for effectiveness and full safety would take even longer. But great effort has telescoped anticipated timescales. The weakness of a vaccination approach, as should have been foreseen by SAGE, is that in any pandemic the search for a vaccine cannot start until the virus has emerged and spread widely. Further, the emergence

Fig 1. UK Covid-19 deaths during 2020, mainly controlled by the Sun.



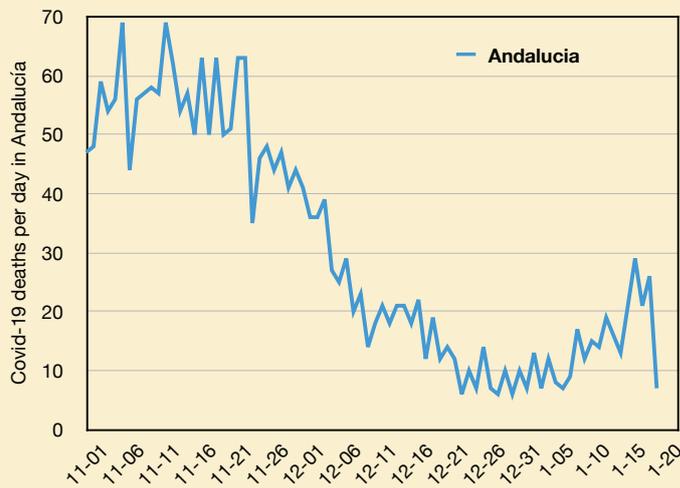


Fig 2. Dramatic decline in hospital Covid-19 admissions and deaths in Andalusia after Government roll-out of calcifediol in mid-November, 2020. (Graph derived by the author from original data from these sources: Directive: <https://tinyurl.com/y3s87nbk>; Data: <https://tinyurl.com/y29vtmjk>)

Calcifediol dramatically cuts deaths in Andalusia

We must take a lead from the imaginative, regional government of Andalusia in Spain. On 8th November it issued a directive to doctors to prescribe vitamin D and it indicated that, in vulnerable people, calcifediol should be used. This is the natural, part-activated form of vitamin D, the form that is measured in the blood. Whereas taking vitamin D by mouth might take up to two weeks to be activated by the liver into calcifediol, if calcifediol itself is given, it achieves good blood levels within two hours. Its clinical advantages are remarkable, as shown by the rapid decline of hospital Covid-19 admissions and deaths during the month of December. It effectively brought the epidemic in Andalusia to an end.

essary. To achieve this, a supplement of 400 international units (IU) (10 micrograms) per day is adequate.¹⁰

But at a time of serious infection, during which vitamin D as 1,25(OH)D is consumed, a reserve in the blood is essential. It has been demonstrated in several studies that it is necessary for the blood level to be greater than 30ng/ml (75nmol/L) and ideally to be in the safe range of 40-60ng/ml (100-150nmol/L).¹¹ This is unachievable in the UK if we rely on normal exposure to the Sun, but it has long been characteristic of the Maasai tribesmen of East Africa. In the UK, to achieve the necessary blood levels, it is necessary to take a supplement of about 4,000 units each day, a dose that is perfectly safe. In Norway it has been policy for people to receive a supplement of 2,000 IU per day and experience during 2020 has shown the benefit of this amount.

Over 215 leading international scientists and doctors, myself included, have signed an Open Letter to governments endorsing the immediate need for this level of vitamin D supplementation to be rolled out to boost the population's immune systems, especially the main high-risk groups which are all vitamin D-deficient (see p.8). An added benefit would be to increase the likelihood of enhancing an antibody response to any

vaccine, which relies on a well-functioning immune system to produce an adequate response.¹² It has been sent to Health Minister Matt Hancock but no response has been received from him to date.

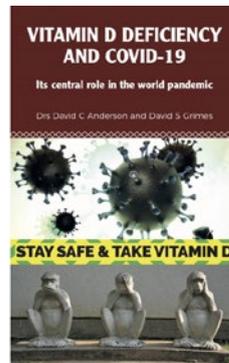
Our best defence is our internal immune system and this must be optimised by eliminating vitamin D deficiency. This needs to be officially recognised and achieved before the next pandemic. Remembering that vaccines cannot be produced until a virus has emerged and spread, our first line of defence is always our immune system – for whose proper functioning an optimal vitamin D blood level is absolutely essential.¹³

We have experienced viral respiratory pandemics of Russian flu (1889-90), Spanish flu (1918-19), Asian flu (1954-55), Hong Kong flu (1968-69) and now Covid-19. Further, similar pandemics in the future are inevitable and it is therefore very important to learn from the experience of the 2020 pandemic.

The Covid-19 pandemic is still causing about 1,000 deaths a day. We can anticipate that during the first half of 2021 daily death numbers will fall, as in 2020. This will result from the Sun, after the Spring equinox, being strong enough, depending on latitude, to be able to produce vitamin D in the skin.

References

- Hanel A, Carlberg C. Vitamin D and evolution: Pharmacologic implications. *Biochemical Pharmacology*, 2019. <https://doi.org/10.1016/j.bcp.2019.07.024>.
- Dadaei T. Effect of vitamin D3 supplementation on TNF- α serum level and disease activity index in Iranian IBD patients. *Gastroenterol Hepatol Bed Bench*, 2015;8(1):49-55.
- Kashani HH et al. The effects of vitamin D supplementation on signaling pathway of inflammation and oxidative stress in diabetic hemodialysis: A randomized, double-blind, placebo-controlled trial. *Front Pharmacol*. 2018;(9):50.10.3389/fphar.2018.00050
- www.therapeuticsaccelerator.org
- Author's unpublished research. Details available from: davidgrimes1@mac.com
- Sutherland JP et al. Differences and determinants of vitamin D deficiency among UK biobank participants: A cross-ethnic and socio-economic study. *Clin Nutr* 2020. <https://doi.org/10.1016/j.clnu.2020.11.019>.
- Gallagher JC, Vitamin D and aging. *Endocrinol Metab Clin North Am*. 2013;42(2):319-32. doi: 10.1016/j.ecl.2013.02.004.
- www.nice.org.uk/advice/es28 (updated in December)
- Catillo ME et al. Effect of calcifediol treatment and best available therapy versus best available therapy on intensive care unit admission and mortality among patients hospitalized for COVID-19: A pilot randomized clinical study. *J Steroid Biochem Mol Biol*. 2020;203:105751.
- SACN 2016. www.gov.uk/government/publications/sacn-vitamin-d-and-health-report
- Brown R. Low vitamin D: high risk COVID-19 mortality? Seven preprints suggest that is the case. Does low 'D' put BAME and elderly, at particular COVID-19 risk? *BMJ* 2020;369:m1548. doi: <https://doi.org/10.1136/bmj.m1548>.
- Open Letter to governments on optimum vitamin D supplementation levels. <https://vitamindforall.org/letter.html>
- Anderson DC, Grimes DS. *Vitamin D Deficiency and Covid-19*. Tennon Publishing, 2020. (Available: www.yps-publishing.co.uk)



Dr David Grimes qualified in medicine in 1966 and did post-graduate training, specialising in acute and general medicine, and gastroenterology. From 1977 to 2014 he was a consultant in East Lancashire hospitals, where personal research led him to realise that the key to the high death rates and poor health in the north-west, especially in the large South Asian communities, was vitamin D deficiency.

Disclaimer: SACN states its maximum safety dose of vitamin D as 4,000 IU a day

Retraction of vitamin D references Since publication of issue 103, it has come to our attention that two references in Dr Nigel Rulewski's vitamin D article have been found to be fraudulent. References 5 and 6, by MM Alipio in the Philippines and P Raharusuna et al in Indonesia respectively, have been exposed as fake. Thus, Figs 1 and 2, taken from the respective preprints, must be assumed to be unreliable. We apologise for this error, which had not been revealed prior to publication.