

P2 Pt 2 Lack of comment in reviewing current UK Government recommendations that there is no mention of people of African descent also needing extra sun exposure. This lack is also repeated throughout the text and in the conclusions

P11 pt 66 no mention of cathelicidin

P10 pt 78 no mention that sun exposure has no risk of vitamin D poisoning whereas exuberant use of Vit D in patients with borderline hypercalcaemia might

***P20/21 This advise might be wise when on holiday doing outdoor pursuits in hot climate but is totally inappropriate when more than a third of our native and in excess of 75% of the immigrant population with darker skin are Vitamin D deficient for more than half of the year. Given the fact that people who disregard this advise and take outdoor activity on 2 days a week have significant protection from melanoma this paragraph must be re-written minimally to say it applies particularly only when the sun is so hot to give burning feeling in the skin after a short period or the person knows they are sensitive to the sun. Ideally it should actually promote 30 mins sun exposure twice a week between the hours of 11.00 and 15.00 and educate people that given our new knowledge about DNA repair time from work with radiation when 90% of a single dose is repaired within 3hours, it is likely that this explains the reduced melanoma occurring in people who do so. In fact the NHS consensus from 2010 recommends regular short exposure around midday (See

http://www.nhs.uk/livewell/summerhealth/documents/consensus_statement%20_vitd_dec_2010.pdf The

time required to make sufficient vitamin D is typically short and less than the amount of time needed for skin to redden and burn. Regularly going outside for a matter of minutes around the middle of the day without sunscreen should be enough..)

**24 pt 128 Given data from Kenyan muscle studies showing much higher Vitamin D content than UK residents, veterinary studies should be requested to show Vitamin D content of meat sold in the UK, whether reared indoors or out and whether slaughtered in summer or winter

P25 pt 133-135 The issue of reverse causality is an excuse to downgrade the issue of Vitamin D. When there is inflammation whether acute or chronic it is almost certainly consumed when the Cathelicidin system of Macrophages and other repair cells are activated. The idea of Vitamin D being a biomarker of sun exposure is already established through studies on Melatonin in nurses on night duty and Nitric Oxide synthetase and blood pressure (see Liu D, Fernandez BO, Hamilton A, Lang NN, Gallagher JM, Newby DE, et al. UVA irradiation of human skin vasodilates arterial vasculature and lowers blood pressure independently of nitric oxide synthase. J Invest Dermatol. 2014;134(7):1839-46.) These observations in association with comments on p20/21 pt 106 are needed to begin undoing the harm done over the last 20 years with the obsession that sun avoidance and excessive sun-cream use was good for one. This is particular relevant now that traffic fumes and chromium have been identified as co-carcinogens with UVB in causation of melanoma (see Meyskens & Yang <http://www.ncbi.nlm.nih.gov/pubmed/21253789>)

P26 pt 142 estimations of Vitamin D in food will always be imprecise as they will also depend on how much sunshine or vitamin D supplements in the diet the animals have been exposed to and whether they have been killed at end of winter indoors or end of summer outdoors

P36 pt 193 see discussion above re consumption by inflammatory process

P47 pt 269 see p24 pt 128 and p26 pt 142 as corroboration that sun/Vit D content of food needs to be rated according to season and that sun exposure is a vital route to improving UK health in general and Animal health as well viz a vie such problems as TB in cattle

**P63-65 pt363-379 do not mention the link between suggestion of a role of sun deficiency during pregnancy in Multiple sclerosis and schizophrenia

P68 pt 401 high Vitamin D and increased Pancreas cancer in one study is posted without comment. Is it due to over indulgence in supplements in the particular population or living in high sun environment

P69 pt 402-4 show lack of effect of Vitamin D supplements on cancer but high Vitamin D prevents Colon cancer without discussion of life-long ambient sunshine data reducing colonisation of scar tissue by anaerobic microbiome hypothesis in prostate, breast, colon and pancreas (see attached unpublished paper). The data on exercise after diagnosis and confounding effect of exercise and Vitamin D while not

class 1 data provides more meaningful data when considering a life-long sub-clinical Vitamin D hypothesis.

P73 pt 424-8 The above arguments apply equally to most cardiovascular disease and is most relevant in chronic cardiac failure and particularly many years of sub-clinical Vitamin D deficiency. Given the data on Kenyan runners and Woods et al [see ?] Recovery of heart muscle could take time to build vitamin D stores and there could be non-vitamin D effects of sunshine.

P80 pt 470. "Data on Autoimmune disease are lacking". The most convincing contrary observation relates to an anecdote from Hafstong & Hallegren on Swedish patients getting 6 months rehab in either Israel or Tenerife. This observation, taken with Tirwana et al's observation on *P. mirabilis* in RA and the US Nurse study on sun exposure and rheumatoid by Arkema suggest that more attention is required in this area.

****P84 pt 496-500 Infectious disease: the same situation could apply to this area as in heart, and autoimmune disease. Moreover given the governments campaign against antibiotic use and coughs and colds being basically a problem of the winter, there could be a case for a large scale placebo controlled study of Vitamin D as an alternate to antibiotics in patients with borderline need for antibiotics.

**P 86-7 pt 508-19 Neuro-psychiatric disease: the lack of appreciation that exercise and vitamin D are confounding variables in all data on depression, makes it highly likely that it is long-term deficiency as in cancer that is playing a role. Given the animal data showing profound effects in brain protein synthesis in offspring born to mothers deliberately made vitamin D deficient mean that more attention needs to be paid to the observed association between MS and Schizophrenia and neuro development during winter.

P89 pt 526-9 rightly emphasises that Vitamin D deficiency association with periodontal disease is due to its relevance to host immunity more than calcium metabolism. However as there are few dentists who acknowledge this "early" manifestation of "chronic", ie 5-20 years subclinical sun-deficiency has relevance to the need of alteration of life style rather than more regular attendance for hygienist attention and they could play an important public health role in this respect.

P93-100 pt 548-606 and p130 pt 799-806 Having devoted most of previous pages to asserting that there is no grade 1 evidence ie randomised trial data to consistently prove benefit for any other condition, the review ends by concluding that the only issue that they wish to inform the public is about musculoskeletal health and what should be reference nutritional intake. Having reached a conclusion as to what should be the RNI, the report then concludes that others should consider strategies to achieve this RNI.

****P103-113 pt 620-688. This to me is the most significant part of the report that the public need to be educated about and given the long delay in getting this report completed should be immediately passed to Public Health England, Scotland, Northern Ireland and Wales for action. There are two minor deficits in this section, both related. The first is Table 1 p103 does not include liver from cattle/calves indoor/end of winter slaughtered vs outdoor/end of summer slaughtered. Given that Eskimos do not suffer much vitamin D deficiency because they eat a diet with a greater preponderance of liver this food needs more attention as a topic for any public health education.

The second deficit in this section relates to p107 pt 661. There is no discussion about the extraordinary comment that black adults have a higher vitamin D level than Asian adults despite having darker skins. From my personal experience with educating African and Asian parents in East London, it is possible that different intake of liver in their diets could be a factor as liver is more frequently eaten by the African-Caribbean community than the Asian. Perhaps education is needed for Curry house cooks to look at using liver in their menus.

P113 pt 688 This is the most important paragraph of the whole document and needs to be disseminated to each household in the UK with 3 minor adjustments. The first is a calculation should be made for the darkest African skin as used by **Clemens T.L et al. Lancet 1982 1:74-76** for his estimate that Africans need 16 times more sun than Caucasians. Secondly instead of daily or in addition to the daily need calculations the figures 2 days should also be given in order to give the opportunity to address the observation of Newton-Bishop that 2 days outdoor activity significantly reduces melanoma risk possibly due to 5 days DNA repair time. Finally this calculation should be remade based on adding into the diet a portion of outdoor/end of summer slaughtered liver every 2 or 4 weeks.