

Supplementary Table 1 Embase (including Medline) Search Terms (19 October 2020) and Cochrane Central Search Terms (19 October 2020)

| # | Search terms | Result |
|---|---|-----------|
| 1 | 25\$OH\$D\$ OR '25-OH' OR '25-hydroxy vitamin' OR '25-hydroxyvitamin' OR '25-dihydroxyvitamin' OR calcifediol OR '25-hydroxycholecalciferol' OR '25-hydroxy cholecalciferol' OR (('vitamin D\$' OR cholecalciferol\$ OR ergocalciferol\$ OR calciferol OR calcidol) NEAR/2 level\$) OR ('vitamin D\$' NEAR/2 (metabolism OR status)) | 71,568 |
| 2 | 'sunlight'/exp OR 'ultraviolet radiation'/exp OR 'solar radiation'/exp OR sunlight OR 'sun light' OR sunshine OR 'sun shine' OR solar OR ultraviolet OR UVR OR UV-R OR UVB OR UV-B OR 'artificial light' OR (exposure NEAR/3 sun) | 335,713 |
| 3 | 1 AND 2 | 7,311 |
| 4 | 'clinical trial'/exp OR 'intervention study'/exp OR 'experimental study'/exp OR 'open study'/exp OR 'major clinical study'/exp OR 'pilot study'/exp OR 'feasibility study'/exp | 5,238,573 |
| 5 | 3 AND 4 | 2,147 |
| 6 | ('animal'/exp OR 'nonhuman'/exp OR 'animal cell'/exp OR 'animal cell culture'/exp OR 'animal experiment'/exp OR 'animal tissue'/exp OR 'animal model'/exp) NOT (('animal'/exp OR 'nonhuman'/exp OR 'animal cell'/exp OR 'animal cell culture'/exp OR 'animal experiment'/exp OR 'animal tissue'/exp OR 'animal model'/exp) AND 'human'/exp) | 7,191,854 |
| 8 | 5 NOT 6 | 2,123 |
| 9 | 8 NOT 'conference abstract'/it | 1,658 |

Cochrane CENTRAL (19 October 2020)

| # | Search terms | Result |
|---|--|--------|
| 1 | 25\$OH\$D\$ OR "25\$OH" OR "25\$hydroxy vitamin D\$" OR "25\$hydroxyvitamin D\$" OR calcifediol OR "25\$hydroxycholecalciferol" OR "25\$hydroxy cholecalciferol" OR (("vitamin D\$" OR cholecalciferol\$ OR ergocalciferol\$ OR calciferol OR calcidol) NEAR/2 level\$) OR ("vitamin D\$" NEAR/2 (metabolism OR status)) | 6,429 |
| 2 | sunlight [MeSH] OR ultraviolet radiation [MeSH] OR sunlight OR "sun light" OR sunshine OR "sun shine" OR solar OR ultraviolet OR UVR OR UV\$R OR UVB OR UV\$B OR "artificial light" OR (exposure NEAR/3 sun) | 5474 |
| 3 | 1 AND 2 | 606* |

*Of these 3 are Cochrane reviews and 1 is editorial = 602 trials.

Supplementary Table 2 Inclusion/exclusion criteria

| | Included | Excluded |
|--|--|--|
| Population of interest Apparently healthy children and adults | <ul style="list-style-type: none"> • Healthy children of any age • Healthy adults up to 65 years of age | <ul style="list-style-type: none"> • Those with illness that might impact vitamin D or calcium status or metabolism • Pregnancy or lactation |
| Outcomes Measures of vitamin D status | <ul style="list-style-type: none"> • Serum or plasma 25(OH)D levels | <ul style="list-style-type: none"> • Studies not reporting outcome of interest • Studies not reporting baseline and endpoint concentrations |
| Interventions Exposure to sunlight or artificial UVB | <ul style="list-style-type: none"> • For studies with natural sunlight exposure, quantification of personal exposure (personal dosimeter and/or exposure diary and ambient measurements for sunlight) • Defined dose of artificial UV • For studies using artificial UVB, the source must be clearly specified, with spectral information in the paper or available because a standard lamp type. | <ul style="list-style-type: none"> • Studies providing high-dose UVB for therapeutic purposes (i.e. dose greater than MED (minimum erythema dose)) • Studies not quantifying natural sunlight exposure • Studies not reporting source of UVB or sufficient detail regarding the source of UVB |
| Study designs | <ul style="list-style-type: none"> • Intervention studies; including randomized and non-randomized controlled trials, non-controlled intervention studies (i.e. before and after studies) | <ul style="list-style-type: none"> • Observational studies including cohort, case-control, cross-sectional, ecological studies • Animal studies • Reviews (but use for snowball referencing). |
| Study details | <ul style="list-style-type: none"> • Studies of any duration • Minimum sample size of N>2 | <ul style="list-style-type: none"> • Individual/ case-control studies • Studies with participants taking vitamin D supplements |
| Publication type | <ul style="list-style-type: none"> • Peer-reviewed journal publications | <ul style="list-style-type: none"> • Conference posters and abstracts • Articles for which full-text unobtainable |
| Other No restrictions on dates, settings, languages (WHO will translate if needed) | <ul style="list-style-type: none"> • All dates, settings, languages | |