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Vitamin D Recommended Daily Allowance (RDA) Insufficiency in Female Healthcare Employees of Childbearing Age

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Purpose: The Recommended Dietary Allowance (RDA) to ensure a serum 25-OH-vitamin D level ≥ 20 ng/ml in 97.5% of all healthy individuals was recently re-calculated and increased by 50% to 600 IUs. We sought to assess the accuracy of this calculation in medically literate, fully insured women of childbearing age.

Methods: Observational study of early spring serum levels of 25-OH-vitamin D and self-reported vitamin D intake in female healthcare employees aged 15–49.

Results: Of the 6874 participants, 2809 (40.9%) reported taking no vitamin D, 639 (9.35%) reported 200–400 IUs (prenatal/multivitamin), and 3426 (49.8%) exceeded the previous RDA of 400 IUs. There was a strong linear relationship between self-reported dose and serum level ($R^2=0.9759$, $p=0.001$). For all reported doses, the mean serum level for 25-OH-vitamin exceeded the 20 ng/ml goal. The mean level for doses 3001–4000 IUs ($n=132$) was 42.1 ng/ml (± 16.6) and for >4000 IUs per day ($n=279$) was 41.8 ng/ml (± 18.4). At all doses, women with a BMI ≥ 30 exhibited significantly lower 25-OH-vitamin D status compared to those women with BMI <30 ($p<.0001$). The percent achieving sufficiency by dose also shows a strong linear trend ($R^2=0.9424$, $p=0.001$). This data documents that for 97.5% of this population to achieve ≥ 20 ng/ml would require doses several fold higher than 600 IUs per day.

Conclusion: Daily prenatal or multivitamin supplementation does not ensure adequate 25-OH-vitamin D levels in Minnesotan female healthcare workers of child-bearing age. For women with a BMI <30 , the RDA appears to be at least 2000 IUs too low. For women with a BMI ≥ 30 , at least an additional 3000 IUs/day would be needed to achieve the same goal. For any BMI,

reported vitamin D intake >4000 IUs/day did not provide any additional benefit nor result in excessively elevated serum levels.

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