Vitamin D Screening

The Monroe County Medical Society provides the following recommendations on vitamin D screening:

- Do not screen for vitamin D deficiency in healthy adults or children.
- On a case-by-case basis, consider selective testing for vitamin D deficiency in high-risk individuals, such as patients with malabsorption syndromes, osteoporosis, or patients living in institutional settings
- Nearly all Americans and Canadians obtain sufficient vitamin D from their diet.
- Serum 25-Hydroxyvitamin D is the best commercially available indicator of vitamin D status.
- Serum 25-Hydroxyvitamin D level greater than 20 ng/mL is adequate for the vast majority of the population *who are not considered high risk*

The National Academy of Medicine, the USPSTF, and the American Society of Clinical Pathology as part of the Choosing Wisely ® campaign do not recommend screening for vitamin D deficiency in healthy individuals. This recommendation is consistent with the Monroe County Medical Society's guidelines

Which patients are considered high risk and should be tested for vitamin D deficiency? Those with:

- Malabsorption syndrome (eg gastric bypass, celiac disease, or a history of small bowel surgery)
- Metabolic bone disease (eg osteoporosis, osteopenia, or osteomalacia)
- Abnormal blood calcium or phosphorus level
- Chronic liver or renal disease
- Chronic use of medications that may interfere with absorption (eg cholestyramine) or normal vitamin D metabolism (eg anticonvulsants)
- Parathyroid disease

There is limited or mixed evidence regarding vitamin D testing and supplementation in these cases

- Chronic PPI use
- Malignancy [associations are primarily observational and results of supplementation trials have been mixed]

Vitamin D toxicity is unusual, but may occur following prolonged consumption of doses over 10,000 units daily.

- Symptoms of toxicity include muscle pain and weakness, vomiting, and confusion, and may be accompanied by hypercalcemia and hyperphosphatemia.
- Caution should be used in dosing vitamin D supplements in patients with on medications that can cause hypercalcemia, such as digoxin and hydrochlorothiazide.
- Supplementation should be avoided or minimized in patients with hypercalcemia, recurrent nephrolithiasis, or granulomatous disease, such as sarcoid.

Special Populations

The American Academy of Pediatrics recommends that supplementation with 400 IU of vitamin D should be initiated within days of birth for all **breastfed infants**, and for **nonbreastfed infants** who do not ingest at least 32oz of vitamin D–fortified formula daily. [Rationale: fewer than one-quarter of infants studied would have met the current 2008 AAP recommended intake of 400 IU per day, regardless of feeding type]

The USPSTF previously recommended vitamin D supplementation to prevent falls in **community-dwelling adults aged 65 years or older who are at increased risk for falls**. However, in a draft recommendation in 2017 the USPSTF now recommends **against** vitamin D supplementation in this group to prevent falls. [Rationale: in a review of the evidence, the USPSTF found that vitamin D supplementation does not reduce the number of falls or the number of persons who experience a fall.]

The American College of Obstetricians and Gynecologists concludes that there is insufficient evidence to support a recommendation for screening all **pregnant women** for vitamin D deficiency. For pregnant women thought to be at increased risk of vitamin D deficiency, maternal serum 25-hydroxyvitamin D levels can be considered and should be interpreted in the context of the individual clinical circumstance.

Updated Jan 2018. Patient Handout from the University of Florida. References: AAP, ACOG, Choosing Wisely, Monroe County Medical Society, USPSTF

Highlights from Vitamin D Screening and Supplementation in Community-Dwelling Adults: Common Questions and Answers

LeFevre et al. *Am Fam Physician.* 2018 Feb 15;97(4):254-260.

SORT: KEY RECOMMENDATIONS FOR PRACTICE

Clinical recommendation	Evidence rating	References	Comments
Serum 25-OH-D levels of 12 to 20 ng per mL (30 to 50 nmol per L) correlate to the vitamin D exposure necessary to maintain bone health. Individuals with levels less than 12 ng per mL are usually deficient in vitamin D, and 97.5% of individuals with levels higher than 20 ng per mL have adequate vitamin D intake.	C	5	Use of 25-OH-D levels to assess adequate vitamin D exposure is limited by variability in measurement technique and precision.
Routine vitamin D supplementation in community-dwelling adults is not recommended.	A	16-22	Routine vitamin D supplementation does not prolong life, decrease the incidence of cancer or cardiovascular disease, or decrease fracture rates.
There is insufficient evidence to recommend screening the general population for vitamin D deficiency. Treating asymptomatic individuals with identified deficiency has not been shown to improve health.	B	25-27	The USPSTF found adequate evidence that treating vitamin D deficiency does not reduce risk of cancer, type 2 diabetes mellitus, or death in community-dwelling adults, or fractures in persons not at high risk of fractures. Evidence is insufficient for other outcomes, including psychosocial and physical functioning.
Physicians should not measure 25-OH-D levels or prescribe vitamin D supplementation in the treatment of depression, fatigue, osteoarthritis, or chronic pain.	A	37-41, 46-48, 53-57	Randomized controlled trials do not show benefit for conditions commonly treated with vitamin D. Other nonskeletal conditions have been inadequately studied.

25-OH-D = 25-hydroxyvitamin D; USPSTF = U.S. Preventive Services Task Force.

A = consistent, good-quality patient-oriented evidence; **B** = inconsistent or limited-quality patient-oriented evidence; **C** = consensus, disease-oriented evidence, usual practice, expert opinion, or case series. For information about the SORT evidence rating system, go to http://www.aafp.org/afpsort.

"...the recommended dietary allowances of 600 IU per day for persons one to 70 years of age and 800 IU per day for persons older than 70 years are the allowances needed for those with the greatest biologic need, not the minimum or average needed across the population, which has been widely misinterpreted. The estimated average requirement is 400 IU per day. The estimated average requirement and the recommended dietary allowance both assume minimal to no sun exposure."

"Therapeutic benefits for chronic nonskeletal disorders have not been established. A variety of nonskeletal disease states have been associated with vitamin D levels, but clinical trials generally do not support health benefits of supplementation. Evidence is mixed for some conditions, and larger trials will be required to draw definitive conclusions."

TABLE 1

Effects of Vitamin D Supplementation on Medical Conditions

Conditions	Patient-oriented effects
Adverse pregnancy outcomes[28-30]	Possible increase in birth weight, no other definitive maternal or neonatal benefits; prenatal vitamins include recommended amounts of vitamin D
Asthma[31-33]	Does not improve control of asthma or enhancement of corticosteroid responsiveness
Chronic obstructive pulmonary disease exacerbation[34-36]	No therapeutic effect overall; two trials showed benefit in a subgroup of patients deficient in vitamin D
Depression[37-41]	No therapeutic effect
Diabetes mellitus[42-45]	Does not prevent or help treat glucose intolerance
Fatigue[27,46-48]	Does not increase energy in postmenopausal women or patients with chronic fatigue syndrome
Heart failure[49,50]	Small increase in ejection fraction, no increase in walking distance
Hypertension[51,52]	Does not lower blood pressure or prevent hypertension
Menopausal symptoms[27,46,47]	No therapeutic effect in Women's Health Initiative study
Nonspecific musculoskeletal pain[53-55]	Does not decrease symptoms
Osteoarthritis[56,57]	No improvement in pain or cartilage loss
Upper respiratory tract infection[58-60]	No effect on incidence of infection

Information from references 27 through 60.