

VITAMIN D LEVEL: TO TEST OR NOT TO TEST?

Daniel Mundt, MD^{1,3} (Contact: Daniel.Mundt@aah.org); Wajih Askar, MD^{1,3}; Kayla Heslin, MPH^{2,3}; Marianne Klumph, MA^{2,3}; Kern Reid, MD³.

¹Internal Medicine Residency, Aurora Health Care, Milwaukee, WI. ²Center for Urban Population Health, Milwaukee, WI; ³Aurora UW Medical Group, Aurora Sinai Medical Center, Milwaukee, WI

BACKGROUND

- 10% of the US population has severe vitamin D deficiency, with highest prevalence in African Americans.¹
- Vitamin D deficiency is significantly higher among the urban-living population, obese patients, and in the Midwest.²
- Multiple studies suggest that vitamin D deficiency may contribute to the pathophysiology of many diseases including cardiovascular disease, depression, and cancer.^{3,4}
- There are limited guidelines regarding the frequency and indications for vitamin D level testing.

PURPOSE

- To assess the prevalence of vitamin D deficiency at “Aurora Sinai Medical Center Internal Medicine” clinic.
- To evaluate and define risk factors that might contribute to vitamin D deficiency in our clinic population.

METHODS

- The study population includes all adult patients (≥18 years old) who attended the clinic from January 2018 to December 2018.
- Retrospective analysis included: demographic information, past medical history consisting of various comorbidities
- Vitamin D levels ≥ 30ng/ml were considered normal, while levels < 30ng/ml were considered deficient.
- Basic descriptive statistics were used to describe the population, while Chi square tests and t-tests were used as appropriate to compare groups.

RESULTS

- Of the patient cohort (n=3,976), only 17.56% had vitamin D levels tested and 12% had a prior diagnosis of vitamin D deficiency. Of those tested, 68% were females, 72% were African Americans, with an average age of 59 years.
- Women, patients with a history of bone fracture, alcohol use disorder, celiac disease, and chronic kidney disease (CKD) were more frequently tested (Table 1).
- Although most patients tested had vitamin D deficiency (71%), our study did not show significance between low vitamin D levels and medical conditions known to cause vitamin D deficiency (table 2).
- Of those with vitamin D deficiency who were re-tested, 52% had an increase in their vitamin D levels, and 40% of them became vitamin D sufficient.

	Vitamin D Test Done						P-Value
	Overall		No		Yes		
	N	(%)	N	(%)	N	(%)	
Race							0.8038
African American	2861	(71.96)	2355	(82.31)	506	(17.69)	
Other	68	(1.71)	58	(85.29)	10	(14.71)	
White	1047	(26.33)	865	(82.62)	182	(17.38)	
Gender							<0.0001
Female	2440	(61.37)	1963	(80.45)	477	(19.55)	
Male	1536	(38.63)	1315	(85.61)	221	(14.39)	
Hx of Bone Fracture							0.0035
No Indication	3740	(94.06)	3100	(82.89)	640	(17.11)	
Indication	236	(5.94)	178	(75.42)	58	(24.58)	
Hx of Alcohol Use Disorder							0.0089
No Indication	3780	(95.07)	3130	(82.80)	650	(17.20)	
Indication	196	(4.93)	148	(75.51)	48	(24.49)	
Celiac Disease							0.0191
No Indication	3966	(99.75)	3273	(82.53)	693	(17.47)	
Indication	10	(0.25)	5	(50.00)	5	(50.00)	
Hx of Vit. D Deficiency							<0.0001
No Indication	3499	(88.00)	3036	(86.77)	463	(13.23)	
Indication	477	(12.00)	242	(50.73)	235	(49.27)	
Chronic Kidney Disease							<0.0001
No Indication	3477	(87.45)	2969	(85.39)	508	(14.61)	
Indication	499	(12.55)	309	(61.92)	190	(38.08)	

Table 1: Demographics, and comorbidities of ASMC IM clinic patients

	Overall		Vit. D Deficiency Based off Test				P-Value
	N	(%)	No		Yes		
			N	(%)	N	(%)	
Race							0.464
African American	506	(72.49)	143	(28.26)	363	(71.74)	
Other	10	(1.43)	2	(20.00)	8	(80.00)	
White	182	(26.07)	59	(32.42)	123	(67.58)	
Gender							0.6430
Female	477	(68.34)	142	(29.77)	335	(70.23)	
Male	221	(31.66)	62	(28.05)	159	(71.95)	
Hx of Bone Fracture							0.2335
No Indication	640	(91.69)	191	(29.84)	449	(70.16)	
Indication	58	(8.31)	13	(22.41)	45	(77.59)	
Hx of Alcohol Use Disorder							0.7351
No Indication	650	(93.12)	191	(29.38)	459	(70.62)	
Indication	48	(6.88)	13	(27.08)	35	(72.92)	
Celiac Disease							0.3287
No Indication	693	(99.28)	204	(29.44)	489	(70.56)	
Indication	5	(0.72)	0	0	5	(100.00)	
Hx of Vit. D Deficiency							0.5590
No Indication	463	(66.33)	132	(28.51)	331	(71.49)	
Indication	235	(33.67)	72	(30.64)	163	(69.36)	
Chronic Kidney Disease							0.0021
No Indication	508	(72.78)	132	(25.98)	376	(74.02)	
Indication	190	(27.22)	72	(37.89)	118	(62.11)	

Table 2: Comparison of vitamin D deficiency amongst various subgroups

CONCLUSIONS

- Although African Americans are generally known to have lower levels of vitamin D when compared to other races, we found they were not more likely to be tested, or to have vitamin D deficiency.
- This retrospective study did not show significance between common medical problems associated with the low vitamin D levels and vitamin D deficiency.
- The majority of patients who had a repeat follow-up with vitamin D test had an improvement in their level.

RECOMMENDATION

- The decision to test for vitamin D level should remain individualized.

REFERENCES

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