



## 25-Hydroxy Vitamin D and Calcium Reference Ranges Updated

January 2008

On January 2, 2008, 25-Hydroxy Vitamin D (25(OH)D) and Calcium reference ranges were updated in order to be consistent with recent literature<sup>1-3</sup> and our own in-house studies.<sup>4</sup> Serum levels of 25(OH)D are directly related to bone mineral density.<sup>3</sup> At 25(OH)D levels less than 32 ng/mL, calcium absorption is significantly decreased and PTH levels are elevated.<sup>3</sup>

The high normal for calcium reference ranges will change from 10.0 to 10.3 mg/dL based on our own in-house study using healthy volunteers.<sup>4</sup> All patients 12 years and older will have the new reference range of 8.6 to 10.3 mg/dL. Reference ranges for patients less than 12 years old will remain the same. The in-house study did not show a clinically significant difference between genders. (See the table below.)

It has been estimated that one billion people worldwide are mildly to severely Vitamin D deficient.<sup>3</sup> Based on the new reference ranges for 25(OH)D and data gathered from 3200 patients recently tested at Legacy Laboratory Services, about 50% of the local population is Vitamin D deficient. Since exposure to the sun's UV light is the primary method of getting Vitamin D, many people in the Pacific Northwest are not synthesizing adequate amounts *in vivo*. Vitamin D3 supplements are highly recommended.

**Recent data shows 50% of the Portland population is Vitamin D deficient.**

### **FOR MORE INFORMATION, CONTACT:**

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TEST	COLLECTION GUIDELINES	REFERENCE RANGES
<p><b>Vitamin D 25-Hydroxy Level (Vit D 25-L)</b></p> <p><b>Contains:</b></p> <ol style="list-style-type: none"> <li><b>Vitamin D Total 25-Hydroxy Level (Vit D Total 25-L)</b></li> <li><b>Vitamin D 2 25-Hydroxy Level (Vit D2 25-L)</b></li> <li><b>Vitamin D3 25-Hydroxy Level (Vit D3 25 L)</b></li> </ol>	<p><b>Specimen:</b> 1.0 mL serum; Frozen</p> <p><b>Collection Container:</b> Gold (SST) top tube</p> <p><b>Test Performed:</b> Tue, Thur, Sat</p> <p><b>Turnaround:</b> 1-4 days</p> <p><b>Method:</b> LC/MS/MS</p>	<p><b>Total 25-Hydroxyvitamin D</b></p> <p>0-14.9 ng/mL = Severely deficient</p> <p>15.0-31.9 ng/mL = Mildly deficient</p> <p>32.0-100.0 ng/mL = Optimal</p> <p>&gt;100.0 ng/mL = Consider toxicity</p>
<p><b>Calcium</b></p>	<p><b>Specimen:</b> 0.5 mL serum or plasma; Refrigerate</p> <p><b>Collection Container:</b> Gold (SST) or Mint Green (PST) top tube</p> <p><b>Test Performed:</b> 7 days/week</p> <p><b>Turnaround:</b> 1 day</p> <p><b>Method:</b> Colorimetry</p>	<p><b>0-9.9 days:</b> 7.6-10.4 mg/dL</p> <p><b>10 days - 1.9 years:</b> 9-11 mg/dL</p> <p><b>2-11.9 years:</b> 8.8-10.8 mg/dL</p> <p><b>≥12 years:</b> 8.6-10.3 mg/dL</p>

### References:

- Hollis BW. Circulating 25-hydroxy vitamin D levels indicative of vitamin D deficiency: implication for establishing a new effective dietary intake recommendations for Vitamin D. J Nutr 2005, 135: 317.
- Hollis BW and Wagner CL. Normal Serum Vitamin D Levels. NEJM 2005, 352: 515.
- Holick MF. Vitamin D Deficiency. NEJM 2007, 357:266.
- Legacy Laboratory Services. 76 normal volunteers; 52 females, 24 males (1 serum and 1 heparinized plasma tube from each). Calcium was run on the Olympus AU 640. Statistics performed by EP Evaluator 7. Summer 2007.
- Saenger AK, Laha TJ, Bremner DE, and Sadrzadeh SM. Quantification of serum 25-hydroxyvitamin D2 and D3 using HPLC-tandem mass spectrometry and examination of reference intervals for the diagnosis of vitamin D deficiency. Am J Clin Pathol 2006, 125: 914.