



**Date:** 8/28/2023

**To:** UCM Medical Staff, House staff, Nursing Staff, Patient Care Centers, and Outpatient Clinics

**From:** KT Jerry Yeo, PhD, DABCC, FAACC  
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**Subject:** 25-hydroxy Vitamin D Reference Range Update

**Effective Date:** 8/30/2023

**Laboratory Section:** Clinical Chemistry

**Summary:**

The term “normal range” should not be used in reference to 25-hydroxy Vitamin D levels.

Instead, the UCM Clinical Laboratories use the current published Vit D reference ranges established by the 2011 Institute of Medicine, which are largely concordant with the Endocrine Society guidelines.

The IOM defines the reference ranges as follows:

**Appendix A Table 1. Serum Vitamin D Level Reference Ranges**

Serum Level (nmol/L)	Equivalent Range in ng/ml	NAM Description*	Qualitative Term Used to Describe This Range†
<30 nmol/L	<12 ng/ml	Persons with levels in this range are at risk of deficiency relative to bone health outcomes	Severe deficiency
Between 30–50 nmol/L	Between 12–20 ng/ml	Some, but not all, persons in this range are at risk of deficiency relative to bone health outcomes	Deficiency
Between 50–75 nmol/L	Between 20–30 ng/dl	Most, but not all, persons with levels in this range are sufficient relative to bone health outcomes	Some refer to this range as insufficiency; others contend this range is sufficiency.
>75 nmol/L	>30 ng/ml	Persons with levels in this range do not consistently have an increased benefit relative to bone health outcomes	Sufficiency
Above 125 nmol/L	Above 50 ng/ml	Levels in this range may be cause for concern	–

\* As described in: *Dietary Reference Intakes for Calcium and Vitamin D*. IOM (Institute of Medicine). 2011 Washington, DC: The National Academies Press.<sup>5</sup>

† These are not terms attributed by NAM; rather, these are descriptors commonly found in the literature describing these ranges. Experts disagree about the terms that should be used to describe these ranges, whether these ranges adequately reflect the evidence, and whether these ranges reflect clinical thresholds for action related to supplementation.

**Abbreviations:** NAM=National Academy of Medicine (formerly Institute of Medicine); ng/ml=nanogram per milliliter; nmol/L=nanomole per liter.

In consultation with UCM endocrine experts, Drs. Jain and Vokes, we are updating the overall reference range to **20-99 ng/ml**, so that any value <20 or >99 ng/ml will be “flagged” as abnormal. We will also attach a note to values <12 ng/ml as associated with rickets in children and osteomalacia in adults.

The revised guidance ranges will show:

- Deficiency: <12 ng/ml; associated with rickets in children and osteomalacia in adults
- Potential Deficiency: 12-19 ng/ml
- Potential Insufficiency: 20-29 ng/ml
- Sufficiency: = or > 30 ng/ml

**Questions:** If there are any questions regarding this change, please contact:

- Dr. Jerry Yeo from Clinical Chemistry ([jyeo@bsd.uchicago.edu](mailto:jyeo@bsd.uchicago.edu))