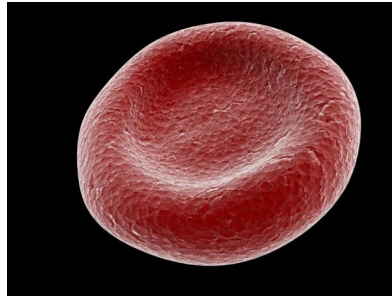


Chronic Anemia^{1,2}

Narrative Section

HISTORICAL VIGNETTE - One decade into the twenty-first century, the World Health Organization estimated that almost one-third (30%) of the world's population experienced chronic anemia.² The familiar symptoms of fatigue are often paired with patient reports of consuming non-nutritive materials, from corn starch to cardboard, from paint chips to paper. Clinicians have noted a regional variation in the non-nutritive consumption called *pica* (derived from the Latin word for *magpie*, a bird with indiscriminate eating habits). Patients with chronic iron deficiency anemia in the southern United States report a higher incidence of consuming clay. The *pica* habits of those experiencing anemia can not only rob a person of vital nutrients, *pica* can also expose patients to toxins, such as lead. Still, *pica* is a non-specific historical feature of those experiencing chronic anemia. Are there physical exam features that provide more statistical support in making the diagnosis of chronic anemia?



CONTEXT AND USEFULNESS - A patient with chronic anemia will clinically compensate differently from a patient with acute blood loss anemia. As a result, knowing the physical exam findings of chronic anemia is a useful tool for the clinician interacting with ambulatory patients in the outpatient setting. Likewise, traditional teaching to detect anemia often does not discriminate between those tests which increase the likelihood of identifying disease and those that are clinically insignificant.

¹ Chi J *et. al.* "The Five Minute Moment." *Am J Med.* 2016 Aug; 129 (8): 792-795.

² Auerbach and Adamson. "How we diagnose and treat iron deficiency anemia." *Am J Hematol*; 91: 31-38: 2016.

Physical Manuever

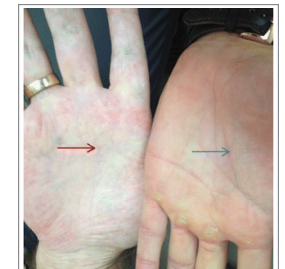
Model Proper (And Improper) Technique³ - Making the diagnosis begins with understanding the etiology of the clinical signs. Since *anemia* describes a reduced number of circulating red blood cells, the absence of oxygen-rich, red-tinted hemoglobin manifests as *pallor*. Detecting this pallor requires looking in areas where the patient's natural skin pigment will not alter the exam results. The most clinically useful area to examine is the conjunctiva. *Conjunctival rim pallor* is present when the entire exposed inner lid is pale, and not just the inner everted lower lid. (If a red-rim highlights the edge of the lid, conjunctival rim pallor is *not* present.) Likewise, fully extending the fingers exposes the creases of the palms. If these natural valleys of the palm becomes as pale as the planes they cut through, *palmar crease pallor* is present (which may be more difficult to detect in darker skin). Despite decades of bedside teaching to the contrary, *nail bed pallor* **does not** increase the likelihood of detecting chronic anemia.



Conjunctival Rim Pallor



Nail Bed Pallor



Palmar Crease Pallor

INTERPRETATION - Conjunctival rim pallor has the highest positive likelihood for detecting anemia (LR = 16.7) followed by palmar crease pallor (LR = 7.9). There are no exam findings which *decrease* the likelihood of anemia.

CAVEAT AND COMMON ERRORS - Acute blood loss will not immediately result in noticeable pallor (but will result in abnormal vital signs). Cold exposure and sympathetic discharges can cause vasoconstriction, increasing pallor false-positive exam findings for anemia. Conversely, inflammation or vasodilation may cause false-negative results, abnormally causing an erythematous flush of the skin.

³ McGee, Steven. *Evidence-Based Physical Diagnosis, 4th ed.* Philadelphia, PA: Elsevier; 2018.