

# Blood Chem Anemia of Chronic Disease Review

## ANEMIA OF CHRONIC DISEASE (ACD)

- Also referred to as anemia of chronic inflammation.
- It can be caused by something as simple as a viral infection, a UTI, H. pylori infection, or an autoimmune disease.
- Anemia of chronic inflammation is an adaptive or protective mechanism to limit the amount of iron a person absorbs when pathogens are present.
- All living things, including bacteria and cancer cells, depend on iron to sustain life.
- The body can regulate how much iron it absorbs and absorb only what is needed to make red blood cells but not enough to nourish pathogens or feed cancer cells.
- In this situation, hemoglobin levels will often decrease slightly, typically to the range of 9.5 to 10.5 g/dL, and stabilize at that level until the underlying condition is cured.

## ACD AND IDA IRON MARKER COMPARISON

	Serum iron	Serum ferritin	Iron saturation	TIBC/ UIBC	Soluble transferrin receptor	Reticulocyte hemoglobin content	Hemoglobin	MCV	RDW	White blood cell
<b>Anemia of Chronic Disease (ACD)</b>	Low	High	Low	Low	Normal	Normal	Low, but rarely <9.5 g/dL	Normal to slightly low	Normal	High, low, or normal
<b>Iron Deficiency Anemia (IDA)</b>	Low	Low	Low	High	High	Low	Low; may be <9.5 g/dL	Low	High	Normal

- Ferritin can be used to distinguish between iron-deficiency anemia and anemia of chronic disease in about two-thirds of patients, but it is not reliable in the other third.
- Hemoglobin is often low in both anemias but typically not below 9.5 g/dL in ACD.

## POPULATIONS AT RISK FOR ACD

Population	Risk factors
<b>Elderly</b>	H. pylori, other chronic inflammatory conditions common with aging
<b>People with chronic infections</b>	H. pylori, tick-borne illness, reactivated viral infections, GI pathogens
<b>People with autoimmune disease</b>	Rheumatoid arthritis, IBD, Hashimoto's, etc.
<b>People with other chronic, inflammatory conditions</b>	Osteoarthritis, interstitial cystitis, etc.

ACD is the most common cause of anemia in the elderly.

### SUMMARY

- If you see markers of anemia such as low serum iron or iron saturation, check TIBC and ferritin.
  - If TIBC is low and ferritin is high, it is likely that it is ACD, especially if RDW is normal, MCV is normal or low normal, and white blood cells are high or low.
  - If there is any question, run soluble transferrin receptor and reticulocyte hemoglobin content. If those are normal, it is virtually certain you're looking at ACD.
- Address any underlying causes you've identified that can result in ACD.
- If the patient has ACD and iron deficiency concurrently, do what you can to resolve the ACD first, particularly if there is a pathogen present, because if you feed that pathogen iron, it could get worse.
- If you are absolutely certain there is no pathogen and it is just inflammation that is present, try to get the inflammation under control before supplementing with iron, or just focus on more iron-rich foods.
- If ACD doesn't resolve after addressing the underlying causes you identify, or if there are signs of more serious disease present, refer to a hematologist, a gastroenterologist, or a nephrologist.