

# Mean Cell Volume (MCV)

## Interpretive Summary

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**Description:** Mean Cell Volume (MCV) is a measure of the average size or volume of the red blood cells (RBCs) in whole blood.

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### Decreased MCV

#### Common Causes

- Iron deficiency
- Liver disease
  - Portosystemic shunt
  - Liver failure
- Asian dog breed microcytosis (Akita, Shiba Inu, Jindo, Tosa, Chow Chow, Shar Pei)
- Young animals (kittens, foals) typically have lower MCVs than adults

#### Uncommon Causes

- Abnormal red blood cell morphology
  - Fragmented red blood cells
  - Spherocytes
- Vitamin B6 deficiency
- Low serum sodium

#### Related Findings

- Iron deficiency
  - Positive fecal ova and parasites
  - Positive fecal occult blood
  - Decreased serum iron, decreased ferritin, normal total iron binding capacity (TIBC)
- Liver disease
  - Increased ALT, ALP, bile acids
  - Decreased BUN, albumin, cholesterol, glucose

### Increased MCV

#### Common Causes

- Regenerative anemia
- FeLV infection
- Artifact
  - Agglutination of RBCs
  - Cell swelling
    - Aged samples
    - Short samples (low blood to EDTA ratio)

#### Uncommon Causes

- Hereditary Poodle macrocytosis
- Vitamin B12 deficiency
  - Genetic in Giant Schnauzers
  - Severe GI disease
- Myelodysplastic disorders

## Related Findings

- Regenerative anemia
    - Increased reticulocytes
  - Positive FeLV serology or PCR
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## Additional Information

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### Diagnostic Methodology

- Automated hematology analyzers measure the MCV directly; however traditionally the MCV was calculated with the equation:  $PCV \times 10 / RBC \text{ count } (10^6)$ .

### References

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