

### Sighthounds

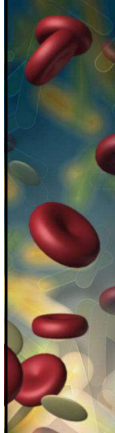
**Higher reference values – increased red cell mass**

- HCT, Hb, RBC
- Also increased MCV (macrocytosis)

**RBC life span half of other dogs**

- Normally 100-120 days
- Sight Hounds 50-60 days

**Predisposed to Babesia infection**

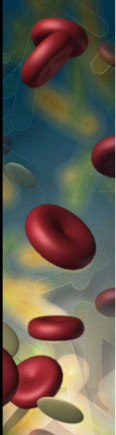


### Primary Polycythemia


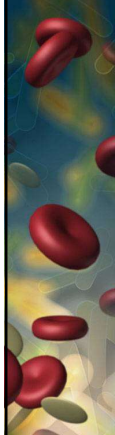
aka – polycythemia vera  
 aka – chronic red cell leukemia  
 aka – primary erythrocytosis

**Dx** - a diagnosis of exclusion

- Bone marrow sampling not helpful to diagnosis, as erythroid hyperplasia is present with all absolute polycythemias
- EPO levels normal
- PCV often 70-80% despite fluid therapy



### Bobby Cox Leonard TX

### Secondary Appropriate Polycythemia

**Clinical Signs:**

- Dyspnea or cyanosis
- *Differential cyanosis:*

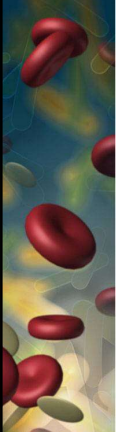
**Arterial blood gases:**

- Easier to get reliable results after phlebotomy

**Pulse oximetry**

- <80% oxygen saturation
- In rPDA, will be much lower on the rear of the dog or cat

CBC, profile, UA, chest rads, Abd US may show evidence of primary lung or heart disease



### Secondary Inappropriate Polycythemia

**Clinical Signs:** same as primary polycythemia, due to hyperviscosity

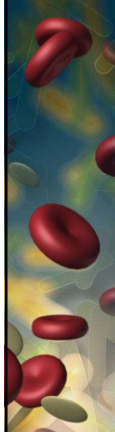
**Arterial blood gases:** normal

**Pulse oximetry:** normal

CBC, profile, UA, chest rads, Abd US may show evidence of primary neoplasia or kidney disease

**Most common offending tumors & diseases:**

- Any severe renal disease
- Renal neoplasia
- Leiomyoma/leiomyosarcoma
- Endocrine tumors – benign or malignant
- Liver tumors – benign or malignant



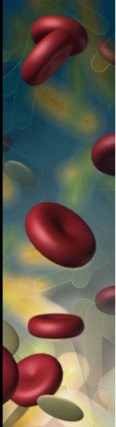
### EPO Levels

**In theory:** should be high with SAP and normal with PP and SIP

**However:** only 50% of dogs with SAP have high EPO levels

- If you get high EPO level, you have your diagnosis of SAP
- Normal EPO level is not helpful

**Renal disease can result in anemia \*or\* polycythemia**



### Treatment

**Relative Polycythemia:** give IV fluids and treat primary problem

**PP, SAP, SIP:** serial phlebotomy. Leeching (4) for 48 hours has been used in fractious cats.

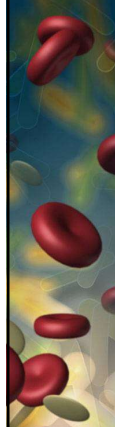
- Remove 10 ml/lb in dogs and 7 ml/lb in cats
- Replace with IV fluids
- Target: PCV <55% in dogs, <50% in cats

**SAP (hypoxia):** find the sweet spot between hypoxia and hyperviscosity

- Alternative to phlebotomy - hydroxyurea 30-50 mg/kg x 7d, then reduce to 15 mg/kg/day OR 50 mg/kg QOD, titrate both to effect

**SIP:** treat neoplasia or renal disease, if possible

- Phlebotomy to palliate symptoms of polycythemia



### Prognosis

**Relative Polycythemia:** depends on primary problem

**PP:** 2-4 years with serial phlebotomy.

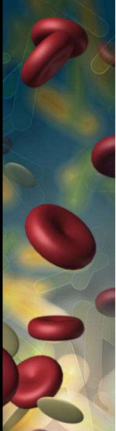
**SAP (hypoxia):**

- rPDA – 2-4 years with serial phlebotomy.
- Others – depends on primary problem

**SIP:** depends on neoplasia or renal disease.

- Benign neoplasms are potentially curable if surgically resectable.

[Polycythemia Diagnostic Handout 1](#)  
[Polycythemia Diagnostic Handout 2](#)



### Acknowledgements

**Chapter 3: Erythrocytes Disorders**

- Douglass Weiss and Harold Tvedten
- Small Animal Clinical Diagnosis by Laboratory Methods, eds Michael D Willard and Harold Tvedten, 5<sup>th</sup> Ed 2012

**Chapter 60: Polycythemia**

- Andreas Hans Hasler
- Textbook of Veterinary Internal Medicine, eds Stephen J Ettinger and Edward C Feldman, 6<sup>th</sup> Ed 2003