

# Polycythemia:

## Overview of the two main types

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**Polycythemia**  
 Defined as: [Hgb] > 185 g/L (men) or > 165 g/L (women)  
 Hb concentration can go up because of a  $\uparrow$  RBC mass or a  $\downarrow$  plasma volume. Both true and relative polycythemia will show  $\uparrow$  Hb on CBC, but the clinical context will help differentiate between them.

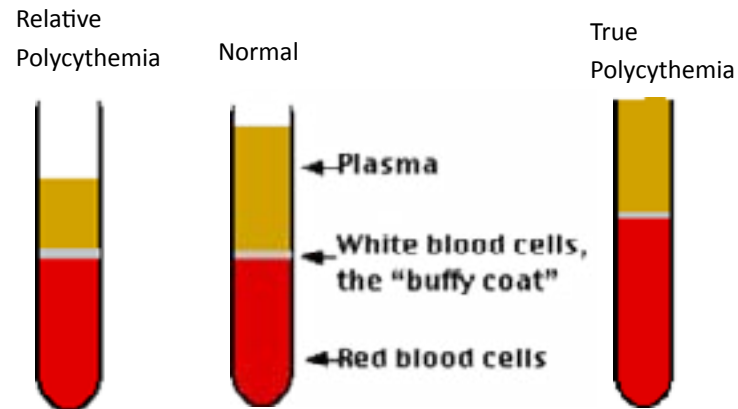
### Relative Polycythemia

Plasma volume has  $\downarrow$  but RBC mass has NOT changed. Causes include:

- Dehydration
- Burns
- Diuretic use
- Diarrhea
- Vomiting

$\uparrow$  [RBC] =  $\uparrow$  Hb

Note: Normal EPO level and no hypoxia



### True Polycythemia

There is an  $\uparrow$  in RBC mass BUT plasma volume (as an absolute amount) has remained the same. True polycythemia is classified as secondary or primary.

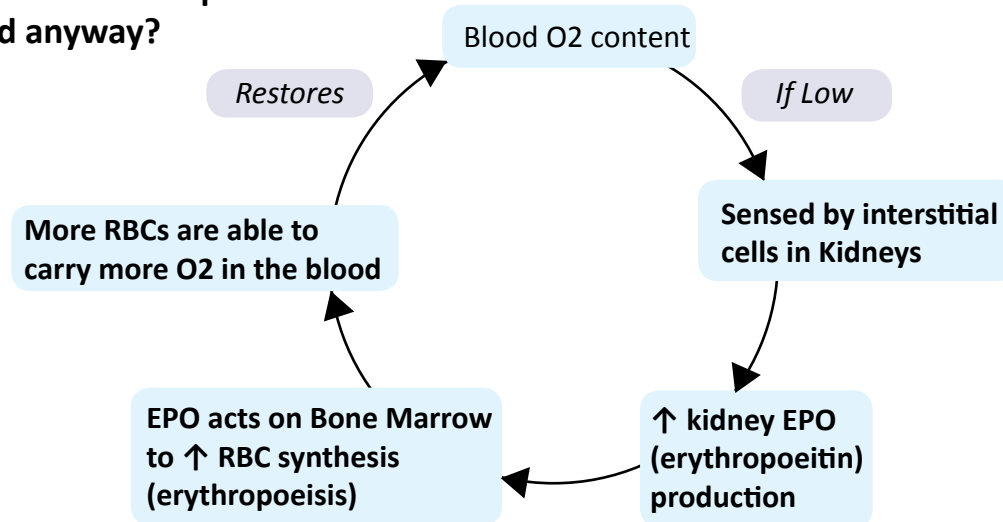
#### Primary polycythemia

Erythrocytosis due to neoplastic growth of red blood cells even when unstimulated (EPO is low). Example: Polycythemia Vera

#### Secondary polycythemia

High red blood cell mass due to high EPO, caused by a reaction to other body processes

### How is red blood cell production regulated anyway?

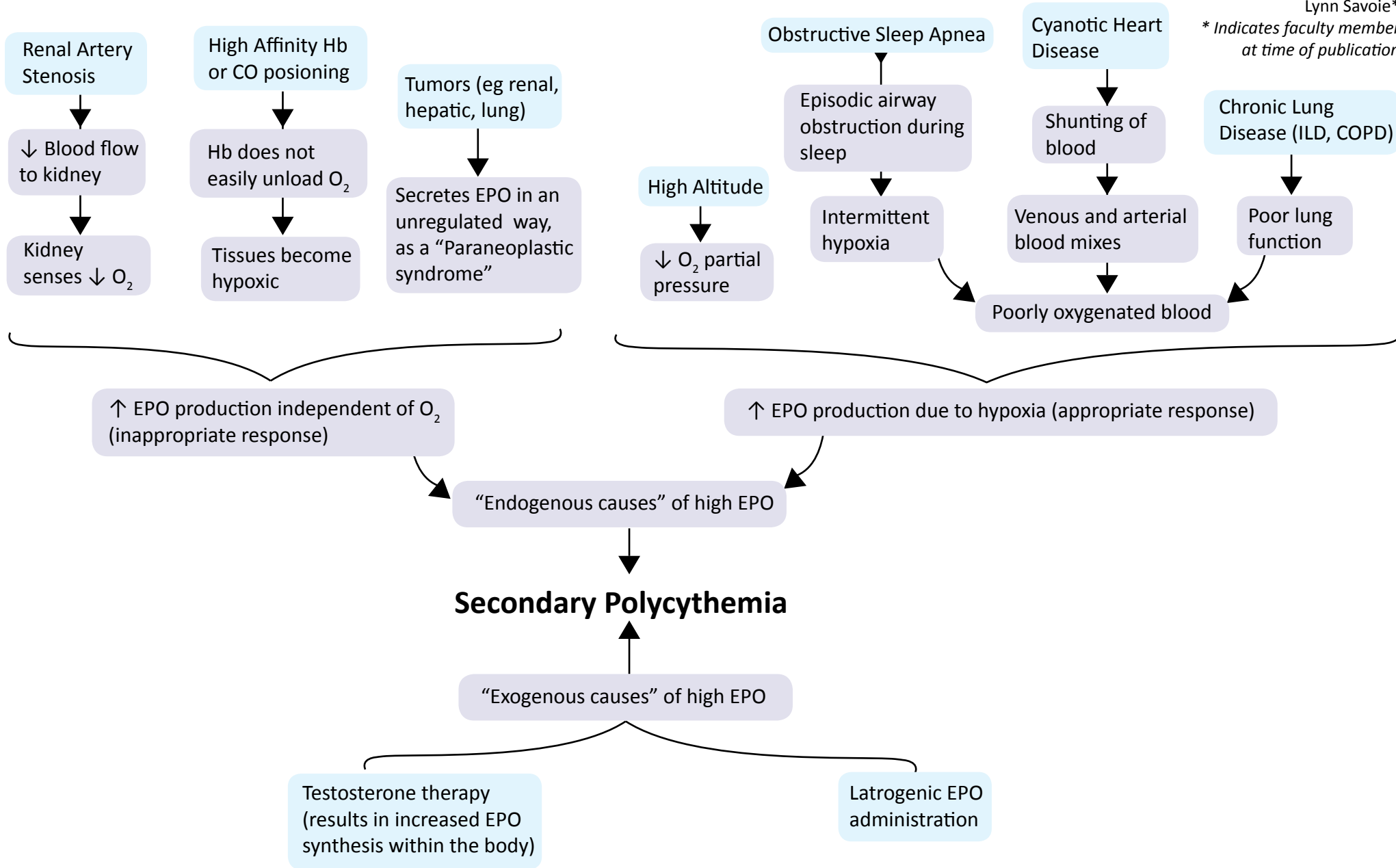


# Secondary Polycythemia: Pathogenesis

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# Polycythemia Vera (PV): Pathogenesis, Signs and Symptoms, and Complications

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PV is a clonal stem cell disorder characterized by an absolute ↑ in red cell mass due to ↑ red cell production. Although erythrocytosis is the main abnormal finding, many patients also have concurrent leukocytosis and thrombocytosis

