

Haemoglobin level in patients with Chronic obstructive pulmonary diseases

Thesis

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List of abbreviations

- \$: Dollar.
- 2hPPBS: 2 hours post prandial blood sugar.
- 6MWDT: Six minute walk distance test.
- ACD: Anemia of chronic disease.
- AF: Atrial fibrillation.
- AIDS: Autoimmune deficiency syndrome.
- ALT: Alanine transaminase.
- AST: Aspartate transaminase.
- ATP: Adenosine triphosphate.
- ATS: American Thoracic Society.
- BAL: Bronchoalveolar lavage
- BMI: Body mass index.
- BODE: body mass index, airflow obstruction, dyspnea, and exercise capacity.
- BTS: The British Thoracic Society.
- Cm: Centimeter.
- CN⁻: Cyanide.
- CO: Carbon monoxide.
- CO₂: Carbon dioxide.
- COPD: Chronic obstructive pulmonary disease.
- CRP: C-reactive protein.
- CT: Computed tomography.
- CXR: Chest x ray.
- DALY: Disability-Adjusted Life Year.
- dl: deciliter.
- DU: Duodenal ulcer.
- ECG: Electrocardiogram.
- ECP: Eosinophil cationic protein.
- EPO: Erythropoietin.
- ERS: The European Respiratory Society.
- ET-1: Endothelin-1.
- FEV₁/FVC: Forced expiratory volume in first second/ forced vital capacity.
- FEV₁: Forced expiratory volume in first second.

- Fe: Iron.
- FVC: Forced vital capacity.
- GERD: Gastro esophageal reflux disease.
- gm/dl: gram per deciliter.
- gm: gram.
- GOLD: Global Initiative for Chronic Obstructive Lung Disease.
- GM-CSF: Granulocyte-macrophage colony stimulating factor.
- HB: Hemoglobin.
- HCT: Hematocrite level.
- HTN: Hypertension.
- IgE: Immunoglobulin E.
- IL-6: Interleukin6.
- IL-8: Interleukin8.
- Kg/m²: kilogram/meter square.
- L: litter.
- LTOT: Long term oxygen therapy.
- MENA: Middle East and North Africa region.
- mEPHX1: Microsomal epoxide hydrolase1.
- Mg/L: Milligram/litter.
- µg: Microgram.
- MCP-1: Macrophage chemotactic protein -1.
- MIP-1: Macrophage inflammatory protein-1.
- MMRC: Modified medical research council.
- MV: Minute ventilation.
- NE: Neutrophil elastase.
- NHANES3: The third National Health and Nutrition Examination Survey.
- NIPPV: Noninvasive intermittent positive pressure ventilation.
- NIV: Noninvasive ventilation.
- No. : Number.
- NO₂: Nitrogen dioxide.
- O₂: Oxygen.
- Oxy: Oxygen.
- PaCO₂: Arterial partial pressure of CO₂.
- PaO₂: Arterial partial pressure of oxygen.
- PEF: Peaked expiratory flow rate.
- Plt: Platelet count.

- PT: Prothrombin time.
- PTT: Partial thromboplastin time.
- RBC: Red blood cells.
- SaO₂: Oxygen saturation.
- SO: Sulfur monoxide.

- S²⁻: Sulfide.
- s-TNF-R55: Soluble tumor necrosis factor receptor 55.
- s-TNF-R75: Soluble tumor necrosis factor receptor.
- TB: Tuberculosis.
- TGF-1: Transforming growth factor beta1.
- TLC: Total leucocytic count.
- TLCO: Carbon monoxide transfer factor.
- TNF: Tumor necrosis factor alpha.
- UK: United Kingdom.
- USA: United State of America.
- V_A/Q: Ventilation/perfusion ratio mmHg millimeter mercury.
- VIP: Vasoactive intestinal peptide.
- WHO: World health organization.
- WOB: Work of breathing.
- YLD: Years of living with disability.

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Introduction

Chronic obstructive pulmonary disease (COPD) is a major cause of chronic morbidity and mortality and is characterized by chronic air flow limitation. Many people suffer from this disease for years and die from it or its complications (*Lopez et al., 2006*).

COPD produce significant extra pulmonary (systemic) manifestations Including nutritional abnormalities, weight loss, skeletal muscle Dysfunction, anemia and patients are at increased risk for myocardial infarction, osteoporosis, depression and sleep disorders (*Hersh et al., 2004*).

Adult hemoglobin is a $[\alpha(2):\beta(2)]$ tetrameric haemeprotein found in erythrocytes where it is responsible for binding oxygen in the lung and transporting the bound oxygen throughout the body where it is used in aerobic metabolic pathways (*Guralink et al., 2005*).

Polycythemia develops in COPD patients because the body produces an Over-abundance of red blood cells in an attempt to compensate for decrease Oxygen level in the blood (*Caludi et al., 2005*).