Section I

Basics of Blood Gas Analysis
Chapter 1

INTRODUCTION

HOW TO GET MAXIMUM INFORMATION FROM THE BLOOD GAS REPORT

Following is a typical arterial blood gas report:
pH / PaCO₂ / PaO₂ / HCO₃ / BE / SaO₂

In a non-emergency situation make it a habit to read the ABG in the following manner. By following this sequence you are less likely to miss the unusual conditions and will be more confident in case of an emergency.

Always read a blood gas report in context of the clinical picture of the patient

Always read a blood gas report in context of the clinical picture of the patient: As you will see in the following pages, each numerical value of a blood gas result has a limited significance if read on its own i.e. without knowing the clinical picture. This is because of the number of confounders and variables affecting each parameter of the report. Most institutions use instruments that give the ABG report printouts without the patients’ names and therefore errors in ABG reporting do occur sometimes. (The author knows of incidences where patients were almost intubated as the wrong blood gas report was being ascribed to them).
If the ABG report does not make sense, do not hesitate to repeat it or to get help from your seniors or colleagues. The implications of wrong treatment because of a wrong ABG report can be disastrous for the patient and may be difficult to correct later on.

**Read What Is Obvious On The ABG Report:**

Number 1. - \( \text{SaO}_2 \) (Saturation of the hemoglobin by oxygen)

Number 2. - \( \text{HCO}_3 \) and BE (Bicarbonate and Base Excess)

Number 3. - \( \text{PaO}_2 \) (Partial pressure of \( \text{O}_2 \) in blood. Also called \( \text{PO}_2 \))

Number 4. - \( \text{PaCO}_2 \) (Partial pressure of \( \text{CO}_2 \) in blood. Also called \( \text{PCO}_2 \))

Number 5. - pH

**Read What Is Not Obvious On The ABG Report:**

Number 6. - \( \text{A-aDO}_2 \) (A-a gradient or alveolo-arterial oxygen gradient).

Clinically, in an ABG report pH, \( \text{PaCO}_2 \), \( \text{PaO}_2 \) and \( \text{A-aDO}_2 \) are the most important parameters. We will see this in the following pages.