Exercise 1 – ABG Analyzer

When looking at Arterial Blood Gas (ABG) results, we typically want to know

a) Are they acidotic or alkalotic?
b) Is it metabolic or respiratory?

And we only need about 3 pieces of information to figure this out: pH, pCO2, and HCO3- (Bicarb)

To calculate the anion gap, we also need: Na+ and Cl- concentrations

$$AG = Na - Cl - HCO3$$

This interpretation process can be easily automated!

Using the following coding concepts

- ◊ Variables
- ◊ Booleans
- ◊ User input
- ◊ If/else
- ◊ Print statements

To make an ABG analyzer algorithm that will provide the following information

- ◊ Acidosis or alkalosis
- ◊ Metabolic or respiratory
- ◊ Compensation present or not
- ◊ Anion gap or non-anion gap

Getting started

1. Write #comments in normal human language to figure out what you need to do
2. Then replace #comments with the code blocks that will perform this function

Use the following to get user input in numbers

my_number = int(input('Please input my desired number: ')

You can also have the user input a bunch of numbers in your chosen order using: .split()

Look up how to use this on google!

Test your algorithm on the following set of values:

1)

pH	7.25
pCO2	60
HCO3	26
Na	137
Cl	100

2)

pH	7.45
pCO2	49
HCO3	34
Na	130
Cl	95

3)

pH	6.95
pCO2	9
HCO3	2
Na	130
Cl	98

Answers

1) Anion gap respiratory acidosis, no compensation
2) Non-anion gap metabolic alkalosis with compensated respiratory acidosis
3) Anion gap Metabolic acidosis with compensated respiratory alkalosis