Shunt Calculations

As per the texts, the fraction of blood shunted past the lungs (physiological shunt) out of the total lung flow (Qs/Qt) can be calculated as follows:

$$\frac{\dot{Q}_S}{\dot{Q}_T} = \frac{Cc'_{O_2} - Ca_{O_2}}{Cc'_{O_2} - C\bar{v}_{O_2}}$$

where Ca & Cvbar are the measured arterial and mixed venous PO2 and Cc' is the estimated capillary P02.

Case data retrieval

Case data is retrieved from experiments stored in the HUMAN data base. Log in for personalized features, select 'Get a saved experiment' and locate the folder RespPhysFall08 , open it and then, as/if directed to, open the indicated file.

Procedure

1) Run #1 – Determine by calculation (shunt equation) the size of the right to left shunt in HUMAN *at rest*.

2) Run #2 –Run the model "Shunt Case 1" to open your initial conditions & settings. Now

Run it for 5 min. with 1 min. between printouts.

Determine by calculation (shunt equation) the size of the right to left shunt in HUMAN.

3) Run #3 – Retrieve Shunt Case 2

Run it for 5 min. with 1 min. between printouts.

Determine by calculation (shunt equation) the size of the right to left shunt in HUMAN.

Present each experimental run, your calculations and any other relevant aspects of the case to the class.