

**Blood gas measurements using the Bayer Rapid Point 405: are we basing our decisions on accurate data?**

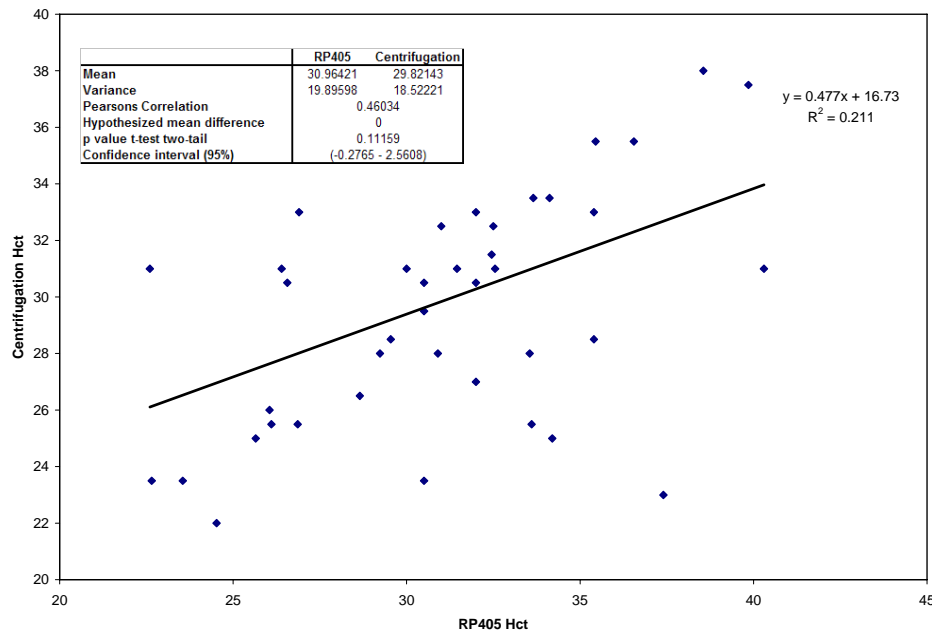
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**Introduction:** In the operating room therapeutic decisions are often made based solely upon results obtained from arterial blood gas machines. To our knowledge, there have been no published reports on how accurate and precise the Bayer RP405 is in the hands of the operating room staff. We evaluated how precise and accurate the results obtained from these analyzers were vis-à-vis those of the routine blood gas laboratory and if they met the accepted standards.

**Methods:** Ninety (90) patients requiring an arterial catheter were included. For each patient, 3 ml of blood from the arterial catheter was drawn into a heparinized syringe (FIMS Portex Inc.) and immediately analyzed by the two RP405 and in the ICU blood gas machine (Instrumentation Laboratories GEM 3000). The remaining 2.8 ml of blood was used to measure Hematocrit and sent to the hospital’s main biochemistry laboratory for electrolyte measurement using an indirect ion selective method (Roche Diagnostics Modular ISE Module). A survey was distributed to each of the 19 anesthesiologists at the SMBD-JGH. Their opinions for accuracy and treatment thresholds for each of the twelve variables measured by the RP405 were sought.

**Results:**



**Figure 1. Hematocrit by centrifugation versus RP405**

	Variable: Hct		
	Accuracy/ Precision	Treatment threshold (inf value)	Treatment threshold (sup value)
Average	1.2704	24.3048	46.6289
Standard deviation	0.7583	6.7119	14.0468
Median	1	25	50
Mode	1	25	50

**Table 1. Survey results for the Hematocrit variable**

**Discussion:** Our results show that the RP405 analyzers produce accurate, precise and reproducible measurements. These results were within the limits of acceptability to our sample of experts. In the context of rapidly changing clinical status, anesthesiologists must be confident that the information they receive is accurate.