A722 - Pushing the limits of storage of venous blood gas samples from intensive care patients

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Introduction:
The blood gas sample is the most used paraclinical test at the ICU and recommended to be analysed instantly without any storage. At a clinical setting with acute and unexpected work tasks, blood gas samples might be left unanalysed and, consequently, replaced by a new patient sample. We hypothesis that minor storage with delayed analysis is unproblematic. We aim to define the timespan venous blood gas samples maintain stable values. The study is ongoing.

Methods:
From each of ten healthy participants we have obtained 16 blood samples. This is followed by an ongoing inclusion of ICU patients with an abnormal pH, and we increase the number of samples to 20. Sampling is done through an intravenous access (central or elbow flexion), a three-way stopcock and 1.8 ml heparinised syringes. Samples are either packed in separate ice bags or stored at room temperature. The ABL800 FLEX analyses samples for pH, pO₂, pCO₂, HCO₃⁻, glucose and lactate. The first and last obtained samples are analysed immediately and used as a reference, followed by a cooled and un-cooled sample every 15th-18th minute. In the case of the ICU samples, the test period is prolonged from two to three hours.

Results:
The number of currently included ICU patients (nine) does not meet a sufficient sample size for statistics. However, preliminary results tend towards the results of the normal values; Except lactate, all normal values remain stable throughout a two-hour test period without any differences compared to controls (un-paired Mann-Whitney U-test; all p>0.05). Apart from pO₂, there are minor clinically irrelevant effects of cooling (paired Mann-Whitney U-test, n=70; all p<0.001). In the case of lactate, cooling delays an otherwise instantly increase for one hour and also slows down the progression (paired Mann-Whitney U-test; p<0.001).

Conclusion:
Preliminary results of stored abnormal venous blood gas values reflect the trends of normal values. Except for lactate, normal venous blood gas values remain stable throughout two hours.