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Point of Care Testing Error in the ICU

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In the two cases discussed here, POCT error led to an inappropriately aggressive course of respiratory support. These errors increased the risk of oxygen free-radical tissue damage because of high FiO₂, created a risk of barotrauma and hemodynamic instability with elevated PEEP, and prolonged exposure to intubation and thus increased the risk of ventilator-associated pneumonia. Additionally, a blood transfusion was given per surviving sepsis guidelines based on SO₂<70% measured during the time of other suspect measurements. In both cases the recognition of error allowed alternative measurements to be preferred and changed the direction of care.

This error was reported to our lab and appropriately investigated. All suspect samples came from the same lot number of ABG cartridges. Further investigation was unable to consistently demonstrate a pattern of errors within a particular lot number, particular POCT devices, or specific operators. Quality control showed the devices in the ICU to be accurate. Cartridges of the suspicious lot number were removed from use. The conclusion was that a consistent operator error such as not allowing cartridges to come to room temperature or simply sporadic cartridge malfunctions within the lot number was responsible.

The serial and low-volume nature of the work makes pattern recognition very difficult, a recognized weakness of POCT versus central lab testing. Detecting POCT errors is typically a matter of using clinical judgment if the values are in discordance with the patient’s presentation and, perhaps more importantly, planned quality control measures such as operator training, device maintenance, and periodic sample comparison with central lab values.

**Point of Care Testing Error in the ICU**

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**References**


**Abbreviations**

POCT: point of care testing

ALS: advanced life support

NPO: nothing by mouth

BMI: body mass index

SIRS: systemic inflammatory response syndrome

SO₂: arterial oxygen saturation

pH: hydrogen ion concentration

FiO₂: fraction of inspired oxygen

SpO₂: pulse oximetry reading

PEEP: positive end-expiratory pressure

ARDS: acute respiratory distress syndrome

Hypoxemia: low oxygen saturation

Lactic acidosis: low pH

Hypercarbia: high partial pressure of carbon dioxide

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