Dear Editor:

After having discussed perfusion techniques with various Technologists at the 10th Annual Convention, a question of much concern has arisen in my mind. This question has to do with maintenance of optimal acid-base balance at Hypothermia. For example, at 30°C, optimal PH reading when uncorrected for temperature with the electrode maintained at 37°C should be 7.20 with a PCO2 of approximately 60-65 mm Hg.

If we were to drop the blood temperature lower, then the PCO2 should be raised until optimal PH is reached for that lowered temperature. When rewarming, the CO2 percentage has to be greatly reduced.

Medical Device Hazards

1. Type of device (e.g. electrocardiograph, oxygen-powered resuscitator, heart valve, wheel chair, surgical dressing, etc.)
2. Mode of injury and effect on patient or user (e.g. laceration of hand by sharp-edged equipment housing, tissue reaction to implanted pacemaker, ventricular fibrillation and death due to electric shock by patient monitor, thrombosis and infection due to venous catheter, perforation of the uterus by IUD, etc.)
3. Cause of problem if identified with reasonable certainty (e.g. operator error in using defibrillator, broken plug and frayed electrical cord, micro-wave oven, inhibition of pacemaker, uncalibrated spectrophotometer) or indicate if cause is unknown.
4. Name of manufacturer, model number and serial number of the device, if possible.
5. What action, if any, was taken to correct the problem or prevent future injuries (e.g. replaced with new equipment, rewired electric cord and plug, unknown).

The more details you can provide, the more valuable your contribution will be. A standard short reporting form is available on request.

Health Devices Hazard Reporting System
The Emergency Care Research Institute
913 Walnut Street
Philadelphia, Pennsylvania 19107
Telephone: (215) 923-5470

In Vivo

According to Carson et al. “The essence of management on by pass is maintenance of optimal PH but, since optimal PH is changing as the temperature is altered, it is necessary to vary the percentage of carbon dioxide in the pump oxygenator gas mixture to maintain the desired PH.” It is not possible to maintain good acid-base balance by administering a pre-determined fixed percentage of CO2 into the pump oxygenator through out by pass.

At our institution we are using the above principle to maintain normal blood gas physiology. For example, at 30°C, optimal PH reading when uncorrected for temperature with the electrode maintained at 37°C should be 7.20 with a PCO2 of approximately 60-65 MM Hg.

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