**Pre/Post Op Care Discussion Forum**

Scenario:

Patient C is a high school senior. During the opening drive in the Friday night football game, Patient C is hit from behind. When he falls, he sustains open, comminuted fractures of his left tibia and fibula. Because he is unable to stand, an ambulance is brought onto the field to transport the young player to the hospital for evaluation.

Upon arrival at the emergency department, Patient C's leg is examined, x-rayed, and evaluated by the orthopedic surgeon on call. It is determined that prompt stabilization and cleansing of the wound would be optimal for the best possible outcome; thus, Patient C is prepared for surgery. His parents, who were at the game, arrive in the emergency department just moments after the ambulance and are available to give permission for the operative procedure. As Patient C has been medicated for pain, a history is obtained from the parents. There are no notable problems; Patient C is a healthy young man in excellent physical condition. He has not had previous operations and no previous exposure to anesthesia.

Patient C is transferred to the operating room. The anesthesiologist gives the patient a number of preoperative medications, including those to prevent PONV. The anesthesia of choice is enflurane (Ethrane), a volatile gas. The patient first receives succinylcholine prior to intubation, followed by the anesthetic gas. Within minutes, the anesthesiologist notes that Patient C's carbon dioxide levels are beginning to rise. Just as the surgeon is to begin, the patient sustains a cardiac arrest.

The anesthesiologist immediately stops the insufflation of the gas and begins to administer 100% oxygen. A code response is initiated by the remaining members of the operating team. The rescuer performing chest compressions notes that the patient's skin is warm. While resuscitative efforts continue, blood for laboratory evaluation is obtained. The arterial blood gas results demonstrate a pH of 6.9, partial pressure of oxygen (PaO2) of 110 mm Hg, and a partial pressure of carbon dioxide (PaCO2) of 55 mm Hg. At this point, the anesthesiologist's suspicions are confirmed; the patient is experiencing an episode of malignant hyperthermia.

As soon as the diagnosis is confirmed, the staff is ordered to administer dantrolene at a dose of 2 mg/kg. The operating room personnel contact the PACU to ask for assistance in drawing up and preparing the dantrolene. Only one nurse is available to leave the PACU, and she assists with mixing and administering the dantrolene as soon as it is prepared. Additionally, the patient requires repeat doses of sodium bicarbonate to combat the falling serum pH.

Within 15 minutes of administering the dantrolene, the patient begins to demonstrate a perfusing rhythm, although this is punctuated by frequent runs of premature ventricular contractions. Antiarrhythmics are administered to control the cardiac complications.

Simultaneously, the patient is cooled with external cold packs applied to the groin and axilla areas. The leg wound is dressed to prevent further contamination during the resuscitative efforts. Repeat blood is obtained for laboratory analysis. The patient's potassium is elevated, and the patient is started on a glucose-insulin drip.

After the patient's cardiac condition is stabilized, the operating room staff request transfer of the patient to the PACU for further management. The patient is moved, and the PACU staff becomes responsible for managing the patient. The antiarrhythmics, the glucose-insulin drip, and the cooling measures are continued. During the first 30 minutes in the PACU, the patient's urine is noted to be a deep red color, indicative of developing rhabdomyolysis and potential renal failure. The patient is given 100 mg furosemide, and fluids are increased to 150 mL/hour. Within 20 minutes, the urine lightens in color, although it retains a reddish tinge.

Approximately three hours after the first cardiac arrest, the patient suffers a second arrest with the development of ventricular fibrillation. A second code response is called, and the patient is again resuscitated with dantrolene, antiarrhythmics, and sodium bicarbonate. Once again, the patient responds to treatment and regains a perfusing cardiac rhythm.

The patient is ordered to receive dantrolene every 4 hours for the following 48 hours to ensure that another episode of malignant hyperthermia does not develop. The patient is subsequently stabilized and transferred to the ICU, where he remains for 72 hours.

1. What went well? Could anything have been improved?

2. Why do you suspsect the patient developed MH?

3. Do you think that the patient's fracture was stabilized and repaired? What will need to happen during subsequent surgical procedures for this patient?