

A 16-yr-old patient underwent uneventful surgery for scoliosis. Uneventful intraop course, which included a low-dose ketamine infusion. Ketamine infusion was supposed to be d/c'd in the OR but was not and the patient was transported to the PACU with it infusing. PACU nurses assumed that ketamine was part of the postop pain plan and sent the patient to the floor with it infusing. Floor nursing staff filed an incident report because ketamine was not part of the postop pain plan.

This report highlights an infusion error with ketamine that crossed three clinical areas: the OR, the PACU, and the inpatient unit. There is not enough detail regarding the care team model, but if care was rendered by a team (attending anesthesiologist and another provider), whose responsibility was it to ensure that the ketamine was discontinued? Albert Bandura, a Canadian American psychologist, is cited as the original author of the quote, "Where everyone is responsible, no one is really responsible" (*Journal of Social Issues* 1990;46:27-46). In situations where the anesthesia care team involves more than one individual, specific roles and responsibilities are rarely defined, and every reader can likely recall incidents in which there were lapses in care due to this lack of clarity.

This phenomenon has been described in literature as "diffusion of responsibility," in which individuals feel that others are responsible or have already addressed a problem (asamonitor.pub/3zwlYB7). The literature also shows that the larger the group, the less likely each individual will feel responsible and intervene. Suggested solutions to address this problem include decreasing the size of groups and assigning clear roles and responsibilities. A perfect example of medicine's understanding in addressing this phenomenon is illustrated in the evolution of Basic Life Support (BLS) and other advanced life support training, as well the maturation of in-hospital code teams. Current BLS training clearly defines the roles and responsibilities of each individual when one-rescuer CPR changes to two-rescuer CPR (*Circulation* 2000;102:I-22-I-59). These are clearly defined in the course material and during hands-on training.

Many decades ago, hospitals created code teams to respond to acute events. These teams were often composed of individuals with expertise in cardiac and/or respiratory arrests and typically included intensivists, anesthesiologists, respiratory therapists, nurses, and pharmacists. However, in the early days of code teams, the team would respond to in-house emer-



gencies, but it became abundantly clear that there was a need to assign roles and responsibilities to each member of the team. This practice has become commonplace at most hospitals and is incorporated into code team training. Hospitals have also made concerted efforts to decrease the size of their code teams and to discourage personnel who are not code team members from participating, which can also mitigate diffusion of responsibility. Teaching hospitals must balance the need to keep teams small, while also training a number of personnel in real-life situations.

If the attending anesthesiologist assumed that the non-attending provider was responsible to discontinue the ketamine, what was the role of the attending anesthesiologist? Oversight? In all instances in which more than one person is involved, there should be a clear understanding of both responsibility and accountability. A standardized protocol or checklist for the anesthetic management of patients undergoing this procedure may have helped prevent this error, especially if the non-anesthesia provider was unfamiliar with the procedure. If no such protocol or checklist was available, a standardized handoff from the anesthesia team to the PACU nurse, which includes a report on all infusions, could have detected this error. There are a number of articles attesting to the importance of a standardized PACU handoff, demonstrating how the process can be completed efficiently without increasing the duration of the handoff (*Jt Comm J Qual Patient Saf* 2015;41:35-42; asamonitor.pub/3GQscyK).

There were two other opportunities to recognize this error and to intervene. One would have been at the time of sign out from the PACU. Myriad models exist in practice regarding this phase of the perioperative journey. Some institutions have the providers who cared for the patient intraop-

eratively sign patients out, while others may have personnel assigned to the PACU and designate someone on call to handle this responsibility. The universal default may be the first available anesthesia team member who is in the PACU at the time the patient is ready for sign out. Departments without defined responsibilities may suffer from a diffusion of responsibility, which could lead to prolonged PACU stays due to an inability to obtain a sign out.

The PACU staff performs two different tasks before a patient can be admitted to a medical/surgical unit. PACU staff should be providing up-to-date information to the anesthesia staff member responsible for signing the patient out of the PACU. A variety of personnel may be signing the patient out, some of whom may have had no prior contact with the patient. In many ways, this should be considered a handoff, and perhaps some consideration should be given to the development of standardized handoff tools for this process. In this situation, a structured process may have detected this medication error. While there are a number of articles that have studied the OR-to-PACU handoff process, there is a dearth of literature regarding the anesthesia sign-out process.

The last opportunity to detect this error occurred during the report from PACU nursing staff to the inpatient nurse assuming responsibility for the patient (*Pediatr Qual Saf* 2019;4:e180). However, it would be incorrect to assume there was no discussion about the ketamine infusion dur-

ing nursing handoff. The PACU nurse may have relayed that ketamine was part of the postop pain plan. If the inpatient nurse had not verified inpatient orders, the nurse may have accepted the patient only to discover that ketamine was not ordered.

There are three take-home lessons we can learn from this report. The first is the concept of diffusion of responsibility, which teaches us the importance of having clearly defined roles and responsibilities whenever possible. The other lessons are about redundancy and standardization, two fundamental principles of patient safety that complement each other well.

Redundancies provide a safety net so a single error at one point does not progress past another point. For example, there are a number of redundant measures that we practice each day in order to prevent wrong-sided surgery. We ask patients to identify the correct laterality preoperatively. Surgeons then mark the site. The anesthesia sign-in procedure confirms the patient's identity and the procedure, including laterality. Finally, we confirm the procedure and laterality during the time-out process.

In this particular case, redundancies could have been created with a series of structured handoffs. This is where standardization is important. There are data to show that there can be degradation of information during handoffs. A structured, templated handoff process minimizes the likelihood that critical pieces of information will be omitted. Data also show that these types of handoffs improve not only the integrity of the information, but also high acceptance among providers without taking up more time. Compliance in using structured handoffs is important because one might have the best handoff tools and processes, but these will not improve patient safety if providers are not using them.

Finally, this case illustrates the need for health care providers to report all incidents. This event was caught by the bedside nurse and did not result in patient harm. One could easily imagine a similar situation that reached the patient and caused harm. Every safety report is an opportunity to reevaluate systems and processes and an opportunity to improve the care of our patients. ■

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