Patient and Family Education Key to Capnography Monitoring Compliance

Multiple organizations recommend capnography for monitoring patients who may be at risk of inadequate ventilation because of the depressive effects of sedatives and pain medications on respiration.[1-5] Patients receiving postoperative opioids to control pain and those undergoing moderate to deep procedural sedation are good candidates for monitoring with capnography. Analysis of the American Society of Anesthesiologists Closed Claims Database (a database of adverse patient outcomes) revealed that more than half of cases of death and serious injury could have been prevented by better monitoring, including with capnography.[6-7]

Patient compliance is an issue with any method of monitoring. When a patient removes a monitoring device, he or she is at risk until monitoring resumes. Caregivers receive an alarm they must be respond to, and eventually too many alerts can result in alarm fatigue.[8]

For capnography monitoring, the patient wears a small, nasal or nasal/oral interface. Through the interface, exhaled CO_2 samples are collected, and if required, the interface delivers supplemental oxygen. One advantage of capnography over other monitoring methods is that it doesn't require a secondary point of attachment, because many patients are already receiving oxygen to treat or prevent hypoxemia.

Too often, patients aren't properly instructed about why they are being monitored. If patients are not educated about why the monitor is being used and do not understand the benefit it provides, there is a greater chance that he or she will remove the interface. Experienced capnography users report that by educating the patient and family prior to the procedure and reinforcing it during monitoring, patients are more likely to be compliant.

"Patient education is the key. A well-educated patient and family is a key to having successful compliance with using [capnography]. Once the patients and the families understand that it's being done for safety, for their safety, they're much more compliant. They don't have any issues wearing the cannulas."

– Harold Oglesby, RRT , Director of Respiratory Care, St. Joseph / Candler Hospital[9]

"We've experienced really high compliance with our patients who have been using the end tidal CO_2 monitoring. It's very rare that once we've explained how important it is, that a patient says I don't want that on my nose. Most patients do very well with it."

–Joan Kohorst, MA, RRT, Director of Infusion and Medication Administration Safety, Sisters of Mercy Health System, St. Louis, Mo.[10]

"Patient education is the key to patient compliance. It would be ideal to educate patients prior to surgery."

–Debra Fox, RRT, Director of Respiratory Care, Wesley Medical Center, Wichita, Kan.[11]

"Newer nasal-oral cannulas used to measure capnography in spontaneously breathing patients are very well tolerated by children."

–Melissa Langhan, M.D., Associate Professor of Pediatrics, Yale School of Medicine, New Haven, Conn.[9]

"Observational studies substantiate our finding that continuous monitoring by capnography is feasible in very young children."

–Jenifer R. Lightdale, M.D., MPH, Children's Hospital Boston, Boston, Mass.[2]

In addition to educating the patient, it is also helpful to educate the patient's family who may be present during monitoring, especially for young children or patients who are already sedated. Family members can remind patients that the monitor is in place to protect patient safety.

Components of Education

Education of the patient and family is most effective when it is simple and brief. Educational tools available to assist with the education are listed below. Key components of education include:

- Explain that the medication that will be given can make breathing slow or shallow, which could be dangerous if not monitored. State that the capnography monitor will alert clinicians to changes in breathing and ventilation events.
- Let patients and family members know that alarms alert clinicians to a change in breathing. Explain that alarms can serve as a reminder to the patient to take a few deep breaths.
- Remind the patient that if the interface is removed for brief periods, for activities such as eating or getting out of bed, it should be replaced immediately after the activity.
- Routine postsurgical activity, like sipping water or eating ice chips, does not interfere with ventilation monitoring. But care should be taken not to introduce liquids into the sampling ports as this will block the sample line and create an alarm.
- Explain that generally patients will be monitored until the physician believes there is no longer a risk of slow or shallow breathing. This period depends on the type and duration of medication prescribed, as well as the patient's response to the medication.

Capnography is an essential tool in preventing adverse events for patients receiving sedation, analgesia or other medications that can cause respiratory depression. A few minutes of education can go a long way in improving patient compliance and ensuring their safety.

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