Helping to avoid postdischarge nausea and vomiting

Nausea or vomiting after surgery can cause more distress than the pain, and even with modern anesthetics, it is not as rare as once thought. If the procedure is outpatient, symptoms may arise after the patient is at home, away from medical intervention. Thus, ambulatory surgery centers (ASCs) need to assess each patient’s risk for postdischarge nausea and vomiting (PDNV) and plan for it by administering longer-acting antiemetic medication if needed.

Studies have attempted to identify risk factors for PDNV and found they may be patient-related—female, younger than 50—or procedure-related—laparoscopic rather than open. Recently, researchers at the University of California San Francisco compiled past research and their own new study to create a list of 5 screening questions plus a scoring system to pinpoint the probability of a particular patient experiencing nausea after surgery.

The results, as published in the September 2012 Anesthesiology, showed the overall frequency of PDNV for the 2,170 study subjects was 37%—significantly higher than the expected 20%.

Health hazard
As the research report explains, postsurgery nausea is not only unpleasant but also can be a health hazard and require costly followup treatment.

“Severe nausea can be so draining and debilitating that patients have rated it as more serious than postoperative pain,” lead investigator Christian Apfel, MD, PhD, notes. “Vomiting increases the risk of pulmonary aspiration of gastric contents and suture dehiscence and may even lead to esophageal rupture, subcutaneous emphysema, and bilateral pneumothoraces. In addition, postoperative nausea and vomiting (PONV) can delay patient discharge from the postanesthesia care unit (PACU), and it is a leading cause of unexpected hospital admission after ambulatory surgery.”

One predictor of later nausea or vomiting is having that condition in the PACU. Often, however, a patient may avoid PONV only to suffer PDNV after discharge.

The trigger
As a rule, ambulatory patients should be less susceptible to nausea because the procedures they undergo are less serious and require less exposure to inhaled anesthetics or opioids administered during surgery. But because these patients leave the ASC within 24 hours, those who do suffer postoperative nausea may find it occurring postdischarge.

Robert Langer, MD, an anesthesiologist who specializes in ambulatory surgery and is affiliated with New York Hospital, says patients vary widely in susceptibility. Clinically, he notes, the trigger for nausea and vomiting is located in an area of the brain stem called the chemoreceptor trigger zone (CTZ). As a primitive part of the brain, the CTZ instinctively responds to both sensory input such as taste and to toxins in the body with the same emetic response.
“The brain stem is not very smart,” Dr Langer quips. “It thinks every toxin comes from the stomach and induces vomiting to eliminate it.”

In a 1995 paper, Dr Langer compared alternative treatments and proposed a “routine prophylaxis” of low-dose droperidol (10-20 mcg/Kg) followed by ondansetron for patients receiving a general anesthetic who still experience PONV. Even then, he concluded that targeting susceptible patients would be a better option.

“Although routine prophylaxis would seem appropriate, the choice of antiemetic agents is wide, and some are too expensive to be cost-effective for routine use.”

One option, ondansetron (Zofran), is currently in short supply, and many ASCs are reporting it unavailable.

**Who is most at risk?**

In a previous study cited by Dr Apfel and his associates, of 154 patients followed after ambulatory surgery, 35% “were significantly distressed by PDNV.” With more than 60% of surgeries in the US performed on an ambulatory basis, he adds, PDNV warrants closer scrutiny.

For their study, Dr Apfel’s team enrolled 2,170 adults having elective surgery at 12 ASCs and evaluated 1,913 for PDNV. Based on patient self-reports following discharge, 37% had PDNV, 13% had severe nausea, 12% had vomiting, and 5% had severe vomiting. The researchers were surprised to find postdischarge rates were higher than PACU rates.

They tracked a wide range of patient variables. Procedures represented included breast surgery, cholecystectomy, hernia repair, gynecologic surgery, cystoscopy, prostate surgery, ENT surgery, orthopedic surgery, and general surgery. Surgical techniques were arthroscopic, endoscopic, laparoscopic, or conventional. Several inhalational anesthetics were included as well as opioid analgesics and prophylactic anti-emetics.

Analyzing the experience of their study subjects, Dr Apfel et al identified the following 5 most common independent predictors of PDNV and developed a probability formula giving them the indicated weights:

- female patient: +0.43
- patient younger than 50 years: +0.77
- previous postop nausea: +0.41
- opioid medication administered in PACU: +0.66

**Designing a scorecard**

Based on the findings, Dr Apfel has designed a scorecard to determine which patients are at highest and lowest risk for PDNV. To make screening more practical, he assigned a simplified score of 1.0 (which approximates the statistical probabilities) to each predictor (sidebar).

Dr Apfel and his colleagues conducted a small survey of 257 patients to validate the new checklist. While the sample was too small for the results to be statistically significant, it closely followed the pattern of the larger group.

**Weighing the odds**

What does this mean for ASCs and their patients? Screening becomes an important economic as well as clinical issue.

Dr Langer estimates PONV can delay discharge by 47 to 61 minutes. Adding to the cost of staff and medications for treatment, there is an opportunity cost when other procedures must be delayed to deal with the PONV. Based on 1995 average ASC volumes and revenue, he estimates an average annual loss of $253,000 to $1.5 million.
“Clearly,” he concludes, “PONV has a significant impact on revenues, and a cost-effective method of addressing the problem needs to be found.” A hospital admission necessitated by PDNV is even more serious.

Dr Apfel does not recommend a specific protocol for preventive medications or taking other steps to avoid PDNV.

He concludes further study is needed to identify the best prophylactic anti-emetics and optimal dosage. The scorecard, however, will at least alert clinicians to which patients may need some form of additional treatment.

—Paula DeJohn

References
