AMERICAN HEALTH CONSULTANTS®

Critical Care MANAGEMENT™

The essential monthly resource for critical care and intensive care managers and administration

INSIDE

SEPTEMBER 1999

VOL. 3, NO. 9 (pages 97-108)

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Managers may soon see pressure grow to reduce medication errors in ICUs

Regulators may require more self-reporting of adverse drug events

How bad is your record on medication errors? A number of regulatory agencies are interested in knowing. One agency, the Joint Commission on Accreditation of Health Care Organizations (JCAHO), which sets operating standards for the nation's hospitals, is likely to ask pointed questions about adverse drug events (ADEs) and other issues involving care in your ICU.

The Health Care Financing Administration, the federal agency that administers Medicaid and Medicare, and state and local licensing agencies may follow suit.

It's all part of a growing trend focused on tightening hospital oversight that for many acute and critical care providers is likely to make ADEs and other sentinel events a hot topic in coming months.

The trend comes in the wake of a toughly worded report from the U.S. Department of Health and Human Services (HHS) in July criticizing the way JCAHO has done its job in monitoring the nation's 5,000 hospitals.

The upshot of the report is that JCAHO, based in Oakbrook Terrace, IL, hasn't been demanding enough in its accreditation oversight.

In some cases, it's been too forgiving with problem hospitals and

EXECUTIVE SUMMARY

Nursing managers can expect the heat to be turned up on reporting sentinel events, including many routine ICU medication errors. A major accreditation body recently has taken heavy criticism regarding its hospital oversight.

- For providers, emphasis is likely to focus on how well they are tracking and reducing adverse drug events.
- The trend is to encourage staff to self-report errors in a problem-solving, nonpunitive environment.
- Importance of documentation focuses on detailed narratives and comprehensive information that can aid problem-solving efforts.

allegedly has been more "collegial" as opposed to "regulatory" in its methods, the report asserts.

With regard to medication errors, the trend is likely to focus more attention on the whys and hows behind ADEs. Unit nursing managers are likely to be held more accountable than ever for demonstrating their effectiveness in reporting, analyzing, and attempting to reduce their error rates.

While ICUs don't necessarily take first prize over other departments in reported ADEs, they are among the first places regulators are likely to look for problems with medications.

The reason is the ICU's high patient acuity, the complex drugs physicians routinely order there, and the growing reliance by nurses and other staff on complex technologies, says **Jeanette Ives Erickson**, RN, MS, senior vice president of patient care services at Massachusetts General Hospital in Boston.

For more than a year, JCAHO has encouraged providers to increase self-reporting and supported a non-punitive, problem-solving stance when reporting medication errors to its department of standards.

The purpose behind investigating and reporting ADEs to the JCAHO hasn't been to lay blame or punish, but to analyze causes and foster efforts at reducing the problem, according to a 1998 policy statement issued by the agency. **(The chart on p. 99 shows examples of the agency's reportable and nonreportable events.)**

The underlying purpose has been to encourage providers to freely report incidents more often and accurately. By reporting more incidents, officials say problems can be better studied and reduced.

But whether the agency maintains its current position in view of the recent HHS criticism remains to be seen.

It's been widely known that medication errors originate from a variety of sources within a hospital. Misspellings of drug names by physicians, incorrect dosages, pharmacist errors, lack of internal checks and balances, and technological snafus are chief among them, says Erickson.

Studies show self-reporting cuts ADEs

Studies also have suggested practical ways to prevent ADEs by encouraging self-reporting, conducting daily reviews of patient charts, and classifying events as either ADEs or potential ADEs.[1]

But whether providers are doing a good job at preventing or reducing incidents of medication error hasn't been accurately determined. One reason is that hospitals and ICUs have not been good in general about reporting events, experts say.

The push now is to encourage more self-reporting and monitoring of any progress in error reduction efforts, says **Kathy Cullen**, RN, MSN, nurse manager of the 28-bed post-anesthesia care unit at Mass General.

As in preparing for any certification site visit, you want to show the surveyor or internal hospital administration strong evidence of compliance with high standards, says Erickson. Growing concerns have centered on keeping accurate records for reporting purposes.

ADE documentation reveals weaknesses

One hospital that has taken a simple and direct approach in both reporting and monitoring ADEs has been Our Lady of the Lake Regional Medical Center (OLOL) in Baton Rouge, LA.

The hospital recently introduced two ADE incident reports that cover most of the ground on regulatory compliance, but emphasize ease of use and comprehensiveness. **(Samples of the forms are inserted in this issue.)**

Being able to produce documentation that tracks each instance and its suspected root cause can reveal important weaknesses in the system, says **Rebecca Hedglin**, RN, nurse manager of a 12-bed surgical ICU at OLOL.

But the effort comes with a price, adds Hedglin. The creation of the incident reports has more than doubled the amount of paperwork for managers since its inception earlier this year because the staff is now encouraged to report ADEs when they occur without fear of reprisals, says Hedglin.

"That's what you want, more reported incidents that will give you sufficient information to investigate causes," says **Patricia Staten**, RN, MS, JCAHO's Department of Standards associate director.

You will also need some essential facts. These should be included on the incident reporting form and should be clearly noted by your reporting staff in detail. For example:

- **Type of error**

The range of choices should include unauthorized drugs, omissions, or extra dosages. But information should be as specific as to include whether the wrong dosage constituted an extra dose, the wrong drug delivery route (by mouth, intravenously, etc.), or an incorrect medication preparation.

Sentinel Events

Reportable to the JCAHO

- Patient death, paralysis, coma, or other major permanent loss of function associated with a medication error.
- A patient suicide in a setting where the patient is housed around the clock, including a suicide following elopement (unauthorized departure) from such a setting.
- Any elopement of a patient from an around-the-clock care setting resulting in a temporally related death (suicide or homicide), or major permanent loss of function.
- Any procedure performed on the wrong patient, wrong side of the body, or wrong organ.
- Any intrapartum (birth-related) maternal death.
- Any perinatal death unrelated to a congenital condition in an infant having a birth weight greater than 2,500 grams.
- Assault, homicide, or other crime resulting in patient death or major permanent loss of function.

Not reportable to the JCAHO

- Any near miss.
- Medication errors that do not result in death or major permanent loss of function.
- Full return of limb or bodily function to the same level as prior to the adverse event by discharge or within two weeks of the initial loss of said function.
- Any sentinel event that has not affected a recipient of care.
- A death or loss of function following a discharge against medical advice.
- Unsuccessful suicide attempts.
- Unintentionally retained foreign body without major permanent loss of function.
- Minor degrees of hemolysis with no clinical sequelae.

• **Origin of the error**

The area of the system the problem occurred narrows the field when investigating the root causes of an error, says Hedglin. Was the order not properly transcribed or not transcribed at all by unit clerks? Was it a charting error? Was the exact medication ordered not available and a close alternative selected?

• **Patient reaction**

The aftermath of the error needs reporting. The OLOL form gives the information in a yes or no form. As a result of the ADE, was increased patient monitoring needed? Did vital signs change? Were additional lab work or other treatment interventions necessary and delivered?

The information should include a detailed narrative of patient outcome to the additional intervention and an explanation to any yes answers.

• **Source demographics**

Where or with whom did the problem arise — a physician, resident, or nurse practitioner? Did the problem originate in dispensing? Was it a pharmacist, technician, or the automated medication dispensing or order-entry system?

Perhaps, the error occurred with a float nurse. The manager will have to track down that nurse, who may be working in another department or hospital following the event. All these possibilities should be reflected on the incident form.

• **Narrative information**

Somewhere on the form there should be space for a detailed narrative of what occurred given by the individual involved in the incident. There also should be a detailed description of interventions taken with a full explanation of the reasons any action was or wasn't taken.

The name and signature of the person making out the report should appear along with a supervisor's name, and the time and date of the report.

A final caveat suggested by Hedglin: The incident report should be considered a legal document, but it should under no circumstances become a permanent part of the patient's medical record and should not be photocopied or distributed to unauthorized hospital staff or outsiders.

Getting staff to comply may appear daunting to a manager. But role modeling works extremely well, suggests **Ann Quealy**, RN, MSN, nurse manager of the medical ICU at Mass General. "It only has to happen once, and everyone will buy into the unit's non-retaliation policy," Quealy says.

[Editor's note: For a copy of the U.S. Department of Health and Human Services' report, "External review of hospital quality," contact HHS on the Web at: www.os.dhhs.gov/oig, or the U.S. Department of Health and Human Services using a search engine. To report a sentinel event, contact the Joint Commission on Accreditation of Health Care Organization's Sentinel Event Hotline at: (630) 792-3700.]

Reference

1. Cullen DJ, Sweitzer BJ, Bates DW, et al. Preventable adverse drug events in hospitalized patients: A comparative study of intensive care and general care units. *Crit Care Med* 1997; 25:1,289-1,297. ■

'Refeeding syndrome' can be lethal to anorexics

Nurse managers should be on alert

Although the number of anorexic and bulimic patients admitted to ICUs each year is relatively small, they nonetheless pose significant challenges to bedside nurses.

The area of biggest concern is reversing the patient's severe protein-calorie malnutrition without overdoing the refeeding process to the point of endangering the patient's life.

Striking that balance and preventing overfeeding, or so-called "refeeding syndrome," makes working with anorexic patients in the ICU a special challenge, says **Elaine Trujillo**, MS, RD, a senior clinical dietitian at Brigham and Women's Hospital in Boston.

Input from a multidisciplinary team that includes the hospital's dietician, pharmacist, psychiatrist, internist, eating disorder specialist, and social worker can be valuable, even in determining the safe and proper levels of parenteral nutrition. That's because anorexic and bulimic patients present a complex set of clinical issues both medical and psychiatric that fall outside the norm for ICUs, Trujillo says. On admission, they also present a range of acutely serious medical problems.

Cardiovascular complications run high

Together these conditions affect, and often are the underlying cause of, the patient's severe malnourishment, adds Trujillo. These aren't your conventional patients.

"When these patients go bad, they go into acute clinical distress," adds **Richard C. Hall**, MD, an eating disorder specialist at Florida Hospital-Altamonte in Gainesville. ICU managers should be on alert to special problems presented by those patients.

Severe cardiovascular complications run high in this population, especially if they are diuretic or laxative abusers, Hall notes. A mixed history of severe anorexia nervosa alternating with periods of bulimia is likely to lead to a range of life-threatening illnesses. More than a third of bulimics admitted to hospitals suffer from a range of medical disorders such as cardiac arrhythmia, esophageal tears, bone marrow failures, gastric ruptures, and hypovolemic shock.[1]

About 10% of severe anorexics who alternate between binging and purging require ICU treatment. "Those percentages have remained fairly constant for over a decade," Hall observes. **(See charts, p. 101.)**

Furthermore, more than one in 10 of anorexic/bulimic patients — 16%, according to one study — have an alcohol or drug abuse problem, and many have ailments such as seizure disorder and pelvic inflammatory disease that may escape detection by nurses during the initial admissions assessment.

The effectiveness of nutritional support to self-starving patients can be a lifesaver. But if performed incorrectly, the effort can backfire and can endanger the patient's life, says **Caroline M. Apovian**, MD, an attending physician in the metabolic support service at Brigham and Women's Hospital.

Anorexic semistarvation is unique

The nutritional support team should follow specific guidelines to avoid pitfalls, Apovian says. Facets of the guidelines include:

- **Understanding the patient's malnutrition**

In the marasmic (starving) patient, the body adapts to the chronic semi-starvation by decreasing its basal metabolic rate by as much as 25%. The body relies less on protein and more on existing fat stores for fuel.

This type of malnutrition is different from the type that involves the body's metabolic response to an injury. So, there is likely not to be many of the usual signs and symptoms such as fever, leukocystosis, or elevated acute-phase reactive proteins, Apovian says.

The distinction is important, because a weight loss of 25% or more in an anorexic that presents to an ICU with injuries can be fatal. Anorexics often present with fractures and other injuries. Mortality rates in an uncomplicated case of semi-starvation don't increase until weight loss of more than 40%. Also, nurses should assume that the anorexic patient's immune function already is impaired.

- **Striking a nutritional balance**

The goal is to ensure the patient gets a reasonable rate of refeeding while avoiding any overfeeding, Apovian says. Estimating the caloric needs of marasmic patients is difficult; initially, it is important to restrict the amount of support to the level of need and not more.

In a 1990 paper, Apovian and her colleagues proposed using a formula called the Harris-Benedict

Frequency of Medical Disorders

Anorexia Nervosa (n=31)

Disorder	Number	Ratios
Hypoproteinemia	23	74%
Iron deficiency/ anemia	18	58%
Clinical malnutrition	13	42%
Hypocalcemia	12	38%
Cardiac arrhythmia	10	32%
Nutritional hepatitis	10	32%
Irritable bowel syndrome	9	29%
Peptic ulcer	6	19%
Hypokalemia with cardiac irregularities	5	16%

Frequency of Medical Disorders

Anorexia/bulimia with purging (n=19)

Disorder	Number	Ratios
Iron deficiency/ anemia	8	42%
Hypoproteinemia	6	32%
Hypomagnesemia	5	26%
Hypokalemia	4	21%
Gastritis	3	16%
Granulocytopenia	2	11%
Leukopenia with white blood count below 3500	2	11%
Nutritional bone marrow suppression	2	11%
Cardiac arrhythmia	1	5%

Source for both charts: Hall RC, Hoffman RS, Beresford TP, et al. Physical illness encountered in patient with eating disorders. *Psychosomatics* 1989; 30:174-191.

Equation to predict basal energy expenditure (BEE).

Once the BEE is estimated, nurses should start feeding to not more than 20% above the BEE level at a resting metabolic rate. The patient's glucose intake should also be monitored carefully to avoid excess. But a positive protein intake will work immediately on restoring lean body mass as long as the patient's kidneys are functional.[2]

• **Exercising caution**

In Apovian's report, she says that carbohydrates given too soon can increase insulin and fluid levels that can stress the heart and overstimulate the nervous system. These conditions increase the likelihood of cardiac arrhythmia, which already affects many anorexics. Therefore, fluid retention should be avoided, especially in the first few days of treatment.

High fluid levels can affect the heart, but it can also falsely suggest weight gain and mislead nurses and physicians about the effectiveness of the nutritional support, Apovian says.

Many physicians aren't familiar with those caveats, says Trujillo. Therefore, ICU nurses should exercise caution and seek expert advice about all phases of the nutritional regimen.

In fact, Apovian indicates that ICUs are not a good first option for hospital-admitted anorexics. "If cleared of congestive heart failure or cardiomyopathy, the patient would probably be better served in an inpatient psychiatric unit where the staff is specially trained in refeeding syndrome," Apovian says.

• **Being fully informed**

Halls says the more you know about the patient during admission, the better you can help implement a treatment protocol that includes appropriate nutritional support.

If the patient is admitted through the emergency department, but has been previously treated in an eating disorders unit, it's likely that he or she has a detailed history and eating disorders questionnaire in the medial record. The patient's internist or primary care physician can also provide input.

The bedside nurse and clinical nurse specialist should study the internist's evaluations, especially the physical exam notes. There also should be information from a psychiatrist that will provide a broader picture of the patient's condition.

• **Anticipating surprises**

In Hall's research, he found that nearly three-fourths of patients admitted to a hospital were unaware that they had serious secondary problems related to the anorexia. Nearly one in five anorexics admitted to ICUs were also laxative abusers, meaning that they used them up to four times a week, and some were physiologically dependent on them. "Anorexics admitted to hospitals are actually more seriously ill than previously thought, and the supporting data in 10 years hasn't changed," he concludes.

References

1. Hall RC, Hoffman RS, Beresford TP, et al. Physical illness encountered in patients with eating disorders. *Psychosomatics* 1989; 30:174-191.

2. Apovian CM, McMahon MM, Bistrian BR. Guidelines for refeeding the marasmic patient. *Crit Care Med* 1990; 18:1,030-1,033.

[Editor's note: Clinicians can read about the Harris-Benedict Equation to predict basal energy expenditure in the book, Nutritional Assessment of the Hospitalized Patient: A Practical Approach, *pp. 183-205, copyright 1984, published by Blackwell's Scientific Publications, 100 University Ct, Blackwood, NJ 08012. Telephone: (609) 228-8900. On-line order inquiries: bob.online@blackwell.com.uk.]* ■

Stay on top of catheter quality, nurses urged

Devices could affect infection, mortality rates

A controversial 1996 report that created a scare in critical care medicine concerning the quality of central venous catheters has faded over time. But it's left lingering questions for nursing administrators about what to do if the catheters used by nurses in their departments are raising potentially harmful red flags. The alarming rise of nosocomial infection rates in ICUs, for example, has focused on catheters as possible culprits.

Critical care departments are among the highest users of central venous catheters. And while hospital product evaluation committees are said to be doing a good job on quality oversight, experts are advising nurse managers to rely more on their own judgment on what constitutes quality, but get help and second opinions from expert resources. Don't take someone else's word, they say.

The controversial report, published in the *Journal of the American Medical Association (JAMA),* stated that use of pulmonary artery catheters was responsible for high mortality rates and longer ICU stays.[1]

The report immediately triggered loud debates over catheter quality, sending even major manufacturers in to quell clinicians' concerns.

Clinicians concerned about safety

But after reviewing the findings, most clinicians concluded that catheters were in fact safe to use; however, they should be used carefully, especially when utilized in conjunction with other complicated therapies.

The catheters themselves weren't often at fault, but played a minor role when employed with other invasive interventions and monitoring equipment in the ICU, most observers concluded. There was also the possibility of human error or poor handling, they added.

The controversy may have died down, but it hasn't disappeared. Some hospital-level clinicians are still bothered by the questions raised by the *JAMA* report.

"If there are questions, look for outside resources," advises **Sandra Reiner**, RN, CIC, an infection control coordinator at Northwestern Memorial Hospital in Chicago. "Not all catheters are the same; but they're not always responsible for the problems with patients," she cautions.

Don't take the blind road; Reiner further advises nurse managers to seek outside help. There's plenty of help available, she adds. Hospital infection control departments are the likely first stop for advice. And speak up, even if doing so contradicts the hospital endorsement of a product.

Unfortunately, as yet there are no uniform or standard quality tests when evaluating catheters in-house. But guidelines for the use of a range of ICU technology, including central venous catheters, have been published.

The American Association of Critical Care Nurses (ACCN) in Aliso Viejo, CA, for one, has established research-based practice protocols as a guide for clinicians on the optimal use of a range of ICU technologies.

The Society for Critical Care Medicine in Anaheim, CA, offers published guidelines on catheter and other technology usage.

Push for uniform catheter usage

But these resources don't necessarily focus on steps in conducting formal product evaluations in the ICU. And catheter makers, while they are actively sponsoring research, are usually guided by self-interest and aren't objective information sources, Reiner cautions.

AACN, however, is leading a nationwide program to create greater consistency in catheter usage in hemodynamic monitoring that may offer more direction.

Awareness of quality is growing, says **Thomas S. Ahrens**, RN, DNS, CCRN, a research scientist and clinical nurse specialist at Barnes Jewish Hospital in St. Louis. He has studied and written extensively about the *JAMA* catheter controversy.

In light of the absence of uniform testing protocols for nurse managers the quality assurance process, according to Reiner and Ahrens, begins with these preliminary considerations:

- **Consider a catheter study**

Consider whether you should launch a unitwide catheter study. In many cases, the problem is likely to involve bloodborne pathogens. If so, the hospital's infection control department (ICD) will need specific data about the incidence of the infection rate. The ICD staff will recommend whether a study is in order, based on information provided by your personnel.

If the problem involves rising mortality or acuity rates, the risk management and resource utilization department should be contacted for similar direction. Do not attempt to ignore or keep the growing trend a secret. The information will inevitably be revealed, Reiner says. Also, catheter studies can be time- and labor-intensive activities that could tie up a clinical nurse specialist who has other responsibilities. Make certain you are prepared to undertake such an enterprise, she adds.

Three years of data may be necessary

• **Get sufficient evidence**

In weighing whether to undertake a catheter study, do not base your conclusions on reported incidents within a few months. Especially in a large critical care unit of 20 or more beds, the available incidence data should go back farther than six months or a year, according to Reiner. In some instances, the ICD will require one to three years' data before determining whether to recommend a study.

In many cases, a type or brand of catheter may provide superficial evidence that patients are taking longer to wean or transfer to a step-down. Infections may be originating not from the catheter, but from unclean tubing or pump surfacing in a catheter, says Ahrens. Remember, patients' acuity in the ICU is higher today, and that trend could alter your data to appear that a problem may be worse than it is, he adds. Therefore, make certain your data is relatively clean.

• **Analyze the problem**

In preparing to approach the ICD or evaluation committee, make certain you've covered your bases. Track down systems' breakdown areas that may be linked to a possible catheter problem by specific elements such as suspected problem site, individual nurse or physician, and patient-related factors such as age, gender, acuity, comorbidities, diagnoses, and underlying disease factors.

Also, present the data in various forms such as infection rates per 1,000 patient days or the number of catheter days per number of patient days. These presentations will offer unit outsiders an easier means of reaching a decision about the gravity of the problem, says Reiner.

SOURCES

To obtain information about ICU technology guidelines and protocols, contact:

- **American Association of Critical Care Nurses**, 101 Columbia St., Aliso Viejo, CA 92656-2273. Telephone: (800) 809-2273. Web site: www.aacn.org.
- **Society of Critical Care Medicine**, 8101 E. Kaiser Blvd., Suite 300, Anaheim, CA 92808-2259. Telephone: (714) 282-6000. Web site: www.sccm.org.

• **Weigh switching catheters**

In doing so, consult with key members of your product evaluation committee. Usually, the committee has a nursing representative. But also seek guidance from colleagues, including physicians, from outside hospitals, says Ahrens. Determine whether they are experiencing similar problems with their catheters.

If not, obtain as much product information in the form of objective controlled studies to recommend that the hospital switch to another type of catheter. Most catheters are roughly equal in quality and safety. But no catheter, regardless of make, is problem-free, Ahren notes.

A hospital is likely to consider changing its product type or brand in light of compelling evidence, especially if the catheter demonstrates greater value — i.e., a longer life span, fewer problems, at the same price per unit, Reiner says. Several studies have looked at the efficacy of heparin-coated and anti-microbial impregnated catheters for their infection-resistance value. So check the literature, Reiner advises.

• **Limit vendor information**

Although the information may be helpful, manufacturers' priorities usually differ from clinicians' when assessing technology, says Ahrens. "Manufacturers have a vested interest in selling new technology rapidly and in large volumes," Ahren says.

At least a half dozen companies manufacture central venous catheters. Each one has merits, but only one may be right for your unit, Reiner cautions.

• **Get the team's buy-in**

Include nurses and other personnel in discussions. A major debate involving catheters relates to the levels of types of antibiotic lumen materials used for treating many of today's catheters.

Ask one of your clinical nurse specialists to research the literature and provide recommendations regarding the merits of using treated triple-lumen vs. untreated catheters and when.

Conduct a product re-evaluation regularly that involves the clinical staff, advises Reiner. Once every two or three years is a good interval.

Reference

1. Connors AF, Speroff T, Dawson NV, et al. The effectiveness of right heart catheterization in the initial care of critically ill patients. *JAMA* 1996; 276:889-896. ■

Shared responsibility can help cut your supply costs

New management view stresses team-sharing

The cost of a pair of surgical gloves probably means nothing to the nurse who slips on a new pair 10 times a day. But those gloves as an expense item mean a great deal to you. So why not share that responsibility with others?

That's the view held by some in critical care. If your staff knew what those gloves and hundreds of similar items cost each day, they would be more apt to help in managing those costs, says **Laurie Shiparski**, RN, MS, a former critical care nurse who is now a practice specialist with CPM Resource Center, a consultant in Grand Rapids, MI.

ICU supply costs rank among the highest in acute care. Exact figures aren't available, but in general, these costs can range between 20% and 30% or more of every dollar earned by the unit per patient day, according to hospital industry sources. In comparison, general medical-surgical costs are about two-thirds of those amounts.

Yet, ICUs are among the least efficient in managing those expenses. Part of the reason is that medical supplies, items worth about $200 or less, get used up in large quantities in greatly different ways.

Clinicians in the ICU aren't only using them more due to higher patient acuity, they use these items differently on different shifts, according to **Connie Stewart**, RN, MS, a nursing administrator who oversees nine critical care departments at MedCenter One Health System in Bismark, ND.

"In a 24-hour environment, it's difficult to get people to use supplies in the same manner," Stewart notes. "And no one really cares about the majority of those items anyway because they're usually paid under one DRG (diagnosis-related group) code."

Wastefulness adds to costs

Consequently, everything from suction tubes to pillows cases gets used and discarded from shift to shift without regard to how long they should last before being changed or the cost impact of the change, Stewart says.

But in budgeting, those costs mean everything to a manager. The solution, according to Shiparski, lies in risk-sharing. "Managers are putting too much time into budgets and finances, and they're doing too much on their own," Shiparski says. Here's what Shiparski and Stewart propose:

- **Make the staff cost-accountable**

Information filters down to you from your central distribution and finance departments. Share that data with your nurses, Shiparski suggests. Managers usually shoulder the unit cost burden alone, mostly out of tradition and no other reason.

An open-book management approach to budgeting helps to get everyone involved in decision making, gives management important input, and creates team spirit. **(See chart, p. 105, for guidelines.)**

- **Set concrete targets and incentives**

At MedCenter One, managers issued targeted cuts in supply usage and made the staff responsible for hitting the targets, says Stewart. In one year's time, the units' supply costs fell six percentage points from 37% to 31% due to everyone's concerted involvement in the effort.

As an incentive, administration tied the nursing staff's yearly salary increases to any demonstrated resource utilization efficiencies. Nurses get a 2% pay increase on top of any other raises during their annual review, Stewart says.

- **Enlist administration's help**

The data you obtain from finance and central supply tell administrators a lot about your unit's budget. Request that information, but ask for it in meaningful terms, Shiparski suggests.

Their computerized information systems can break out your quarterly or annual costs by FTE (full-time equivalent) employee, by payer (Medicare or Medicaid), or unit service, patient day, or in margins (costs as a percentage of patient revenue). Then share this data with your staff, Shiparski says.

- **Get the word out**

In meetings and newsletters, give staff details

Teaching cost accountability

Goal: To plan and maintain a unit supply and equipment budget.

- Issue reports that list all supplies, equipment, and actual utilization on a monthly and annual basis.
- Conduct monthly reviews of reports by the clinical team to identify opportunities for cost reduction.
- Post list of supplies and equipment used in the unit, along with individual prices.
- Consider new or different vendors and the elimination of items with little benefit to patients.
- Hold annual budget planning sessions with staff based on historical usage, projected changes in services, and cost increases.
- Require daily attention to unit supply costs by all staff members.

Source: CPM Resource Center, Grand Rapids, MI.

of the unit's monthly and quarterly supply-cost data, emphasizing the importance of shared accountability. The message should be, "It's everyone's responsibility to conserve," Stewart says.

Post the information on the unit bulletin board and assign a member of the night shift to brief the night staff verbally on budget issues. Let everyone know what it costs each time a new intravenous tube or other item is installed on a patient.

• **Make the information meaningful**

When making a supply item change or reporting new budget constraints to the staff, keep the information clear and logical. For example, explain the need for new policies regarding changing a catheter needle on patients by adding to the explanation information about the effect frequent changes may have on patient outcome, says Stewart. When the staff understands the implication of any new policy on patient well being, they are more likely to appreciate the explanation, she adds.

• **Offer simple alternatives**

Supplies could run the gamut. At Stewart's facility, Styrofoam cups became a thorny issue. "We were finding them everywhere," she says. Managers urged the staff to bring in their own coffee cups. The change would help keep the unit clean and save a few dollars.

Though small, the savings were important. But the effort worked because the clinical staff saw the alternative as thrifty and sensible, and it was something they could do easily, Stewart says.

• **Do some consensus testing**

When adopting a new supply item, conduct your own mini-clinical trial. The hospital's product evaluation committee has probably already made up its mind on switching to a new brand of suture or secretion tube. But no one has asked your nurses, the direct users of the new item.

Poll your staff regarding its ease and effectiveness, Stewart advises. They can give you input that you can use in feedback to the committee regarding the item's value as an investment.

And when changing supply items, post the cost-comparison data where staff can view them. Add to the data descriptions such as the expected life of the product, its particular uses, and expected effect on patients. Central supply officials can help you develop the information.

Supply costs are always subject to the ebbs and flows of uncontrolled factors such as patient census, acuity, transfers, and bed capacity, says Shiparski. But managers typically account for these factors when trying to manage expenses.

But there's still considerable room to cut fat, and much of what passes as inevitable can be traced back to wasteful habits. "What's important is that managers not try to go it alone on this. Cutting costs is a shared responsibility," she says. ■

FDA issues list of medical devices facing Y2K risk

Several devices listed are found in ICUs

The U.S. Food and Drug Administration (FDA) has issued a list of potentially high-risk computer-controlled medical devices used in hospitals that pose the most serious consequences for patients if they should fail due to year 2000 (Y2K) date-related problems.

The list includes many devices commonly used in critical care units for patient monitoring or to support or sustain life during treatment, the Rockville, MD-based FDA stated. The more than 100 devices listed by the FDA include oxygen uptake computers, breathing frequency monitors, arrhythmia detectors and alarms, intra-aortic balloon control systems, and neonatal incubators.

In a statement, the FDA noted that the absence

FDA sources

To obtain the full list of FDA devices on the Web, contact the following Internet sites: **http://www.fda.gov/cdrh/yr2000/classification.html**. A link is also provided to the Y2K Biomedical Equipment Clearinghouse at: **http://sss.fda.gov/scripts/cdrh/year2000/y2k_search.cfm**. This site also will help you to determine the compliance status of medical devices as reported by the device's manufacturer. For any additions, deletions, or questions about the list, contact: Year 2000 Coordinator, U.S. Food and Drug Administration, Center for Devices and Radiological Health, 9200 Corporate Blvd., Rockville, MD 20850. Telephone: (800) 532-4440. ■

of any device on the list doesn't necessarily mean that the device is immune to Y2K-associated failures. Conversely, inclusion on the list doesn't mean that all devices of that type will have a date-related problem or that they pose a significant patient risk.

However, the list excludes diagnostic devices that would pose immediate harm to patients in a Y2K failure. The agency says it produced the list to serve as a guide for hospitals in making proper Y2K assessments.

The agency says it is also working with device manufacturers "to provide increased assurance that product's Y2K status has been carefully assessed and that upgrades have been developed and tested" in compliance with regulations.

However, the FDA recently stated that it could not review the compliance levels of all manufacturers' devices, and plans to review only a representative sample of devices currently in use.

The device list comes in the aftermath of a congressional report criticizing the lack of Y2K readiness by the health care industry and warned of "significant potential for harm" to patients.

For months, nursing leaders have urged that nurses, including unit managers, play an active role in assessing the Y2K-compliance readiness of their unit's equipment.

"Don't put yourself in the position of being the one held responsible by the hospital if and when something goes wrong," warns **Sally Raphel**, RN, MS, director of nursing practice for the American Nurses Association in Washington, DC.

ICUs are particularly at risk of Y2K complications due to patients' severity of illnesses and the technical complexity of their life-sustaining devices. ■

Slashing costs may not be way to manage ICU care

High-risk patients do poorly under low staffing

The way your ICU is organized and dispenses medical care to patients can significantly affect mortality rates, cost of care to insurers, and the length of time a high-risk patient stays in the unit. From daily rounds performed by a full-time ICU physician to routine extubation of patients in the operating room, an ICU's organizational characteristics can have important effects on outcomes, some clinicians argue.

The idea may seem obvious to nurse managers, but a group of critical care clinicians at the Johns Hopkins University School of Medicine in Baltimore tested the notion and found a close correlation between factors such as nurse and physician staffing levels and length of patient stay.

The findings could have widespread implications as ICUs attempt to cut back on staffing and other resources as a cost-saving measure. "The information can provide some direction for clinicians and hospital administrators regarding ways they can further improve outcomes for patients who have high-risk operations," says **Peter J. Pronovost**, MD, a researcher in the department of anesthesia and critical care medicine at Johns Hopkins.

Using discharge data for patients admitted for abdominal aortic surgery at all Maryland hospitals,

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Pronovost and his team found that units not having daily rounds by a full-time staff intensivist were likely to see a threefold increase in in-hospital mortality.

They also saw an increased risk of patient cardiac arrest, renal failure, septicemia, platelet transfusion, and repeat reintubations. Cases of abdominal aortic surgery were chosen because they reflect a common yet high-risk procedure performed in a variety of acute-care hospitals with different organizational characteristics, Provonost says. The data was adjusted for comorbidity and severity of illness.[1]

Among other characteristics related to higher mortality and morbidity were: 1) an ICU nurse / patient ratio of less than 2:1; 2) inconsistent monthly reviews of unit mortality and morbidity data; and 3) routine extubation in the operating room, rather than based on careful assessment.

However, Provonost and his team called for further study before implementing specific measures to improve post-surgical ICU care.

Reference

1. Provonost PJ, Jenckes MW, Dorman T, et al. Organizational characteristics of intensive care units related to outcomes of abdominal aortic surgery. *JAMA* 1999; 281:1,310-1,317. ■

Study: ICU patients sleep better using soft earplugs

Cheap devices address sleep deprivation issues

A new study suggests that ICU patients who wear soft foam earplugs during sleep periods achieve deeper, more restful sleep than those who fall asleep without them. Therefore, nurses should consider the practice of issuing earplugs to patients in the ICU who show patterns of sleep disturbance and can wear the earplugs safely, a research team member advised.

However, the study stopped short of implying that deep, restful sleep in critically ill patients will lead to better clinical outcomes or earlier transfers and discharges.

"We found evidence that the devices can indeed positively affect normal sleep. But the research did not study the connection between restful sleep and clinical outcomes," says **C. Jane Wallace**, RN, PhD, senior outcomes research manager at LDS Hospital in Salt Lake City.

However, conventional wisdom says that sleep deprivation in critically ill patients contributes greatly to impaired immune function, delayed ventilator weaning, changing body temperatures, and delirium, Wallace says. The benefit weighed against the cost of the using the handy, inexpensive devices argues in favor of using earplugs.

The study simulated typical ICU noises using audio tape recordings. Participants were exposed to seven eight-hour sessions and one five-hour session of the tapes, which were designed to simulate typical morning, evening, and nighttime sound levels. Participants in the study were six healthy volunteers.

Those who did not wear the earplugs showed significantly higher levels of shallow REM (rapid eye movement) sleep than those who slept with the earplugs based on recorded brain wave activities. The duration of sleep period, time spent in Stage 4

Critical Care Management™ (ISSN 1070-4523) is published monthly by American Health Consultants®, 3525 Piedmont Road, N.E., Building Six, Suite 400, Atlanta, GA 30305. Telephone: (404) 262-7436. Periodical postage paid at Atlanta, GA 30304. POSTMASTER: Send address changes to **Critical Care Management**™, P.O. Box 740059, Atlanta, GA 30374.

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Editorial Questions

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(deep sleep), and other sleep-quality indicators were higher for participants with the earplugs.

The results, researchers wrote, provide a reasonable basis for further study of noise reduction interventions in the ICU but may not be statistically significant in simulating actual ICU conditions.[1]

Reference

1. Wallace CJ, Robins J, Alvord LS, et al. The effect of earplugs on sleep measures during exposure to simulated intensive care unit noise. *Am J Crit Care* 1999; 8:210-218. ■

Nurse bias lingers against automated pressure cuffs

Opposition stems from nursing myths

ICU nurses continue to show reluctance to using automated, electronically adjusted blood pressure cuffs on heart patients, despite a growing body of evidence that shows automated pressure cuffs are as safe as manual cuffs on thrombolytic therapy patients.

Recent studies have shown that automated cuffs are no more harmful than manual cuffs in preventing skin hemorrhages linked to the use of thrombolytic, or anti-blood-clotting, medications on patients suffering from myocardial infarction.

In fact, the occurrence of purpuric lesions has more to do with the type of thrombolytic agent used than the type of cuff favored by clinicians, according to researchers. Yet, nurses appear to favor using manual cuffs nonetheless.

The use of manual cuffs is perfectly all right, says researcher **Lauren Saul**, RN, MSN, a cardiovascular clinical nurse specialist at UPMC Shadyside, a hospital affiliated with the University of Pittsburgh Medical Center in Pennsylvania. But bedside nurses should not avoid automated cuffs out of safety concerns.

When using either type of cuff, however, bedside nurses need to be on guard against the development of purpura, which normally results from the combination of taking frequent blood-pressure readings and the thrombolytic therapy, Saul says. The bruising could occur from the repeated rubbing of the cuff around the patient's arm.

Patients with myocardial infarction are particularly vulnerable to skin bruising due to the heavy dosages and types of anti-blood-clotting agents used on them, Saul adds. Much of the bias in favor of manual cuffs has been the result of myths and anecdotal observations, not research, studies have shown.[1]

Nurses can, in fact, bias the accuracy of assessments when using manual cuffs by interjecting their own values on how tightly the cuff should be placed or how high the starting pressure level should be on a individual patient. These biases can alter the final pressure reading in subtle ways.

Reference

1. Saul L, Smith J, Mook W. The safety of automatic vs. manual blood pressure cuffs for patients receiving thrombolytic therapy. *Am J Crit Care* 1998; 7:192-196. ■

CE objectives

After reading each issue of *Critical Care Management*, participants in the continuing education program should be able to:

- identify particular clinical, administrative, or management issues related to the critical care unit;
- describe how those issues affect nurse managers and administrators, hospitals, or the health care industry in general;
- cite practical solutions to problems that critical care/intensive care managers and administrators commonly encounter in their daily activities. ■