

# Critical Care MANAGEMENT™

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

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## Nursing in the new millennium: Ten skills every nurse manager will need

*Managers must be able to communicate effectively, meet new challenges*

**E**xploding information technology. The ICU without walls. An increasingly frustrated, aging work force. These are just a few of the challenges awaiting nurse managers in the new millennium.

As critical care nursing enters the 21st century, the successful manager will be one with strong people skills and the ability to adapt under rapidly changing circumstances, according to a sampled cross section of critical care leaders.

Nurse managers' skills will be tested on many fronts, including financial management, adaptability to increasing responsibilities, and the ability to transition from authority figure to collaborator in partnership relationships with others, including physicians.

The good news is that the health care world is shrinking. The ICU is becoming an integrated part of other segments of health care delivery such as acute care and home care. As a result, the ICU manager of the future is likely to function as a member of a network of nursing care professionals in a broad continuum-of-care team environment.

The bad news is that head nurses are likely to inherit a bigger scope of practice and a larger piece of the health care pie to oversee. Furthermore, issues such as the severe nurse shortage, increasing patient census and acuity, and outside pressures to make the ICU a responsive yet cost-efficient engine are not likely to go away. Rather, they'll demand quicker action and new responses, experts say.

"These are not new skills for managers," says **Justine Medina, RN**,

## TOP TEN SKILLS NEEDED FOR THE NEW MILLENNIUM

1. Work well with people
2. Understand new technology
3. Adapt to expanding universe
4. Respond to aging work force
5. Participate in research
6. Promote similar incentives
7. Manage shifting environments
8. Master financial concerns
9. Provide leadership
10. Create new work cultures

MS, CCRN, a clinical practice specialist with the American Association of Critical Care Nurses in Aliso Viejo, CA. "Most managers already possess these abilities. But they're going to have to really hone these skills to meet the changing environment."

### ***People skills will be paramount***

Topping the skills list and ultimately affecting all others will be the manager's ability to work with people — the nursing staff, physicians, administrators, and third-party payers. Indeed, everyone interviewed by *Critical Care Management* for this report spoke about people skills as an absolute requirement.

"I call these ambassador skills," says Medina. "It's the ability to communicate effectively, to deal with adversity, to make people feel like they are important and a part of the solution [to problems]."

"The head nurse of the future will have to be a true caretaker of the ICU. Someone who has the keen ability to work with people and their differences," says **Debra Byram**, RN, MSN, a nurse consultant in acute and critical care with the National Institutes of Health in Bethesda, MD.

Supplementing the menu of new millennium skills, the manager of the future also will have to:

- **Understand and work with complex information systems.** "The ability to study, analyze, and interpret patient data and work with ease in a technology-oriented environment will be a must for the future nurse manager, according to **Tom Rainey**, MD, an intensivist and president of CriticalMed, a hospital consulting firm in Bethesda.

"It's not just the data but the information process itself that will make demands on managers' attention," Rainey says. Virtually everything known about patients from their acuity level to the cost of their care is translated into digital language and stored in information systems, which in turn make the ICU a small but integral part of a much larger complex of a data-dependent health care delivery system.

Furthermore, new information regarding patient classifications, severity of illnesses, and quality-of-care benchmarks are filtering into hospitals daily in digital form. Managers who don't understand the Web and other technologies will not keep pace, Rainey adds.

- **Adapt quickly to an expanding universe.** The traditional ICU's walls are breaking down, and critical care medicine is moving rapidly into new and uncharted territory. Patients are being

discharged from the ICU directly into intensive home care programs under supervision of licensed critical care nurses.

The shift to home care is still isolated but already shows signs of becoming a trend in neonatology. Payers and patients' families have a common interest in getting babies home as quickly as possible where they are likely to do better, says **Frances Strodbeck**, RNC, DNS, co-director of the neonatal nurse practitioner program at the University of Cincinnati School of Nursing.

The ICU manager will have to learn the landscape and adapt quickly to its demands, says Strodbeck, who also serves as president of the 12,000-member National Association of Neonatal Nurses in Des Plaines, IL.

- **Respond to an aging work force.** A critical task for the manager of the future will be the ability to effectively address the severe nurse shortage in critical care, according to some experts. "We have yet to see the full effect of this crisis," Medina says.

Staff development, recruitment, and retention are likely to become the biggest challenges in nursing in the new millennium, says Byram. Mentoring young nurses and cultivating new nursing school talent will become priorities. The present median age of nurses in critical care and certain other specialties is 45. New nurses are reluctant to go into intensive care, and nursing staff turnover at hospitals in large cities and rural areas alike has defied efforts to reverse a growing shortage.

The aging factor will raise concerns about productivity, nurse-patient ratios, declining skill levels, and potential on-the-job injuries. The new nurse manager "will have to pay attention to the ergonomics of the ICU and create a stable, receptive work environment where nurses will feel needed and supported," Byram notes. The nurse of the future will have to manage not only people but their working environment as well.

- **Participate in evidence-based research.** Encouraging nurses to incorporate evidence-based research into clinical practice is already occurring in some ICUs but will accelerate as clinicians continue to face concerns from payers for better, faster patient outcomes. Advanced practice nurses, nurse educators, and clinical specialists are playing important roles in knowledge transfer, says Byram. Savvy nurse managers can help facilitate those advancements by encouraging best practices and prioritizing new learning among staff.

- **Identify and promote similar incentives.** The ability to work with colleagues outside the ICU is likely to become more important as step-down and intermediate care units flourish and patient lengths of stay are trimmed, Rainey says. The nursing world is increasingly becoming a place where managers have to negotiate and align their incentives with others to get things done, he adds.

Getting patients admitted or transferred in a timely manner should proceed like clockwork, but doesn't because of misaligned incentives. Everyone is working with separate agendas, Rainey says. Effective managers must build positive relationships with colleagues. That means working outside of the ICU's narrow box. "The system is built for smooth patient flow, but there are dozens of times in a day when vested interests create traffic jams. The manager of the future will have to know how to sail these waters," he concludes.

### *Manage environments, not just people*

- **Manage shifting environments and growing responsibilities.** Downsizing and integration are the two biggest operational challenges that will affect ICU nurses in the next decade. The effective manager will have to be a quick study and learn to adapt to sudden drops in allocated beds and census and sharp increases in job responsibility, says **Kathleen Taylor**, RN, MSN, CCRN, ICU clinical manager at 200-bed Liberty Hospital near Kansas City, MO.

Nurse managers are already seeing their responsibilities double and triple as medical, surgical, and pediatric acute care departments once considered completely outside the ICU's purview fall under a single critical care management wing. The cost-saving objectives of the trend coincide with efforts to reduce occupancy and save dollars by shrinking the size of ICUs whenever possible, Taylor says.

- **Master financial concerns.** A decade or so ago, when Taylor became an ICU manager, financial management wasn't a head nurse's job. Today without some financial skills, an ICU nursing director will not last long. The ability to create practical, effective budgets that control costs has become an imperative for nursing management, says Taylor.

Ever since health care took on the qualities of a business, nurses and physicians have been thrown into the dual roles of caregivers and entrepreneurs. But the trend has been positive for nursing, Taylor says. More and more nurses have earned advanced

business degrees, which in turn have given nurses greater voice and influence in corporate decision-making, which bodes well for nursing's future, Taylor says.

- **Provide leadership in a growing partnership environment.** According to veteran critical care nurse **Bonnie Wesorick**, RN, MSN, the workplace of the future for nurses will be one in which the team will prevail over the individual. In that setting, nurse managers won't be authority figures as much as lead partners with other professionals such as therapists and social workers.

And they won't be subordinates clinically to physicians as much as true colleagues in a collaborative relationship, says Wesorick, president of The CPM Resource Center in Grand Rapids, MI, an organization that advises providers on staff development issues.

The emergence of advanced practice nurses already has revealed a trend in which nurses will be relied on for more than bedside management. Their special skills and opinions will be valued in a multidisciplinary team environment. The nurse manager will be one of several important players, Wesorick says. He or she will have to rethink the traditional manager's role from authority figure to role model, or a "senior partner" on the clinical team, Wesorick says.

- **Create new work cultures for the next generation.** Currently an embattled group, nurse managers are exhausted by top-down demands placed on them as individuals. But they will not have to go it alone in the new team matrix, says Wesorick. The team model will give managers an opportunity to create healthy working relationships with peers, as accountability for efficiency and patient care becomes the team's responsibility not just the manager's alone.

The ICU itself is fast becoming part of a larger integrated organization of diverse clinical specialties. "The whole mindset of separate hospital departments will be gone," Wesorick says. "Managers won't be unit-focused anymore, but true systems-thinking people."

As gatekeepers of an integrated ICU model, managers will play an important role in maintaining a culture based on teamwork to attract a supply of new nursing talent from schools and mold the graduates into professional critical care specialists, Wesorick predicts.

"Nurses are going to be leading the next big movement in health care because the patient-care process has always begun with the nurse," Wesorick says. ■

# Denver hospital reduces sedation drug costs by 80%

*Drug choices, dosing rules boost effectiveness*

Effective management of sedation agents in the ICU makes good medical sense. But ICU managers also face keen cost-control pressures. That's why the news that a Colorado hospital's ICU staff got not long ago came as a welcome surprise.

Clinicians at Centura-St. Anthony Central Hospital in Denver were stunned by the discovery that their sedation drug costs in the medical ICU had dropped by 80% without any adverse reaction in patients.

According to a report issued last year, the critical care team at the 498-bed hospital began in the spring of 1996 to streamline the use of an arsenal of analgesics and benzodiazepines commonly used to sedate ventilator-dependent and other critically ill patients.

The goal was to study the optimum effectiveness of an array of drugs most favored by physicians in hopes of narrowing the list to the most effective ones.

"We wanted to standardize their use to get an accurate measure of how well they worked on patients. It's hard to know which medications are most effective when there are so many different regimens in use," says **Joseph Heit**, MD, director of the medical ICU at Centura.

The study's objective wasn't cost savings but better patient outcomes. But the unexpected 80%

drop in costs per patient per day over a 12-month period couldn't be overlooked. "It came as something of a surprise," Heit concludes.

Following the introduction of the unit's new sedation protocol, the average sedation cost per patient/per day dropped to as low as \$6.23 from an average of \$49 per day. The average amount fell to \$9.80, according to figures reported by the hospital.

## **Formularies limit drug choices**

In critical care, setting up an effective sedation protocol can be elusive. Although the choices of drugs are relatively limited to hypnotic propofols and benzodiazepines, the variety of individual sedatives that fall into these two categories and their dosages on patients can vary broadly from patient to patient.

Individual clinicians tend to order sedation agents on the basis of what works best in their opinion, says Heit. And nurses use their own interpretation of pain and anxiety when adjusting dosages. The dosage can vary substantially depending on the patient's condition at a given time and the attending nurse's own perceptions of pain and discomfort.

Consequently, the wide variability in dosing and the specific sedation agents used make managing sedation in the ICU difficult, says researcher **Anne Pohlman**, RN, MSN, CCRN, a clinical nurse specialist in the adult ICU at the University of Chicago Hospitals. "There is no perfect drug."

But that shouldn't deter nurses, adds Pohlman, who spoke at last month's National Teaching Institute meeting in New Orleans, sponsored by the American Association of Critical Care Nurses.

In reality, many of the decisions regarding drug choice and cost already have been made by the hospital in the form of drug formularies, which indirectly dictate which drugs are approved for use.

In most cases, these will be the cheaper, more generic drugs that also may be shorter lasting. For this reason, ICU managers and physicians need to be keenly aware of the myriad effects these hospital drug-buying decisions will ultimately have on patient outcomes, lengths of stay, and the ICU's cost structure. "It's not enough to say that the cheaper drug will be less effective. Nurses need to work with what they have and reassess each patient continuously," Pohlman advises. "A cheaper, shorter-lasting titratable drug may work

## EXECUTIVE SUMMARY

Setting up an effective sedation protocol can be tricky and elusive. Variability in drug choices and dosing regimens defies most managers' ability to achieve uniform, measurable outcomes and cost controls. But a Colorado hospital managed to achieve both by:

- working with the clinical staff in narrowing a list of sedation agents down to two;
- adopting concrete guidelines for dosing patients using an agreed-upon pain rating scale;
- allowing physicians sufficient freedom to diverge from the protocols but reporting each instance;
- agreeing to the selected drugs on the basis of effectiveness but also acknowledging their lower cost.

out fine for some patients, but may be driving up your costs with others."

Studies have shown that certain sedation agents can prolong the dependence of some patients on mechanical ventilators and defeat weaning strategies.

One such study found that a group of patients on mechanical ventilation who received continuous intravenous sedation stayed on the vent at least 30% longer in a two-week period than patients who were not on continuous IV sedation.<sup>1</sup>

### ***IV sedation tends to prolong vent dependence***

These same IV-sedated patients, according to the study, also "had significantly longer lengths of intensive care and hospitalization, more acquired organ system derangements, and greater incidence of reintubation."

Motivated by similar concerns, Centura clinicians decided to evaluate their existing sedation practices, says Heit. The hospital's effort actually was part of a broader set of goals that included: 1) getting more consistency in the timing and delivery of ancillary services such as X-rays and enteral feeding to ICU patients; 2) improving the management of common conditions such as diabetic ketoacidosis in the ICU; and 3) building a multidisciplinary team to do patient rounds.

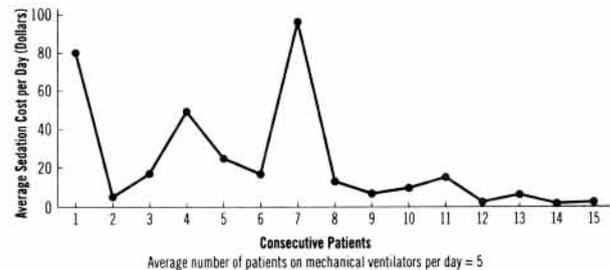
The ICU staff looked at the types of drugs most often used at the hospital for sedating critically ill patients. This list included Haldol, Paradol, Verced, and Deprivan. After several discussions with attending physicians and bedside nurses, the investigators decided to narrow the list to two drugs: Fentanyl and Valium. A concurrent search of the medical literature supported their selection, Heit says.

Heit acknowledged that some clinicians doubted the choice of Valium because it tended to keep patients asleep longer than other drugs, and this would make ventilator weaning all the more difficult. But the team chose Valium based on research findings, Heit recalls, which indicated that Valium worked faster than another highly favored drug, Verced.

Fortunately, the drug-screening process was helped by the amount of information available in the literature on the benzodiazepine class of drugs, especially regarding the drugs' half-life and their effect on patients with multi-organ system failure. The research team didn't account for differences in effectiveness between titratable sedation and those administered by nurses as needed.

## **Sedation for Patients on Mechanical Ventilators: Average Cost per Patient Day**

*Centura-St. Anthony Central Hospital*



Source: Institute for Healthcare Improvement, Boston.

The search helped in narrowing the choices down to Fentanyl based on two key traits: the ability of the staff to control the duration of the drug's effectiveness and its relative low cost.

However, the research team didn't impose any strictures on individual physicians or nurses. Clinicians were allowed to use whichever medication they considered best. "We were not trying to assert that any one drug was better than another. Physicians were free to make their own choices," Heit says.

But clinicians who chose to use drugs other than Fentanyl or Valium had to report the fact to the clinical team for documentation.

The team documented the use of the two drugs each day for several weeks to determine the effects of standardization. To further close the variability gap, the staff agreed to use a modified Ramsey pain-rating scale, a standard tool that attempts to quantify pain levels in patients by assigning numerical score pain indicators based on physical parameters such as facial expressions, vital signs, and motor responses.

Unlike other standard rating tools, the Ramsay scale was useful, Heit says, because it was sufficiently sensitive to account for critically ill patients' multiple-organ dysfunction and nurses' breadth of pain interpretation.

As a rule, many nurses tended to over-medicate patients for pain, and although the rating scale didn't provide absolute uniformity in dosage volumes or occurrences, it helped to significantly narrow the margin in which patients were medicated and when, Heit adds.

After tracking results of these changes, Heit and his team discovered that the pace of ventilator

weaning for some patients improved and patient complaints of pain (reported retrospectively through interviews with family members and satisfaction questionnaires) had dropped significantly.

The rates of change in both categories were difficult to quantify exactly because additional vent-weaning strategies were simultaneously being used with the sedation protocol. They included shorter intervals of nurse-patient monitoring and specific changes in nutritional support.

But the patient satisfaction questionnaires indicated that patients' episodes of pain were being effectively addressed up to 98% of the time. Prior to the sedation protocol, patients reported their pain episodes were controlled only about 70% of the time, the hospital reported.

Yet, the drop in sedation cost was the most surprising outcome, Heit says. Prior to the protocol's adoption, average sedation costs were quite different per patient. (See chart on p. 77.)

The average cost was obtained by dividing the

number of patient days per month into the unit's sedation cost (per pharmacy) each month.

Closing the variability gap in dosings and drugs certainly helped. But "a significant factor that drove down these costs was the fact that the drugs ultimately selected were cheaper," Heit says. Yet, this doesn't necessarily mean other hospitals will arrive at the same results.

Managing sedation drugs remains a tricky affair, Pohlman cautions. Sedation management should always be patient-focused, not cost-based. "Are some sedation drugs more expensive than others? You'll have to factor in how well it works on your patient. That's the bottom line," Pohlman adds.

## Reference

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## CDC: Drug-resistant bugs are on the rise in ICUs

*Hospital infection control steps may need boosting*

Recent news from the front lines in the war against hospital-borne bacterial infections is not encouraging. In January, the Centers for Disease Control and Prevention (CDC) in Atlanta quietly reported a disturbing increase in antibiotic-resistant nosocomial infection rates in intensive care units.

The surveillance data hardly surprised some hospital infection control workers. They've known for years about the need for stronger infection control measures.

But the CDC data and the hospital community's response to it seemed to beg two important questions: Why aren't existing infection controls working and what can be done about it?

Some infection control experts say that effectively managing endogenous (patient-borne) and exogenous (environment-related) pathogens, the two main causes of nosocomial infections, may be more complex than faulting human error or ineffective policies. In fact, advancements in medical care may be partly responsible for the growing rates, some experts say.

The difficulty with attacking infection rates in

ICUs has coincidentally risen with the trend toward better ICU care, according to **Janet M. Serkey**, JD, RN, an infection control officer and attorney at The Cleveland Clinic Foundation in Ohio.

Medical advancements, better technology, and stronger antibiotics have improved outcomes and reduced mortality rates. Sicker patients are being kept alive longer today than in the past. The trend has saved lives but indirectly has contributed to a higher incidence of pathogen growth, Serkey says.

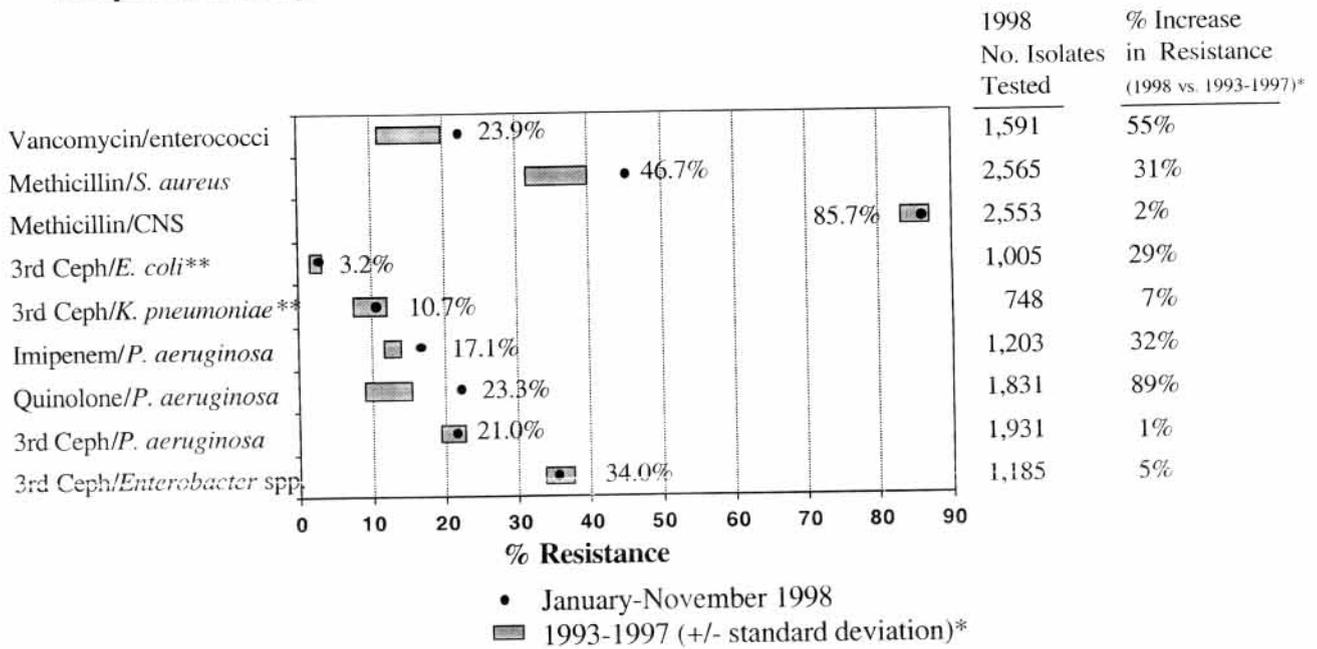
"We have bypassed the body's natural defense mechanism to fight off these pathogens" by an over-dependence on antibiotics, she explains. Antibiotics alone have contributed to the problem by effectively quashing one type of infection only to lay the foundation for another, often stronger pathogen, she adds.

As a result, "we actually end up selecting in favor of drug-resistant pathogens in the ICU," she concludes.

The subject is gaining importance because studies have shown that infections are a major determinant of both morbidity and mortality rates in critical care units (CCUs), and they prolong the length of stay in both the CCU and hospital.<sup>1</sup>

In its surveillance data, which the CDC has regularly published since the 1980s, the agency identified rates of antimicrobial resistance in a group of pathogens commonly responsible for

## Selected antimicrobial-resistant pathogens associated with nosocomial infections in intensive care unit patients, comparison of resistant rates from January-November 1998 with 1993-1997



Note: CNS=coagulase-negative staphylococci, 3rd Ceph = resistance to 3rd generation cephalosporins (either ceftriaxone, cefotaxime, or ceftazidime), quinolone=resistance to either ciprofloxacin or ofloxacin.

\* Percentage (%) increase in resistance rate of current year (January-November 1998) compared to mean rate of resistance over previous 5 years (1993 through 1997):  $[(1998 \text{ rate} - \text{previous 5 year mean rate}) / \text{previous 5 year mean rate}] * 100$ .

\*\* "Resistance" for *E. coli* or *K. pneumoniae* is actually the rate of non-susceptibility of these organisms to the 3rd Ceph group.

Description of methods and results for new antimicrobial resistance surveillance report -NNIS.

This new surveillance report summarizes the rates of antimicrobial resistance among pathogens identified from ICU patients with nosocomial infections. The chart summarizes several important points for the more common pathogens reported to NNIS. First, we provide the pooled mean rate of resistance for January-November 1998. Second, we graph this rate next to the average rate of resistance ( $\pm 1$  standard deviation) over the previous 5 years, for each pathogen. Finally, we calculate the percentage increase in the resistance rate in 1998 compared to the previous 5 years. These data display the concerning and continuing increase in antimicrobial resistance in U.S. hospitals. However, these data are not risk-adjusted and comparisons of these rates between hospitals should be made with caution.

Source: Centers for Disease Control and Prevention, Atlanta.

nosocomial infections in ICU patients.

The rate of resistance showed an alarming rise in an 11-month period between January and November 1998 when compared with the average rate over the previous five-year period (1993-1997).

The highest percentage rates of increase involved quinolon-resistant *P. aeruginosa* (89%), vancomycin-resistant enterococci (55%), and methicillin-resistant *S. aureus* (31%).

The pathogens were selected for study because of their known public health risk and link to nosocomial infections in ICUs, according to the CDC data. (The above chart shows the growth rate for the whole pathogen group.)

The surveillance is just one of several initiatives

under way by the agency to determine the prevalence of uncontrolled infection rates within health care facilities, according to **Scott Fridkin, MD**, medical epidemiologist with the CDC's National Nosocomial Infections Surveillance (NNIS) system.

In a separate report, the agency singled out vancomycin-resistant enterococci (VRE) as one of the most difficult pathogens to eradicate. The difficulty of identifying the epidemiology of VRE is one of the problems associated with its eradication.<sup>2</sup>

The CDC report suggested that patient-to-patient contact and inconsistent hospital infection control policies may be contributing factors. VRE has also shown to be resistant to drugs such as aminoglycosides and ampicillin,

normally used to treat the infection.

In its report, the CDC recommended hospitals carefully and regularly screen ICU patients for the presence of VRE. Additional recommendations included:

- determining when vancomycin use is appropriate, for example, when specific infection-related conditions such as colitis don't respond to conventional therapy and become life-threatening;
- regular monitoring of vancomycin use through the hospital's quality assurance and improvement process;
- better screening methods involving regular testing for the pathogen in urine, wounds, clinical specimens, stool, and rectal swabs (The pathogen is found in the normal gastrointestinal and female genital tracts.);
- isolating infected patients;
- careful disposal of potentially contaminated supplies such as gloves, patient gowns, and fibrous materials.

For nursing staff, constant monitoring for drug-resistant infection growth and faithful adherence to hospital control policies are paramount to managing the problem, according to the CDC. Major endogenous indicators, or priorities, first identified in the 1980s by the Joint Commission on Accreditation of Health Care Organizations, are still relevant, according to most researchers.

They include indicators for: 1) surgical wound infections; 2) post-operative pneumonia; 3) urinary catheter usage; 4) ventilator-associated pneumonia; 5) concurrent surveillance of primary bloodstream infections; and 6) medical record abstraction for the retrospective determination of primary bloodstream infections.

But nurses should remember that external passage from health care workers or contaminated line catheters to the patient is a constant threat, Serkey says. Simple hand washing regimens and frequent changes in resuscitation bags and ventilator circuits are effective precautions that nurses should be reminded about, says **Frederick J. Tasota**, RN, MSN, a clinical instructor at the University of Pittsburgh (PA) School of Nursing. "A lot of it involves simple, direct precautions," he notes.

So why are these steps so often missed? They're not intentionally, says Serkey. But ICUs are busy places. Then, "the major thrust in health care today is in managing resources. Infection control tends to be a resource consumer. These things cost money," she observes.

But no one is indicating that hospitals are lax in their efforts. Fridkin cautioned that the NNIS

data isn't suggesting that current hospital infection control measures aren't working. "What it does say is that in this patient population — the ICU patient — the problem of resistance is continuing despite some warnings and revised recommendations," he told *Critical Care Management*.

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2. Centers for Disease Control and Prevention. *Recommendations for Preventing the Spread of Vancomycin Resistance — Recommendations of the Hospital Infection Control Practices Advisory Committee*. Atlanta; 1998.

(Editor's note: For the full text of the CDC report, go to the agency's Web site at: [www.cdc.gov](http://www.cdc.gov). Click on: About CDC, then National Center for Infectious Diseases, then Hospital Infections. Click on either Antimicrobial Resistance or Surveillance links.) ■

## Nurses conquer opposition to ICU non-professionals

### *Hospital uses competency-based training on staff*

According to estimates, about 10% or more of an RN's typical duties in an ICU involve performing chores that are deemed extraneous to direct patient care. Well-trained, well-paid critical care nurses typically devote an aggregate of one full hour of a 10-hour day involved in bathing, feeding, and turning patients or helping them to get out of bed, according to most nurses.

Although important, no one would argue that these tasks could not be performed as easily by a nurse's aide or someone else. That's what officials at the University of Michigan Health System (UMHS) in Ann Arbor concluded in a successful nurse support training program that began several years ago and is still in use today.

The nurse productivity issue at UMHS didn't spring from a perceived shortage of ICU nurses. The 872-bed hospital was under pressure to find places in its operations to trim costs, recalls **Michael Williams**, RN, MSN, CCRN, formerly a clinical nurse specialist in the thoracic ICU and currently an assistant professor of nursing at Eastern Michigan University in Ann Arbor.

The idea administrators formed was to hire a corps of non-nursing workers, train them to be

nursing technicians, and assign them to the unit to bolster the regular nursing staff's effectiveness by assuming responsibilities for routine patient-care duties that were eating up valuable nursing time and dollars. "This wasn't an option but a mandate," Williams recalls.

### ***Nurses resisted additions to staff***

The idea seemed well received in other departments. In the ICUs, the plan involved hiring a number of assistive personnel to reflect about 10% of the regular nursing staff on any given shift. (The actual number varied due to different staffing requirements in each ICU and on various shifts.)

But strangely, the nursing staff at the medical center's 20-bed thoracic and coronary care ICU didn't take to the idea even though it meant hiring only one or two individuals and they were likely to do less work under the plan. "Overcoming initial resistance wasn't easy," Williams adds.

General skepticism, turf guarding, and difficulty with accepting change may have collectively played a role in the nurses' reactions, says **Janet Watts**, RN, MSA, nurse manager of both ICUs.

Faced with an irreversible mandate, how unit managers and nurse educators solved the problem and rolled out an effective training program for assistive personnel offers a practical lesson in organizational change for managers facing similar challenges.

Initially, the attitude of nurses to the plan threatened its success, Williams recalls. The notion of hiring untrained non-professionals to work with patients seemed ill-advised largely because many of the ICU nurses had not been exposed to primary care, where the presence of non-professional assistive personnel is quite common, Watts says.

Fortunately, the practice was familiar to Watts and **Cindy Donaldson**, RN, CCRN, the nurse educator who helped launch the effort in the ICU.

The simple solution was to get the nurses to buy into the program at each phase by giving them a crucial role to play in it, Williams says. Here's the way the program rolled out and the role nurses played. Nurses were:

- **given the opportunity to help design the educational curriculum.** (The unit staff chose the term education over training.) During meetings, the nurse educators consulted with the nursing staff on the specific duties that would be assigned to the technicians and how they would be trained during the course of their education.

- **empowered to determine the specific tasks**

**they wanted to delegate.** These tasks included the ones cited above but also included doing routine venipunctures and arterial line blood draws (under supervision). The department submitted the list to the hospital's personnel department, which suggested the nursing ICU technician title as a job classification.

Managers used the list along with the American Nurses Association guidelines, "Questions and Answers for RNs Working with Unlicensed Assistive Personnel" to develop a list of competencies for the technicians working in the units.

- **authorized to retain responsibility for competency checking in collaboration with a nurse educator.** The competency training presented considerable challenges, says Watts. Hired applicants came from a variety of backgrounds. They included clerks, paramedics, and persons with no health care background at all.

One of the challenges involving candidates with previous health care experience included teaching them what do on the job, but also what not to do, Watts recalls. Nurses had to manage individuals who were bringing more to the job than necessary, and the problem resulted in some turnover among candidates.

- **sought out for feedback about individual performance throughout the course of training.** The nurses represented the best source of feedback but for more than one reason. In developing performance standards, nurse educators drew up a skills checklist, which incorporated standards from the hospital's own registered nurses skills checklist. The units also developed a critical behavior for competencies list to assess achievement.

The unit also developed multiple-skills checklists, that the nurses had to complete, to verify a broad range of technician competencies.

"Not surprisingly, using designated RN preceptors for each ICU technician proved very effective," according to a later report about the education program.<sup>1</sup>

- **included in determining when each technician is ready for advancement to a higher level of responsibility through individual endorsements and proven performance ability.** Although staff nurses still teach some content, the nurse educators oversee most of the technicians' attainments through lectures, bedside practice, demonstrations, and assigned readings. In addition, seasoned technicians have taken over much of the daily bedside instruction from nurses. But staff nurses are still queried about their opinions and play a key role in continuous

evaluation of the program, says Watts.

Yet, despite such achievements, the program isn't failsafe. And it is definitely not the final solution to a nursing shortage, adds Watts.

For one, employee turnover is relatively high due to the relative low pay the technicians receive in general and compared to other hospital professionals. The starting wage rate for the ICU nursing technician is \$8.98 an hour, Watts says.

But the effort shows promise nonetheless, Watts adds. "Originally, we didn't have a choice in doing this, but it's worked out pretty well," she concludes.

## Reference

1. Williams ML, Donaldson C, Watts J. Educate ICU assistive personnel. *Nurs Manage* 1998; 29:32B-32H. ■

# ICU uses BKAT spinoff to test its pediatric nurses

Nurses in the pediatric ICU at Pennsylvania State University Geisinger Children's Hospital in Hershey have been successfully using a basic knowledge assessment tool that is believed to be the first devised to specifically assess nursing skills in pediatric critical care.

What began as a research study into developing criteria for a test similar to the widely used adult Basic Knowledge Assessment Tool (BKAT) has led to a standard BKAT in pediatric ICU nursing.

The hospital uses the PEDS-BKAT to test all nurses, including recent graduates and those completing the hospital's two-year internships in critical care, according to **Jody Stabinski, RN, CCRN**, acting nurse manager for the seven-bed pediatric ICU. "Everyone takes the test every two years," she notes.

In 1992, Penn State nurse educators looked at the possibility of developing a BKAT in pediatrics after determining that the adult BKAT fell short of covering necessary pediatric skills. The PEDS-BKAT is

a 100-item written test that contains questions in three major content areas, according to Stabinski: 1) patho-physiology; 2) disease processes; and 3) technical components of pediatric ICU care.

Individual questions fall into eight categories of body systems disorders, including cardiovascular, pulmonary, neurology, renal, and parental. Many of the questions either were adopted or modified from the standard adult BKAT Version 4.

A nine-member educational task force at the hospital composed of ICU RNs validated the test's content for accuracy and relevance to the pediatric ICU.<sup>1</sup> The hospital has been using the test to evaluate nurses since 1995.

To achieve a passing grade, nurses must get at least 85% of the answers on the test correct. The written test is composed of a series of multiple-choice and true-false questions. Typical test questions include:

- An early sign of decreased cardiac output in infants and children is:
  - 1) Hypotension
  - 2) Decreased level of consciousness
  - 3) Tachycardia
  - 4) Cyanosis
- Your patient is on a ventilator. The low-volume alarm sounds. This may be due to:
  - 1) Pulmonary edema
  - 2) Decreased secretions
  - 3) A disconnected tube
  - 4) Biting the tube

"The test is helpful because it pinpoints problems involving where a nurse's skills are lacking. Once we've determined these deficiencies, we can work with a nurse individually on improving knowledge areas," Stabinski says.

Nurses who score below 85% on the test are assigned for help to a nurse educator and are required to take on-the-job training before being allowed to retake the exam.

## Reference

1. Runton NG, Toth JC. Introducing the basic knowledge assessment tool for pediatric critical care nursing (PEDS-BKAT). *Crit Care Nurs* 1998; 18:67-72. ■

## COMING IN FUTURE MONTHS

■ New interventions to stem the growing tide of nurse burnout

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# Patient-centered care may be noisy ride to recovery

While more and more technology is being brought to the patient's bedside in critical care, some clinicians are concerned about the unintentional negative effects that patient-centered care may be having on the ability of patients to improve.

The growing trend of bringing diagnostic resources such as pathology testing and imaging to the bedside rather than taking the patient to them has significantly reduced the amount of patient stress. But the benefits can bring with them the harmful potential of increased noise levels, according to researchers at the pulmonary, sleep, and critical care division of Rhode Island Hospital in Providence.

## Noise may interrupt sleep patterns

Researchers worry that noise associated with bedside monitoring and testing may be interfering with normal and necessary patterns of restful sleep for patients. "One of the consequences of this noise pollution is sleep deprivation and fragmentation," observes **Carol C. Carlisle, RN, AB, a**

critical care nurse at Rhode Island Hospital, who helped track the problem in her ICU.

Noise coming from monitoring and intubation equipment may be unavoidable, but a great deal of avoidable noise is disturbing the peace in ICUs too, according to Carlisle and her team. It's this additional preventable noise that bothers the research team.

## ICU noise levels exceed federal standards

After studying the source of avoidable ICU noise such as telephones, radios, and human speech, Carlisle and her colleagues suggested physical and behavior changes for clinicians such as more private patient rooms, smaller televisions, pillow speakers, and designated conference areas away from patients as helpful options.

The team also recommended thorough staff training, a constant awareness of efforts to reduce avoidable noise, and adherence to a strict unit noise abatement policy.

The noise levels associated with a typical ICU are generally quite high, according to conclusions drawn in a study conducted at Rhode Island Hospital.<sup>1</sup> The study found that noise levels in the 750-bed hospital's respiratory and medical ICUs dramatically exceeded guidelines set by the federal Environmental Protection Agency (EPA) in Washington, DC.

The EPA recommendation for hospitals falls at or below 45 dBA during the day and 35 dBA at night. A dBA is a unit of sound defined as an A-weighted decibel. The Rhode Island Hospital study found that peak noise levels in its ICUs were greater than 80 dBA most times.

Researchers also found a strong correlation between the existing noise levels and incidence of sleeping disturbance among patients. They identified 12 individual noises that contributed to the high peak sound levels. The mean peak sound level for these noises ranged from 74.8 dBA to 84.6 dBA. **(The chart, left, shows the 13 identified noises.)**

### Leading Causes of ICU Noise at Rhode Island Hospital

Noise	Percent of time*	Mean peak sound dBA
Air conditioner	2.0	74.8 +/- 1.2
IV alarm	0.9	77.3 +/- 2.0
Ventilator	8.0	78.0 +/- 1.1
Monitor alarm	20.0	79.0 +/- 0.7
Television	23.0	79.1 +/- 0.5
Ventilator alarm	5.0	79.7 +/- 1.3
Telephone	0.8	79.9 +/- 2.5
Nebulizer	0.6	80.6 +/- 0.6
Oximeter alarm	5.0	81.1 +/- 1.6
Intercom	0.5	83.7 +/- 2.1
Miscellaneous	7.0	84.0 +/- 1.1
Beeper	0.9	84.3 +/- 5.5
Talking	26.0	84.6 +/- 0.7

\*Percent of total observation time of 160 minutes

Source: Kahn DM, Cook TE, Carlisle CC. Identification and modification of environmental noise in an ICU setting. *Chest* 1998; 114:535-540.

## Reference

1. Kahn DM, Cook TE, Carlisle CC. Identification and modification of environmental noise in an ICU setting. *Chest* 1998; 114:535-540. ■

# ICU research grant, award available to nurses

The Society of Critical Care Medicine (SCCM) is offering a grant of up to \$15,000 to help fund critical care nursing research. SCCM, which represents mostly physicians but also has nurse members, is offering the funding through its Norma J. Shoemaker Critical Care Nursing Research Grant.

Named after SCCM's founding executive director, the one-year grant is designed to help support research studies into effective nursing strategies in an area of critical care medicine. Applicants must be members of SCCM in good standing for at least two years and must have attended at least one SCCM Educational and Scientific Symposium within the last three years.

Research submitted for funding consideration must demonstrate a multidisciplinary approach to the study of critical care medicine, according to SCCM, which is based in Anaheim, CA. The grant will be awarded through a competitive process.

Each year, the group also selects a recipient for its Norma J. Shoemaker Award for Critical Care Nursing Excellence to a member "who demonstrates excellence in clinical practice, education, or administration." The award includes a \$1,000 prize plus registration, air fare, and hotel expenses to attend an SCCM symposium. Grant and award applications must be received by Sept. 1, 1999. For application information, contact Kim Cantrell, SCCM, 8101 E. Kaiser Blvd., Suite 300, Anaheim, CA 92808-2259. Telephone: (714) 282-6047; Fax: (714) 282-6050. E-mail: kimberly@sccm.org. ■

## 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. ■

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