LISBON — Tuberculosis experts now generally agree that the number-one priority for improving TB therapy is to shorten and simplify the regimen for active disease, Dr. Ann Ginsberg said at the 12th International Congress on Infectious Diseases. "This will have the greatest impact on the epidemic as compared to trying specifically to improve treatment of MDR [multidrug-resistant] TB and of TB/HIV-infected patients," she said.

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Asthma Attacks • from page 1

Goal: Shrink Treatment to 2 Weeks

TB Regimen • from page 1

LABAs Linked to Adverse Effects

News from the College • 6

Critical Care Commentary

Ventilator Recalled Due to Design Flaw

R
eprimor San Francisco Inc. has recalled the PLV Continuum ventilator (PLVCI) used to control or assist in mechanical ventilation. A design flaw can cause lead wires in the air flow and respiratory driving, stopping or arcing. Customers should not use the ventilators until they are replaced. Contact the company to arrange a replacement.

Asthma which may make sense, for patients who do not achieve good control after use of inhaled steroids before moving to combination therapy with LABAs, he said. And when long-acting β2-agonists are added, physicians should carefully monitor patients. Dr. Glassroth noted that the meta-analysis did not fully address the role of disease severity, co-interventions, and adherence in contributing to adverse events.

Dr. Susan M. Harding, FCCP, comments: Although this study is fraught with the weaknesses of a meta-analysis, we need to examine the potential risks of prescribing long-acting β2-agonists (LABAs) for our individual asthmatics. It’s time to perform translational research on this topic on a wide-scale basis. Specific polymorphisms within the β2-adrenergic receptor gene can impact airway responses to β2-agonists. Individuals homozygous for the arg1 allele genotype at the 16th amino acid position have deficits in airflow and worsening asthma control while taking β2-agonists. This arg1 allele genotype occurs in approximately 16% of the U.S. population and is even more prevalent in certain ethnic groups, including African Americans. Until more information is available from translational research, I am headed for the FDA’s black box warning label, especially in the African American patients.

Treatment of TB patients coinfected with HIV—a large and growing population— is essentially the same, with the added complication that rifampicin interacts adversely with key antiretroviral agents. The near-term goal of the Global Alliance and other groups is to replace the conventional process, a regimen with rifampicin, which was sponsored by the International Committee for Drug Development. However, at least a half-dozen are in clinical trials, including gatifloxacin, now in phase III trials, and moxifloxacin, slated to begin phase III trials within several months. Both fluoroquinolones have pharmacokinetics amenable to weekly dosing, as does rifapentine, a long-acting rifamycin developed in the 1990s.

Animal studies suggest a shorter, simpler regimen of once-weekly therapy is probably achievable with some drugs now in development, perhaps used in combination with some current drugs. However, all of the current once-weekly drugs have suboptimal profiles, and none may wind up in a new optimized regimen, according to Dr. Ginsberg. Developing a truly novel TB drug regimen in a timely fashion will require new guidelines from the Food and Drug Administration and other regulatory agencies. The conventional development process evaluates one new drug at a time, substituting it in studies for one of the agents in the current regimen. With the conventional process, a regimen with multiple new drugs could take 30 years to gain approval. “Given the urgency of the global TB epidemic, this is not acceptable,” she said.

The Global Alliance has supported an alternative pathway to clinical development, one in which whole new regimens would be tested against the standard combination. In this way, a more efficacious optimized regimen could be established in a 6-year clinical development period if all goes smoothly, Dr. Ginsberg said. Dr. Aymarah M. Robles, FCCP, comments: Rapid diagnostic tests for TB are crucial if a diet is going to be made in the current TB pandemic now coexisting in the globe. Effective shorter courses of therapy is a crucial component in winning the global TB war. Here are the basics of rifampicins (Rifampin (RIF) is a keyponent of effective antituberculous therapy. A once-weekly regimen, rifapentine (RPT), may be used in combination therapy in HIV-negative patients without cytotoxic disease. Squibb must be drug-susceptible and smear negative at completion of initial 2-month therapy phase. Rifampicin as a substitute for Rif is reserved for patients on medications that interact adversely with Rif. Warnings regarding rifampicin-induced (Taquin) hepatitis in patients with severe disease and jaundice, and canalicular gastric ulcerations, as well as contraindications for patients with liver disease, were instituted in the spring of 2006. Subsequently in May, Bristol Myers Squib announced the removal of rifampicin from the market and the return of drug rights to Kyorin Pharmaceutical Company in Japan. This makes a list of new antimicrobial messages even shorter.

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American College of Physicians

EMERGENT SOCIETY NEWS GROUP

AUGUST 2006

E-mail: chestphysician@news@chest.org

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News from the College • 6

Critical Care Commentary

Ventilator Recalled Due to Design Flaw

R eprimor San Francisco Inc. has recalled the PLV Continuum ventilator (PLVCI) used to control or assist in mechanical ventilation. A design flaw can cause lead wires in the air flow and respiratory driving, stopping or arcing. Customers should not use the ventilators until they are replaced. Contact the company to arrange a replacement.

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Spacers Win by a Nose for Acute Asthma in Children

BY SHARON WORCESTER
Elsevier Global Medical News

Spacers appear to have several advantages over nebulizers for the delivery of β2-agonists in children with acute asthma, according to a Cochrane review of the literature. However, the findings should be viewed with caution, according to Dr. Paul Williams, chair of the section on allergy and immunology, American Academy of Pediatrics.

The updated review includes four new trials conducted in emergency department and community settings and findings from six trials of inpatients with acute asthma. Data on 2,279 children and 642 adults enrolled in a total of 33 trials show that length of stay in the emergency department was significantly shorter in children (but not in adults) who used a spacer, compared with those who used a nebulizer (mean difference of −0.47 hours). Pulse rate also was lower in children who used a spacer (mean difference, 7.6% of baseline), Dr. Christopher J. Cates of St. George’s University of London and colleagues reported (Cochrane Database Syst. Rev. 2006[2]:CD000052).

There did not appear to be any difference in admission rates in children treated with spacers vs. nebulizers (relative risk 0.65). The findings show that spacers are less expensive in the community setting and do not require a power source, the investigators noted. However, Dr. Cates and his associates also pointed out some limitations of the studies.

Overall, this review supports the equivalence of wet nebuliser and MDI [metered-dose inhaler] with spacer administration of β2-agonists in the treatment of acute asthma, when treatments are repeated and titrated to the response of the patient. This review also suggests that pediatric patients given β2-agonists by spacer and MDI may have shorter stays in the ED, less hypoxia, and lower pulse rates, compared to patients receiving the same β2-agonist via wet nebulisation," they wrote.

But, they added, the findings are limited by a relative lack of studies in the community setting, by the exclusion of patients with life-threatening asthma exacerbations from the studies, by the fact that few authors reported specifically on numbers of patients who were excluded from each study, and by a lack of reporting of intention to treat analyses. Further, the analysis of data regarding lung function tests lacks standardized reporting in many of the studies, and standard evaluations related to the changes that were measured were sometimes not reported.

"There are several cautions that should be expressed when presenting the results," said Dr. Williams, who also is with the University of Washington, Seattle. For example, only two of the studies were conducted in a community emergency department; thus, the results may not be applicable to such settings, he said. Also, the doses of albuterol given via spacer were different among the studies. For the nebulizer, the doses are fairly well defined and accepted, but for the MDI and spacer, the doses varied from 2 puffs every 20 minutes, to 1 puff every 12 seconds, up to 12 puffs per hour.

As recommended by the authors, more studies are needed using frequent dosing titrated to patient response, Dr. Williams agreed. But of most concern, he said, is that the studies included in the review used specially trained nurses to administer the medications. "In a community setting, many, if not most, nurses and perhaps even MDs are not familiar with different spacers and techniques for using spacers," he said.

He added that he would like to see studies that look at a standardized regimen of dosing using the spacer and MDI, as well as dissemination of information on using spacers for children through a source such as the American Academy of Pediatrics online PediaLink Module (www.pedialink.org/index.cfm).
A daily fluticasone and salmeterol combination was as effective as low-dose fluticasone twice a day.

BY JANE SALODORO McNEIL
Elsevier Global Medical News

Twice-a-day inhaled corticosteroids work, but adherence is only about 30%.

BY DOUG BRUNK
Elsevier Global Medical News

Combined Scans Define Tx for Non-Small Cell Lung Cancer

Steroids Need More Study

Pneumonia - from page 1
Successful Finance and ATS Leadership Meetings

The deadline for the Presidential column is the first day of the preceding month. Somehow, despite the monthly promise to myself to start earlier next month, June 30 (today) has crept up on me. I have a fairly good excuse in that June was a very busy and productive month for the ACCP.

For example, this past weekend, I was in Northbrook to attend the Finance Committee meeting and a presidential retreat with the leadership of the American Thoracic Society (ATS). Both meetings were held at the ACCP headquarters. I mention the location as segue to invite all ACCP members to visit the building at 3300 Dundee Road at some point in their career. It’s an impressive edifice.

In regards to our finances, it is a challenging time to be in the medical society business, but, as usual, the ACCP is at the leading edge of innovation. The old saying “no money, no mission” applies to most organizations, including ours. The ACCP has a very noble vision, and expert management of those funds is crucial to success. At this point, let me thank ACCP Treasurer Dr. Jeff Vander, FCCP, and The CHEST Foundation Treasurer Dr. John Alexander, FCCP, for their hard work and attention to detail. Both work closely with Stratton Davies, Vice President of Finance, and all take their responsibilities very seriously. The proposed budget for 2007 will be presented for approval at the summer Board of Regents meeting. For the third year in a row, the leadership of the ACCP and the ATS met for a day and a half to discuss items of mutual interest.

The ACCP presidential triumvirate (Dr. Paul Kvale, FCCP; Dr. Mark Rosen, FCCP; and I), plus the President-Degreee (Dr. Alvin Thomas, Jr., FCCP), met with ATS President Dr. John Effener, FCCP, and members of their leadership succession (Dr.s Peter Wagner, David Ingbar, Jo Rae Wright, Randy Curtis). This group, along with the respective executives Al Lever and Carl Booberg, discussed a wide range of topics, including critical care medicine, sleep-disordered breathing, workforce issues, conflict of interest, relations with other international societies, among many other items. While our respective societies have unique interests (e.g., the basic science component of the ATS and the multispecialty focus of the ACCP), we have many common interests that can be advanced more effectively when we work together. By all counts, the retreat was a major success.

CHEST has reached its highest impact factor ever, rising from seventh to third place out of 33 respiratory journals. With an impact factor of 4.006 for 2005, up from 3.11 the previous year, CHEST broke the 4.0 barrier for the first time in its history. Editor in Chief, Dr. Richard S. Irwin, FCCP, comments: “We are delighted that our impact factor has risen and that we are number 2 in number of articles cited. This assures us and our contributing authors that we are on the right track to reach our short-term goal of an impact factor of 5 without sacrificing the clinical nature that has made CHEST patient-focused and clinically relevant and resulted in it having the largest circulation of all the respiratory journals.”

Impact Factor Rankings Released June 2006 for Top Five Journals

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This Month in CHEST: Editor’s Picks

BY DR. RICHARD S. IRWIN, FCCP
Editor in Chief, CHEST

- Nurse-Conducted Smoking Cessation in Patients With COPD Using Nicotine Sublingual Tablets and Behavioral Support. Dr. Philip Tennesen, et al
- Interpreting the Histopathology of Chronic Cough: A Prospective, Controlled, Comparative Study. Dr. Richard S. Irwin, FCCP, et al
- Bench Model To Simulate Upper Airway Obstruction for Analyzing Automatic CPAP Devices. Dr. Jordi Rigau, et al
- Can GOLD Stage 0 Provide Prognostic Information on Long-term Mortality in Men? Dr. Knut Stavem, et al
- Systemic Inflammation in Patients With COPD and Pulmonary Hypertension. Dr. Pavol Joppa, et al

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Section Color: Information: Screens: 

CHEST Physician • August 2006

By Dr. W. Michael Alberts, FCCP
What is a network? If you do a Google search for "networks," what will you find? Your search will hit upon hundreds of Web sites about systems of computers, terminals, and databases connected by communication lines, if you select any one of these Web sites, you might get lost in the technological jargon. Needless to say, you might feel uncomfortable or out of place.

Now, modify your search: NetWorks ACCP. You will soon be linked to www.chestnet.org/networks, where you can access information from any one of ACCP’s 26 NetWorks, and, if you are a member, you can immediately join as many NetWorks as you wish. You will become a welcome participant in a special interest group of other members who share similar expertise and concerns relative to clinical practice and community health issues. You will find your “home” within the ACCP.

The concept of NetWorks as organizational groups representing the special interests of ACCP members became a reality at the CHEST annual meeting in 2000. The vision of then ACCP President Allen Goldberg, MD, Master FCCP, and the diligent efforts of other ACCP leaders has resulted in the transition from 14 Sections in 2000 to 26 NetWorks in 2006. NetWorks were designed to provide ACCP members the opportunity to take an active role in the work of the ACCP.

As NetWorks have grown, many of their 33,000 members have become vital participants and leaders in ACCP activities. NetWorks provide the structures for information development, exchange, and dissemination. They provide pathways to raise issues and an avenue for action on local, national, and global levels.

NetWorks are the building blocks and serve as content experts for a broad spectrum of ACCP activities. Over the past 2 years, they have been working closely with the Continuing Education Committee to design the ACCP’s core curriculum. These topic domains now provide the basis for content of the annual meeting. Currently, the NetWorks are in the process of determining and refining the subtopic areas that will fall under each of these topic domains, helping to better identify gaps and redundancies in ACCP educational programs and products.

The NetWorks provide input to the annual CHEST meeting and plan more than half of the educational sessions. Each NetWork is responsible for developing its NetWork Highlights. The CHEST Scientific Program Committee includes the Council of NetWorks Chair and the Chair of each NetWork, who ensure that the interests of their NetWorks are adequately reflected in the educational content of the annual meeting. Some NetWorks have developed postgraduate courses, while others host special events, such as the Women’s Health NetWork Luncheon.

The combined forces of several NetWorks comprise the governance and expertise for the ACCP Critical Care and Sleep Institutes. The Critical Care Institute steering committee includes the Chair and Vice-Chair of the Critical Care NetWork, and the Sleep Institute includes the Chair and Vice-Chair of the Sleep Medicine NetWork on its steering committee. There has also been representation and assistance from several other NetWorks whose members have provided the needed knowledge and assistance on following page
Continued from previous page

experience for specific projects.

Each year, the NetWorks assist the CHEST Foundation in the administration of some of its awards programs. Many NetWork Chairs and/or steering committee members serve on panels to review applications and select awardees. For example, the Palliative and End-of-Life Care NetWork steering committee serves as the review committee for the Roger C. Bone Memorial Lecture Award for Advances in End-of-Life Care. The Foundation also supports a Distinguished Scholar Awards Program to provide multiyear research grants to ACCP members. Leaders from the Critical Care, Airways Disorders, and Pulmonary Vascular Disease NetWorks not only helped select the scholars but also continue to play a role in monitoring the progress of the three scholars’ projects. In addition to all of the ways that NetWorks integrate with the programs and activities described above, most of them pursue individual projects. These range from educational products for physicians in the form of consensus or policy statements, pocket guides, and brochures; to patient education guides; to speakers kits; to standalone courses. One current project is a collaborative effort of the Pediatric Chest Medicine and Home Care NetWorks to write and publish a consensus statement on respiratory support and perioperative care of patients with Duchenne muscular dystrophy who require anesthesia or sedation. In another project, the Pulmonary Vascular Disease NetWork seeks to determine the degree of training offered in the field, as well as the perceived level of training that fellows receive in this field. These two project examples illustrate how NetWorks provide a venue for ACCP members to address issues important to them in their everyday practice of medicine.

It is apparent that NetWorks contribute to almost every aspect of ACCP business. They have grown from fledgling groups to well-functioning, integrated structures. They work individually, collaborate with each other, and interact with other committees. In some cases, they have served as resources and reached out to external organizations. These joint efforts will utilize the best pool of knowledge and talent, eliminate redundancy, and conserve time and human resources.

The vision of NetWorks is for every member of the ACCP to be involved and actively participate in at least one NetWork. This may be “pie in the sky” (as visions are supposed to be), but those who do decide to have a piece of this pie will derive more value from their ACCP membership.
By Carla T. Herreras, MPH
Health and Science Policy

There has been a huge momentum in the development of scientifically sound, evidence-based clinical practice guidelines in the past decade. Because formal, structured, quality improvement and performance programs are becoming the mandate in clinical practice, physicians are relying more on evidence-based policy to assist in decision-making in order to provide the best care for patients. Patients are also becoming more evidence-savvy and can look at a multitude of resources for information on health care. To determine how evidence-based policy contributes to changes in physician practice, it is important to track the most influential ways of improving quality of care and, at the same time, maintain health-care costs.1

In 2004, the ACCP Department of Health and Science Policy developed a survey to determine the range of activities related to development and use of practice guidelines among general and subspecialty societies. The survey contained five domains of guideline processes on (1) development, (2) grading of evidence, (3) dissemination and implementation strategies, (4) review of guidelines, and (5) resource allocation for guideline programs. Forty-nine medical specialty societies in the United States and Canada were included in this survey. A total of 34 responses were received and included in the results.

The survey confirmed that the process for developing clinical practice guidelines is highly varied, as is the degree of evidence used in providing evidence-based guidelines. Although 79% of organizations indicated that they have a formal process in place to develop guidelines, approximately 19% of these processes rely on consensus-based methods for their recommendations. Half of the organizations surveyed had in place a formal review and approval process for guidelines that included peer review and approval through an oversight body, such as a board. Most organizations stated that they have a dissemination and implementation strategy in place to distribute practice guidelines; however, most of these do not go further than publication in the official journal of the organization. Only 18 organizations indicated that they submit their guidelines to the National Guidelines Clearinghouse, and very few organizations stated that they incorporated guidelines into continued medical education or other structured programs. Very few organizations had any kind of implementation process in place. Organizations that have a process use tool kits and other physician resources to encourage the use of the guidelines in decision-making practices. A few organizations indicated that they have begun incorporating guidelines into electronic medical record systems.

Grading of evidence proved to be widely varied among organizations. The ACCP has adopted a very succinct, user-friendly method of grading recommendations, which allows the benefit and harms and the quality of studies used to back the recommendations. A systematic review,2 conducted in 2000, identified over 120 grading systems in use. Our survey concluded that most grading systems are adapted from existing criteria; however, no two systems were identical. The Grading of Recommendation Assessment, Development, and Evaluation (GRADE) Working Group, a collaboration interested in addressing issues related to grading systems, has put forth a sensible and reliable system that may help narrow the variety of grading systems currently in place.3 The ACCP has based its system on the concepts of the GRADE Working Group.

The results of this survey point toward a substantial interest by medical specialty societies in developing scientifically sound, evidence-based, practice guidelines and show the variety of processes in place used to achieve these goals. The Department of Health and Science Policy continues to refine its process and adapt to changes in the environment of evidence-based medicine. We are in the process of developing a second survey to further gather information on implementation of practice guidelines, especially related to CHEST guidelines.
News from the College

Join your colleagues and friends for this exciting celebration of The CHEST Foundation’s 10th anniversary and the 2006 Humanitarian Recognition Award and Project Development Grant ceremonies.

This year’s Making a Difference Awards Dinner will again be hosted by musician and TV personality, Paul Shaffer, of The Late Show with David Letterman. The dinner will be held on Saturday, October 21, 2006, 7:00 PM–10:30 PM, at the scenic Wells Fargo Building, 23rd Floor, in downtown Salt Lake City, Utah. Bus service to and from The Grand America Hotel will be provided that evening.

As part of the 10th anniversary celebration, there will be a special reception honoring all previous ACCP pro bono service award winners going back to the inception of the program in 1998. Current 2006 award and grant winners, including the special Hurricanes Katrina and Rita Relief Fund project winners and the special Ambassadors Group Humanitarian Recognition Award winner, will be joined at this reception by past Governors Community Service Award winners and Humanitarian Recognition Award and Project Development Grant winners for an opportunity to share the current status of their projects and continued successes with one another and dinner attendees.

Seating is limited, so reserve your place early! Price per ticket is $150, and registration is available at www.chestfoundation.org. As a show of appreciation, CHEST Foundation annual donors at the $500 and $1,000 levels will be provided with one or two tickets, respectively. Please contact Teri Ruiz at truiz@chestnet.org, if you would like more information.

References

Reserve Your Spot for the Annual CHEST Foundation Dinner

.to performance measurement and pay-for-performance, as this becomes increasingly important to physicians. Data from this survey should help ACCP tailor its guidelines to best meet physician needs.

In January 2006, two articles were published in CHEST that addressed issues of grading of evidence and resource allocation. These articles have become the basis for ACCP guidelines used in development of recommendations.

The ACCP accepts applications for development of evidence-based clinical practice guidelines. We encourage NetWorks and other groups and individuals to submit topics to the Health and Science Policy Committee for consideration for guideline development.

The application is available online at www.chestnet.org/education/guidelines/proposal/index.php.

For further information on this survey or ACCP guideline development, contact a member of the Health and Science Policy team at (847) 498-8388 or cherrerias@chestnet.org.
F or years, residency programs have relied heavily on clinical experience to teach physicians critical care during their training. Many of us learned procedural skills by the time-honored tradition of “see one, do one, teach one.” Long hours of patient care in the ICU supplemented by attending rounds and didactic lectures provided residents with the core knowledge and skills to effectively manage critically ill patients. New clinical evidence, work hour restrictions, reimbursement requirements, and an increasing focus on patient safety have brought this traditional educational model into question. Fatigue under the traditional work schedule can cause residents to fall asleep during ICU rounds and to make medical errors (Lockley et al. N Engl J Med 2004; 351:1829), prompting the recently mandated reduction in work hours. Yet, work hour limitations result in less opportunity for experiential learning. Survey data from senior medicine, for example, identify significant knowledge deficits in the core critical care skill of mechanical ventilation (Cox et al. Am J Respir Crit Care Med 2003; 167:32). These issues are not confined to physicians in training. Continuous professional development, maintenance of skills, and requirements for outcomes-based assessments of clinical competence remain significant issues.

Simulators were introduced into education to make advanced training more standardized, safe, and less expensive. The first medical simulator was Resusci-Anne (Laerdal Medical; Norway), developed to improve the performance of cardiopulmonary resuscitation (Grenvik et al. Crit Care Med 2004; 32:556). After a long period of slow growth, recent demand for standardized clinical assessments in medical training and credentialing, and an increasing number of available simulation devices have sparked a more broad-based interest in medical simulation.

Acquisition of knowledge, and behavior in the context in which it will subsequently be used has been shown to enhance learning and recall (Norman et al. Acad Med 1992; 67:537-563). Since the early 1990s, there has been a trend in medical education to emphasize active learning techniques and develop clinical judgment and problem-solving skills by employing problem-based learning over traditional, passive, lecture-based formats (Dishman et al. Acad Med 2005; 80:294). Simulation and problem-based learning follow the same training paradigm, but simulation includes a realistic environment and integrates tasks and skills required in patient management (Murphy et al. Crit Care Med 2006; 34:2420). Gaining practical experience and procedural skills in the ICU setting can be challenging due to the high risk, high stakes nature of the practice of critical care medicine. This makes medical simulation a particularly attractive option. As the focus and subject matter of a simulated encounter is controlled, simulation experiences can provide exposure to critical incidents, important emergencies, such as anaphylaxis and malignant hyperthermia. This has stimulated significant interest in simulation in the field of disaster medicine, providing reality-based training in such areas as chemical and biological casualty management. Available simulation tools include the standardized patient, computer-based scenarios, task trainers designed to develop specific procedural skills, and high fidelity human patient simulators. Although there is no clearly prescribed method to develop a simulation scenario, most facilitators start by developing a needs assessment for the target audience and identifying two to three learning objectives to accomplish. The script, simulation programming, necessary medical equipment, and actor roles are developed to create a realistic setting. Learners are provided with a brief introduction to start the clinical encounter; then, they manage the subsequent clinical situation based upon verbal and visual cues from the simulator, actors, and available tools. Learners are assessed against a checklist of critical actions that are considered to be essential to successfully complete the task. The facilitator reviews these critical actions at the end of the debriefing session with the learners to reinforce the goals and objectives of the lesson. Critical care decision-making is performed in a highly dynamic environment and requires an integrated team approach to simultaneously and rapidly perform diagnostic procedures, therapeutics interventions, and monitor their consequences, while minimizing the effects of distracting factors (Lighthall et al. Crit Care Med 2003; 31:2427). Simulation scenarios have been shown to help develop familiarity with the work environment and improve medical communication, delegation, and organization to maximize task completion and performance in the critical care setting (DeVita et al. Crit Care Med 2004; 32:561).

Criticals of medical simulation largely focus on the substantial resources required for training and on the lack of objective validation of teaching methods and outcome measures for critical proficiency. Creating and maintaining a realistic simulation environment for training can require significant resources, manpower, and time. While there are a number of centers of excellence across the United States that have made the investment to create state-of-the-art simulation centers, some experts question whether this technology can be successfully generalized to smaller academic centers and community hospitals. Most published studies on simulation education in critical care are descriptive narratives of individual institution or group experiences, using qualitative assessments of knowledge and clinical confidence as the primary outcome measures. Simulation has been employed to evaluate the analytic and psychomotor skills of medical students before and after completion of a critical care elective (Rogers et al. Crit Care Med 2004; 32:2851) to provide hands-on experience during courses designed to develop computer management and resuscitation skills among residents (Lighthall et al. Crit Care Med 2005; 33:1467). To strengthen organization and communication between members of crisis management teams (DeVita et al. Crit Care Med 2004; 32:561).

A recent, prospective, randomized study found simulation-based training to be superior to problem-based learning. In this comparison, fourth year medical students were randomized to receive simulation-based training or problem-based learning for identical lengths of time during a 1-week acute care course. Both groups demonstrated similar baseline skill levels during an initial simulation-based assessment and received the same didactic lectures and contact time for practical training. The simulation-based training group scored significantly higher on their final assessment at the completion of the course (0.71 vs 0.53 out of a possible score of 1.0. p <0.001) using a standardized checklist of tasks emphasized during training (Sealeman et al. Crit Care Med 2006; 34:153).

Airway management has been a focus of many simulation courses, with perhaps the best clinical outcome data in this field thus far. Mag and colleagues demonstrated that immediate training of essential airway management tasks after a simulated encounter with a patient in respiratory failure predicted greater retention of these skills at 1 month (Rogers et al. Crit Care Med 2004; 32:2422). In a subsequent study, his group demonstrated that the training intervention could be successfully performed by an experienced attending or trained senior house staff member with no degradation in learner performance (Rosenthal et al. Chest 2006; 129:1453).

Intern comprehension and application of these airway management skills in real clinical situations over the next 10 months was very high (99 to 100%). Although these clinical data represent important steps toward proving that simulation-based learning is an effective educational tool in critical care, issues remain: cost, paucity of outcomes research, and need for standardization. The high cost of the technology will accelerate the demand for more outcomes data before widespread acceptance and adoption of medical simulation occurs. For now, medical simulation remains an exciting new tool for critical care education, with applications that can only expand as the technology improves and methodology becomes more refined.

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Look for the “Simulation Center” in the exhibit hall at CHEST 2006.
The Pulmonary Artery Catheter Controversy

It was assumed that optimizing tissue oxygen delivery based on PAC-derived data would improve outcomes.

Observational studies may reflect common practice, but they do not provide unbiased evidence of safety or efficacy. Cohort designs can attempt to equalize the groups observed, but they cannot account for factors of which we are ignorant. Randomization is the only effective tool we have to equalize treatment groups. Elimination of bias is important. We have seen many examples of procedures or drugs that have been assumed to be safe and efficacious because of widespread use that have been proven to be otherwise in RCTs. If more replacement therapy was thought to prevent atherosclerosis in postmenopausal women based on observational studies, until a large RCT, the WAVE trial, found it did not (Waters et al. JAMA 2002; 288:2432). Arthroscopic treatment of osteoarthritis of the knee was thought to be effective until the Veterans Affairs RCT found it was not more effective than a sham surgical control (Moseley et al. N Engl J Med 2002; 345;871). Numerous other beliefs have been found lacking when subjected to the rigors of RCTs and our practice has been altered for the better.

The FACTT study provides strong evidence that the routine use of a PAC is not necessary in the management of ARDS. It does not exclude any use of the PAC. The results are similar to those reported in other recent RCTs of PAC use in the management of congestive heart failure (Biniarny et al. JAMA 2005; 294:1625) and high risk surgical patients (Sandham et al. N Engl J Med 2003;348:1597) in which PAC management did not improve outcomes.

The controversy should be over for the disease states reported above, but established beliefs do not easily fade in the face of evidence. One month after the publication of the FACTT results, a retrospective analysis was reported of over 50,000 trauma patients of whom 3.6% were managed with PACs (Friesen et al. J Crit Care Med 2006; 34:1597). PAC use was associated with more severe injury and higher mortality, but a survival benefit was observed in severely injured patients in shock and older patients. The authors concluded that their study was the first to show a benefit of PAC in trauma patients. But did it? They could easily reflect earlier initiation of treatment in shock, which is known to be of benefit (Rivera et al. J Eng Med 2003;348:256; Wheeler et al. N Engl J Med 2006; 354:2273). In fact, information derived from right heart catheterization has diagnostic and prognostic value in pulmonary arterial hypertension and is useful in determining appropriate medication (Shure. N Engl J Med 2006; 354:2273).

Conclusions

We have now solid information based on well-designed RCTs in specific conditions to be able to say, that for these disease states, routine use of the PAC does not improve outcomes. Because use of the PAC has known risks, we need to be circumspect about use of the device in these settings, including ARDS. We cannot generalize the results of these studies to other conditions that were not studied.

We need to remember that the PAC is not a treatment; it is a device used for diagnosis and to guide treatment. For use of the device to be effective, the therapy it is directing must be effective and dependent on the device-derived data (Shure. N Engl J Med 2006; 354:2273). If therapies become available for the conditions already studied, those therapies appear dependent on such data, new studies would be needed. While RCTs provide the best evidence, they can be expensive and difficult to perform. However, we need to look for the best possible evidence as a basis for our treatments (Pocock and Elbourne; J Eng Med 2003;348:1597). We cannot afford to continue down the path of larger and larger observational studies without meaningful controls.
San Diego — No clear link exists between obesity and a heightened risk of mortality in infected patients in the surgical/trauma intensive care unit, according to results from a single-center study presented by Dr. Robert L. Smith at the annual meeting of the Surgical Infection Society.

Dr. Smith and his associates prospectively studied data on 807 infected patients from the surgical/trauma intensive care unit at the University of Virginia, Charlottesville, between November 1996 and December 2003. The researchers defined infections using Centers for Disease Control and Prevention criteria, said Dr. Smith of the university’s surgical infectious disease laboratory.

The average Acute Physiology and Chronic Health Evaluation (APACHE II) score of the patients was 18. Nearly 55% of them received transfusions, and 52% were mechanically ventilated at the time of infection. They also had significant co-morbid conditions, including hypertension (29%), cardiac disease (19%), and diabetes (17%). The average age of the patients was 57 years, and 63% were male.

Weight classes were determined using the National Health and Nutrition Examination Survey classification. The researchers categorized 4% of the patients as underweight, with a body mass index (BMI) of less than 18.5 kg/m²; 32% as normal, with a BMI between 18.5 and 24.9; 30% as overweight, with a BMI between 25.0 and 29.9; 11% as obese, with a BMI of 30 to 39.9; and 10% as morbidly obese (BMI greater than 40).

The primary study outcome was in-hospital mortality. Of the 807 patients, 133 died during the hospital stay.

There was no association between in-hospital mortality and any of the BMI classifications. The researchers found that in-hospital mortality was closely associated with increasing age, increasing average APACHE II score, a history of diabetes, cardiac disease, hypertension, a history of cerebrovascular disease, renal insufficiency, a need for hemodialysis, a history of pulmonary disease, a requirement for mechanical ventilation while in the unit, a history of known malignancy, and a history of liver disease.

Logistic regression analysis found these characteristics independently associated with in-hospital mortality: liver disease (odds ratio 4.96), malignancy (OR 2.53), diabetes (OR 2.30), mechanical ventilation (OR 1.91), APACHE II score (OR 1.17 per integer), and age (OR 1.03 per integer).

The lack of an association between in-hospital mortality of infected patients and obesity surprised the researchers. It may be that nutritional reserve was afforded to obese patients, he said. But that is a theory he does not favor, “as there was no improved survival in this patient population as there was in other studies that have looked at obese patients in the ICU.”

The lack of an effect of obesity on the mortality of patients with infections might have been a result of the staff’s skill, Dr. Smith said. “Our experienced ICU staff is used to dealing with a variety of patients from various BMI categories. We have a robust bariatric patient practice.”

Additionally, it could be that there were no differences among BMI categories because of presurgical screening, or maybe the study was underpowered to find a difference,” he added.

“Obesity is estimated to be 9%-16% in those admitted to the ICU,” he said. The general hypothesis is that there are worsened critical care outcomes in the obese patient population and that there are increases in morbidity rates, hospital stays, ICU stays, and numbers of health care-associated infections, he added.

“Certainly there are studies that have demonstrated (that obesity raises mortality in the ICU) in varying sample sizes. However, there are also studies that have demonstrated that there may be a protective effect of being obese in the ICU,” Dr. Smith said.

He added that some new basic science evidence has theorized that there may be immunologic protection for those who are moderately obese.
Sleep Apnea’s Effects on the Brain Worsen With Age

In a study Dr. Ayalon presented at the annual meeting of the Associated Professional Sleep Societies, 12 untreated OSA patients and 12 healthy good sleepers were studied with polysomnography and functional MRI. The interaction between group and age in regard to effects on brain function during a verbal learning task was analyzed. Imaging studies showed that patients’ brains were able to recruit additional resources to maintain intact performance and compensate for either age or OSA. Increased brain activation was noted in both older patients and those with OSA, compared with controls, specifically in the left inferior parietal lobe, thalamus, caudate, middle temporal gyrus, and fusiform; in the right anterior cingulate, and in the bilateral prefrontal and cerebellum. When patients had both increased age and OSA, however, decreased brain activation was noted, compared with younger patients, specifically in the right superior temporal gyrus and anterior cingulate, and in the bilateral parahippocampal gyrus, caudate, prefrontal, cerebellum, and fusiform gyrus, said Dr. Ayalon of the University of California, San Diego.

Patients ranged in age from 25 to 59 years. The groups were similar in age, gender, and body mass index. The average apnea-hypopnea index score—a measure of sleep apnea severity—was 35.1 in the OSA patient group and 1.9 in the control group. The findings suggest that OSA in older patients is associated with decreased functioning, as evidenced by deficiencies in word recall in this study. Studies to address effects in even older patients (as this was a relatively young study population) and the effects of OSA treatment on brain function are planned, Dr. Ayalon said.

Sleep Study Demonstrates Lack Of Compliance With CPAP

Salt Lake City — Continuous positive airway pressure adherence rates are suboptimal, findings from a study of sleep clinic patients suggest. Of 528 adults diagnosed with obstructive sleep apnea and followed for a mean of 5 months, 63% had relatively poor adherence (use of less than 4 hours per night), 21% had adequate adherence (use of 4-6 hours per night), and only 16% had optimal adherence (use of more than 6 hours per night). Mean adherence was 3.1 hours per night, Carl Stepnowsky Jr., Ph.D., reported at the annual meeting of the Associated Professional Sleep Societies.

Adherence was specifically defined as use at the prescribed pressure, and was measured by an internal clock. Baseline disease severity correlated with higher levels of adherence. Patients had a mean age of 59 years, and most had moderate to severe obstructive sleep apnea, with a mean apnea-hypopnea index of 38.8 events per night. Mean change scores (0.68 pounds in weight, −1.6 mm Hg in diastolic blood pressure, and −2.6 mm Hg in systolic blood pressure) were not statistically different from zero, noted Dr. Stepnowsky of the VA San Diego Healthcare System.

Suboptimal use of continuous positive airway pressure therapy results in ineffective treatment and can increase the risk of morbidity and mortality, he said. A closer look at adherence rates showed that patterns of adherence were established as early as the first night of therapy; thus, preexisting factors might explain these patterns. Further studies are needed to replicate these findings, he said.

Self-Management Course Steers Patients Toward CPAP Adherence

Salt Lake City — Patient education via a novel self-management training program may improve adherence in continuous positive airway pressure treatment, Carl Stepnowsky Jr., Ph.D., reported in a poster at the annual meeting of the Associated Professional Sleep Societies.

A total of 17 patients diagnosed with obstructive sleep apnea (OSA) and prescribed continuous positive airway pressure (CPAP) attended 4 weekly 2-hour self-management classes designed to provide education about OSA and solutions for common CPAP problems. The Sleep Apnea Self-Management Program provided patients with information on OSA symptoms and consequences, problem-solving approaches for difficulties with treatment, emotional and cognitive symptom management, strategies to increase physical activity, communication skills, improvement, and physician-patient partnership development.

Over the 30-day study period, CPAP adherence averaged 5.8 hours’ night—a close to the optimal level of at least 6 hours/night. The results compare favorably with previous studies showing that most patients have poor adherence (less than 4 hours use/night), according to Dr. Stepnowsky of the Veterans Affairs San Diego Healthcare System.

In addition, mean scores on the visual analog scale for sleepiness and the Center for Epidemiological Studies Depression scale were reduced from 7.2 to 5.5 and 11.4 to 6.9, respectively. Outcome expectations scores increased significantly, with a mean score increase from 2.7 to 4.5.