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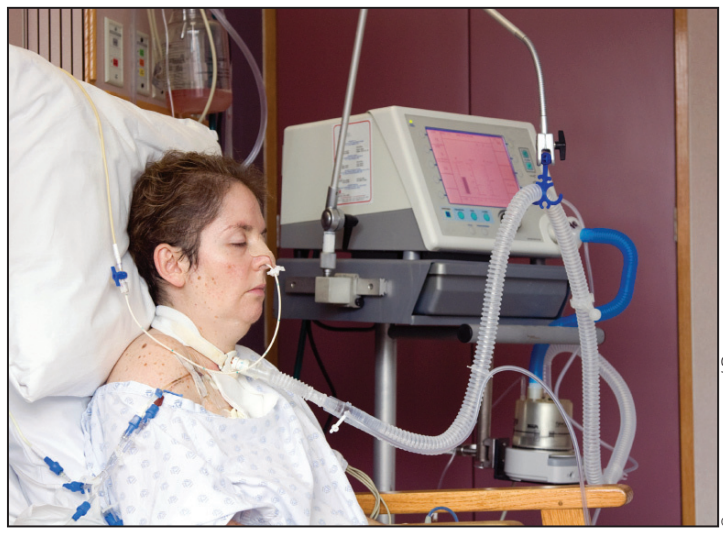

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The results suggest that a tracheotomy shouldn't be performed sooner than after 13-15 days of endotracheal intubation.

VAP Rates Didn't Fall With Early Tracheotomy

BY MARY ANN MOON
Elsevier Global Medical News

Performing a tracheotomy a week after intubation and mechanical ventilation rather than waiting the standard 2-3 weeks did not reduce the rate of ventilator-associated pneumonia in a study reported last month in JAMA.

Such "early" tracheotomy also didn't decrease hospital length of stay, 1-year mortality, or the need for postdischarge care at a long-term health facility, said Dr. Pier Paolo Terragni of the University of Turin, Italy, and his associates.

The study population consisted of 419 intubated ICU patients expected to require mechanical ventilation for an extended time.

"These data suggest that a tracheotomy should not be performed earlier than after 13-15 days of endotracheal intubation," the investigators concluded (JAMA 2010;303:1483-9).

They conducted what they described as the first randomized, controlled trial addressing this issue. Even though the use of tracheotomy in such patients has risen 200% in recent years, the investigators explained, there is wide variation in the timing of the procedure.

Most clinicians wait 2-3 weeks before switching patients from endotracheal intubation to tracheotomy in the hope of forestalling ventilator-associated pneumonia (VAP).

But observational studies have suggested that switching earlier may cut the rate of VAP even more and facilitate earlier weaning from mechanical ventilation, Dr. Terragni and his colleagues noted.

They enrolled adult patients presenting at 12 ICUs in Italy who required intubation with mechanical ventilation for acute respiratory failure. Patients were randomly assigned to undergo tracheotomies 6-8 days after intubation (209 patients) or 13-15 days after intubation (210 patients).

The primary end point was

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FDA Panel Says No To Roflumilast for COPD Therapy

Doubts maintenance treatment effect.

BY ELIZABETH MECHCATIE
Elsevier Global Medical News

Silver Spring, Md. — The majority of a Food and Drug Administration advisory panel last month recommended against approval of roflumilast, an orally administered phosphodiesterase-4 inhibitor, as maintenance treatment for chronic obstructive pulmonary disease.

At a meeting of the FDA's Pulmonary-Allergy Drugs Advisory Committee, panel members voted 10-5 that the efficacy and safety data on the drug, at a dose of 500 mcg once a day, did not support approval for the maintenance treatment of COPD associated with chronic bronchitis in patients at risk of exacerbations.

That was the original indication that had been proposed for approval, but in January 2010—a month after Forest Research Institute Inc., acquired the drug from another company—Forest changed the proposed indication to a more focused one: "maintenance treatment to reduce exacerbations of COPD." Because that was done 6 months into the FDA review period, the panel was asked to vote on the original indication.

Roflumilast has anti-inflammatory effects in patients with COPD, based on animal, in vitro, and human clinical data, according to Forest.

Among the reasons panelists said they voted against approval included what several panelists described as the "meager" or modest beneficial effect of roflumilast in studies, the need to compare it to other COPD treatments like theophylline (a nonspecific PDE inhibitor and the only

See **Roflumilast** • *page 4*

New Studies Advance Asthma Therapy

BY BRUCE JANCIN
Elsevier Global Medical News

Keystone, Colo. — Quadrupling the dose of inhaled corticosteroid was an effective strategy for prevention of asthma exacerbations, and low-dose theophylline enhanced steroids' anti-inflammatory benefits, Dr. Harold S. Nelson noted in a review of new asthma studies.

In the 403-patient study of inhaled corticosteroid dosages (Am. J. Respir. Crit. Care Med. 2009;180:598-602), patients who quadrupled their inhaled corticosteroid dose in response to early evidence of an exacerbation based upon morning pulmonary function testing had a 57% reduction in the relative risk of requiring oral steroids, compared with patients who made no change in their low-dose inhaled steroid regimen, Dr. Nelson said at a meeting on allergy and respiratory disease sponsored by National Jewish Health, Denver.

Although the results didn't achieve statistical significance, he rated this trial as among the past year's highlights in the

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INSIDE

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Study Puts New Spin on Central Line Bundles in ICU

BY MIRIAM E. TUCKER
Elsevier Global Medical News

ATLANTA — Overall compliance with a central line bundle did not significantly affect the rate of central line–associated bloodstream infections unless it reached 95% or higher in a nationwide sample of 312 intensive care units, but compliance with individual elements of the bundle appeared to lower infection rates somewhat.

The findings should not be interpreted to mean that bundles are ineffective. "This study raises the intriguing possibility that complying with all bundle elements is no better than complying with at least one bundle element. … In other words, it's okay to miss an element as long as compliance with other elements is high," Dr. E. Yoko Furuya said during a special presentation of the four best submitted abstracts at the Decennial International Conference on Healthcare-Associated Infections.

The central line bundle—consisting of hand hygiene, maximal barrier precautions, chlorhexidine skin antisepsis, optimal catheter site selection (avoiding femoral vein in adults), and daily review of line necessity—has been promoted by the Institute for Healthcare Improvement and other national/scientific organizations as a strategy for reducing the rates of central line–associated bloodstream infection (CLABSI) events. However, limited data have been available regarding exactly how the bundle works.

"With the new Joint Commission mandate for universal central line 'checklists,' CL bundle use will increase, but will this lead to lower CLABSI rates? It's really not clear," said Dr. Furuya, medical director of infection prevention and control at New York–Presbyterian Hospital.

The data come from a cross-sectional survey of ICUs in the National Healthcare Safety Network (NHSN) hospitals that are participating in the Prevention of Nosocomial Infections and Cost Effectiveness (P-NICE) study. Funded by the National Institutes of Health, the P-NICE is aimed at describing infection control department staffing and ICU interventions in U.S. hospitals. In the online survey, directors and managers of hospital infection control departments were asked to report whether the ICU had a written CL bundle policy; whether compliance was monitored and, if so, how often; and the ICU's NHSN-reported CLABSI rate.

"While the bundle is an all-or-nothing approach, we wanted to deconstruct the bundle and look at the effectiveness of individual bundle elements on rates of CLABSIs," said Dr. Furuya, also with Columbia University, New York.

Hand hygiene compliance was controlled for, since it is considered to affect all health care–associated infections and not specifically CLABSIs. Also controlled for were ICU type, infection-control department characteristics, hospital bed size, region, and teaching status. Separate analyses were conducted with and without chlorhexidine antisepsis because some data suggest it may be less effective against gram-negative and fungal pathogens and because its use has been linked to methicillin resistance in *Staphylococcus aureus*, she said.

A total of 250 hospitals reported on CL bundle data for 415 ICUs, of which 312 also included CLABSI rates. Of those 312, 44% were in the northeastern United States, and 26% were in the south. The majority (76%) were from states with mandatory CLABSI reporting. More than half of the 250 hospitals (58%) had 201-500 beds, and 54% of the 415 ICUs were medical/surgical.

THERE IS A POSSIBILITY THAT COMPLYING WITH ALL BUNDLE ELEMENTS IS NO BETTER THAN COMPLYING WITH AT LEAST ONE BUNDLE ELEMENT.

Of the 240 hospitals reporting hand hygiene compliance, just 7% reported complying "all of the time" (95%-100%), 43% reported "usually" (75%-94%) complying, and 33% said they only "sometimes" (25%-74%) comply. The overall mean CLABSI rate was 2.1/1,000 central–line days, which is similar to the overall NHSN average, she noted.

Just under half of the 415 ICUs (49%) had written CL bundle policies, and only 45% reported monitoring for compliance. Of those 91, only 38% reported correct implementation of all the bundle elements 95% or more of the time. When not all bundle elements were fully implemented, maximal barrier precautions were most often implemented while daily line checks and optimal site selection were least commonly implemented.

No associations were found between CLABSI rates and having a bundle policy, monitoring compliance, or low compliance with the CL bundle. In fact, only when an ICU had a policy, monitored compliance, and had 95% or greater compliance did CLABSI rates decrease significantly, Dr. Furuya reported.

In a series of multivariate analyses, no individual bundle element was associated with decreased CLABSI rates; however, when zero compliance was compared with moving from compliance with any one element to any two or more elements, there was a significant decrease in rates. Complying with any one of three bundle elements also resulted in decreased rates, and complying with all bundle elements was not necessary to show a significant decrease in infections.

Indeed, for all elements except chlorhexidine antisepsis, there was a nonsignificant trend toward a lowering of CLABSI rates. It's unclear whether the lack of chlorhexidine effect is related to an increasing prevalence of gram-negative and fungal infections causing CLABSIs or to chlorhexidine not being applied optimally, Dr. Furuya noted.

"I think we don't fully understand the implications of what we found with chlorhexidine. I think what we did find is that if you're very compliant with some elements of the bundle you may still reduce CLABSI rates, and even if you're missing one or more elements, then perhaps it doesn't make a difference," she commented.

Further study, including direct observations of adherence to bundles, will be required to determine what impact, if any, very high rates of bundle adherence might have on reducing CLABSI rates. Future planned stages of the P-NICE study will interview personnel about compliance and will examine data over a longer period, she said.

Dr. Furuya stated that she had nothing to disclose. ■

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CHEST PHYSICIAN

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Low Vitamin D Linked to Impaired Asthma Control

BY BRUCE JANCIN
Elsevier Global Medical News

KEYSTONE, COLO. — Low vitamin D levels in adults with asthma are associated with impaired lung function, increased airway hyper-responsiveness, and diminished in vitro response to glucocorticoids, according to a cross-sectional study.

The inference from this study is that vitamin D deficiency—a common finding in adults with asthma—may be one of the mechanisms underlying suboptimal clinical response to inhaled corticosteroids. This raises the testable hypothesis that vitamin D supplementation may improve asthma severity and treatment response, Dr. E. Rand Sutherland, FCCP, said at a meeting on allergy and respiratory diseases.

There was a 22.7-mL increase in FEV_1 for each 1-ng/mL increase in serum vitamin D level.

DR. SUTHERLAND

In light of the findings, a multicenter prospective trial of vitamin D supplementation in asthma is being organized to see whether it improves asthma control. Results are probably 4 years away, said Dr. Sutherland, who is chief of the division of pulmonary and critical care medicine at National Jewish Health, Denver.

"I don't know that we have actionable data here in terms of what to do with asthmatics, but there is probably very little harm in giving 1,000-4,000 IU/day of cholecalciferol. If you're up against the wall in terms of what to do with a patient, this is one thing that's cheap, relatively easy, and may not be harmful," he said in response to an audience question.

The cross-sectional study included 54 nonsmoking adults who had persistent asthma. Their mean serum vitamin D level was 28 ng/mL; most experts consider levels below 30 ng/mL insufficient, he noted at the meeting, sponsored by the National Jewish Medical and Research Center.

The higher a study participant's serum vitamin D level, the greater the lung function. Analysis revealed a 22.7-mL increase in forced expiratory volume in 1 second (FEV_1) for each 1-ng/mL increase in vitamin D (Am. J. Respir. Crit. Care Med. 2010;181:699-704).

Airway hyper-responsiveness was also more pronounced in subjects with reduced vitamin D levels. They had a 1.03-mg/mL provocative concentration of methacholine to induce a 20% fall in FEV_1, compared with 1.92 mg/mL for those with a serum vitamin D level of 30 ng/mL or more.

In the 30 subjects not on inhaled therapy, higher serum vitamin D levels were associated with greater dexamethasone-induced expression of mitogen-activated protein kinase phosphatase-1 by peripheral blood mononuclear cells.

"We feel pretty good about these data as a potential biologic underpinning to some of the population data that suggested higher vitamin D concentrations are a biomarker of steroid responsiveness," the pulmonologist observed.

He cited in particular a recent study of 616 school-age children with asthma, in which higher vitamin D levels were associated with less need for inhaled steroids as a controller medication (Am. J. Respir. Crit. Care Med. 2009;179:765-71).

The current study was supported by the National Institutes of Health.

Dr. Sutherland disclosed that he serves on advisory boards for Dey and GlaxoSmithKline and as a consultant to Schering-Plough. ■

Inhaled Steroids May Cut Atherosclerosis Risk

BY JENNIE SMITH
Elsevier Global Medical News

While oral and intravenous corticosteroids have been linked to an increase in certain risk factors for cardiovascular disease, a team of Japanese researchers has found the regular use of inhaled corticosteroids to be associated with a decreased incidence of carotid atherosclerosis.

In a case-control study funded in part by the Japanese government, the investigators compared the incidence of carotid atherosclerosis in 150 asthmatic patients who had used ICSs regularly for at least 2 years (but no oral or intravenous corticosteroids) against an equal number of control subjects. They found a higher incidence of carotid plaque and greater mean carotid intima-media thickness in the control group (29.3% and 1.01 mm, respectively) than in the asthmatic, ICS-using group (20% and 0.93 mm). These differences were statistically significant.

Overall 34% of the asthmatics evidenced carotid atherosclerosis, compared with 46% of control subjects, Dr. Michio Otsuki of the Osaka University Graduate School of Medicine and colleagues reported in the European Respiratory Journal.

"Stepwise multiple logistic regression analysis demonstrated that age, male sex, and dyslipidemia were identified as positive risk factors for carotid atherosclerosis, whereas the mean daily dose of inhaled corticosteroids proved to be a negative risk factor," Dr. Otsuki and colleagues wrote. Among the ICS users who did have the disease, "mean daily dose of ICSs was significantly lower for patients with than for those without carotid atherosclerosis," they wrote.

Three-fourths of subjects in each group were men; the average age was 55 years for study patients and 55 years for controls.

None of the control subjects had asthma or were taking ICSs or other corticosteroids, but were otherwise matched for age, sex, dyslipidemia, body mass index, smoking, diabetes, and other cardiovascular risk factors.

Because inflammation is known to contribute to the etiology of atherosclerosis, Dr. Otsuki's team hypothesized that the anti-inflammatory properties of the ICSs were responsible for the protective effect.

"Although concentrations of ICSs entering the circulation are very low, they may have the potential to inhibit atherosclerosis-related inflammation, since this type of inflammation is chronic and moderate," they wrote. While oral and intravenous corticosteroids have been linked to dyslipidemia and hypertension, which are known risk factors for cardiovascular disease, ICSs have not demonstrated such a link, the researchers noted.

Other researchers have recently explored the question of whether inhaled corticosteroids might have a protective cardiovascular effect. A 2003 cohort study (Am. J. Med. 2003; 115:377-81) found a decreased rate of myocardial infraction among severe asthmatics who used inhalers frequently, compared with mild asthmatics who used them less frequently.

Dr. Otsuki's team noted that the significance of their findings was limited by their study's small size and the fact that it was a case-control study and not a randomized controlled trial. However, they noted, the results "indicate the potential of ICS drugs for the prevention and treatment of some aspects of atherosclerosis." ■

FDA Approves Thermoplasty Device for Severe Asthma

BY ELIZABETH MECHCATIE
Elsevier Global Medical News

The Food and Drug Administration approved a thermal device that ablates airway smooth muscle to treat severe, persistent asthma that is not well controlled with medication.

The device uses a radiofrequency (RF) generator and a single-use catheter with an electrode basket at the tip to deliver RF energy to the airway wall to reduce smooth muscle. The procedure is performed as outpatient bronchoscopy.

Asthmatx Inc. will market the device as the Alair Bronchial Thermoplasty System. The thermoplasty system is the first medical device to use RF energy to treat severe and persistent asthma "in certain adults," according to the FDA statement announcing the April 27 approval. The RF energy "heats the lung tissue in a controlled manner, reducing the thickness of smooth muscle in the airways and improving a patient's ability to breathe," the FDA statement noted, adding that multiple treatment sessions to target different parts of the lungs are required for patients to benefit from treatment.

The FDA based its approval decision on a randomized, double-blind, controlled trial of 297 patients with severe, persistent asthma who experienced symptoms despite treatment with inhaled corticosteroids and long-acting beta agonists (Am. J. Respir. Crit. Care Med. 2010;181:116-24). In that study, patients treated with the Alair system had improvements in asthma-specific quality of life and a reduction in severe exacerbations, as well as improvements in asthma-related quality of life.

Possible side effects during treatment include chest tightness or pain, atelectasis, hemoptysis, anxiety, headaches, and nausea. Other risks associated with treatment include acute asthma attacks and wheezing, according to the FDA statement. The FDA also noted that the device is designed to reduce the number of severe asthma attacks on a long-term basis.

As a condition of approval, the FDA will require Asthmatx to conduct a 5-year postmarketing study to evaluate the long-term safety and effectiveness of the device.

That requirement reflects concerns by an FDA advisory panel that reviewed the device in October 2009. The panel agreed that there was reasonable evidence that the device was safe and effective, and it recommended approval. However, panel members recommended a postmarketing study to assess the device's long-term safety and efficacy.

For that postmarketing study, Asthmatx will enroll many of the patients who were enrolled in the clinical trial, as well as 300 new patients in the United States, according to the FDA.

Patients with asthma who have an implantable electronic device, such as a pacemaker, and those who are known to be sensitive to lidocaine, atropine, or benzodiazepines, should not be treated with the device, according to the FDA.

In addition, the procedure should not be performed in asthma patients who have an active respiratory infection or coagulopathy, as well as in those who are having an asthma exacerbation and those who have had changes to their corticosteroid regimen within 14 days prior to treatment.

In addition, areas of the lung that have been treated with the device should not be retreated, according to the FDA. ■

Dementia Patients Can Use Inhalers With Help

BY SHERRY BOSCHERT
Elsevier Global Medical News

LONG BEACH, CALIF. — Thirty-eight of 40 older adults who had dementia but were able to hold their breath for 10 seconds when asked also were able to use an inhaler successfully with assistance.

People with dementia commonly have chronic lung disease, and metered-dose inhalers or dry-powder inhalers are mainstays of treatment for chronic lung disease.

The prospective study assessed adults in nursing homes with an average age of 86 years and Mini-Mental Status Examination (MMSE) scores from 10 to 24 who had never used a multiunit dry-powder inhaler that goes by the trade name Diskus. The 21 subjects with MMSE scores of 17.7 or higher succeeded in using the inhaler after two tries when supervised and assisted by people who had been trained in using the device, Dr. Meenakshi Patel and her associates reported.

Of the remaining subjects, 17 succeeded on the third try and 2 were unable to use the inhaler successfully, she and her associates reported in a poster presentation at the annual meeting of the American Medical Directors Association.

Among those who succeeded on the third try, MMSE scores were as low as 10, noted Dr. Patel, director of geriatrics at Wright State University, Dayton, Ohio. The mean MMSE score for the study subjects as a whole was 17.4.

The investigators created a scale of 0-19 to assess subjects' ability to complete the steps involved in the use of the inhaler, including opening the cover, snapping the mouthpiece into position, sliding a lever until it clicks, keeping the inhaler horizontal, spontaneously putting the inhaler to their lips, breathing in deeply and quickly, holding the breath for 10 seconds, and closing the device.

Subjects who succeeded in using the inhaler within three tries had a rating scale score as low as 7.6. Every 1-point increase on the MMSE was associated with a 0.345-point increase in the device rating scale score after controlling for possible effects of age, sex, and education, a regression analysis revealed.

The prospective study's findings appear to be more optimistic about inhaler use than results of three previous studies, which suggested that cognitive impairment hinders proper use of inhalers.

A 2003 randomized study of 30 frail elderly patients found that few with abnormal MMSE scores were able to use inhalers independently despite training (Age Ageing 2003;32:299-302). A more recent study of 80 older adults suggested that those with an MMSE score less than 24 were unlikely to be able to use a metered-dose inhaler (Int. J. Clin. Pract. 2009;63:1150-3). A study of 51 older adults, from 1996, also found that an MMSE score lower than 24 was associated with being unable to correctly use a metered-dose inhaler (Arch. Intern. Med. 1996;156:984-8).

If further studies could be conducted in assisted-living facilities, which provide less nursing oversight, they might help determine the minimum amount of supervision or assistance needed for residents with varying degrees of cognitive impairment to effectively use inhalers, the investigators suggested.

GlaxoSmithKline, which markets the Diskus inhaler, funded the study. Dr. Patel reported no other conflict of interest. ■

COLLEAGUE COMMENTARY

Dr. Philip Marcus, MPH, FCCP, comments: The use of various devices for delivery of medications to the lower airway is widely accepted as effective therapy for patients with airway diseases, primarily asthma and chronic obstructive pulmonary disease. The ability of various segments of the population to use these devices is variable and requires education. The study evaluated the Diskus device exclusively, and the results do not apply to the more commonly used metered-dose inhalers. In this study, even patients with significant cognitive impairments were able to effectively use the device with proper training. Nebulized medications are generally advocated in this population, and perhaps this needs to be re-evaluated when the appropriate medication is available in the device studied. The use of the term "inhaler" in this story should be taken in a narrow sense of applying only to the Diskus device, referred to as the Diskus inhaler.

Panel Votes on Roflumilast

Roflumilast • *from page 1*

PDE inhibitor marketed in the United States), and the need to evaluate its efficacy when added to standard COPD treatments like inhaled corticosteroids.

Several panelists said they were concerned that the original indication was too broad and could result in overuse and inappropriate use of the drug because it is easy for patients to take, compared with inhaled COPD drugs.

Panelists voting in favor of approval said that the beneficial effects of roflumilast were similar to other drugs used for COPD. In addition, there was a need for more drugs to treat COPD, they said, and for alternatives to inhaled medications.

Panelists recommended that if approved, safety signals—including suicidal behavior and an excess of cancer cases among patients on the drug—should be followed closely.

In the two pivotal 1-year studies, roflumilast was compared with placebo in more than 3,000 patients with severe or very severe COPD, chronic bronchitis, and at least one COPD exacerbation requiring systemic corticosteroid treatment and/or hospitalizations within the previous year. About half were taking a long-acting beta agonist, 31%-41% were on short-acting anticholinergics, and 99% were on short-acting beta-2 agonists.

In one of the studies, the rate of moderate or severe exacerbations was reduced by 15% and 18.5%, compared with placebo; and the prebronchodilator forced expiratory volume in 1 second improved by 39 mL and by 58 mL, over placebo, respectively.

Although those results were statistically significant, FDA reviewers described the effects as modest and said that the clinical significance of the effects was unclear. A concern raised by panelists and FDA reviewers was that patients in the two studies probably should have been on treatment with an inhaled steroid, which is known to reduce COPD exacerbations.

In the entire COPD safety database of more than 12,000 patients, diarrhea, nausea, and weight loss were more common among treated patients, compared with those on placebo. There were also two suicide attempts and three completed suicides, all in patients on roflumilast, and there were more cases of common types of cancer in treated patients.

Several panelists were troubled by the lack of data monitoring safety beyond a year of treatment.

"The benefit of the drug, although it's there, is meager," said one of the panelists, Dr. Richard Honsinger, of Los Alamos Medical Center Clinic, Los Alamos, N.M., who voted against approval. Before it is approved, "We need to compare this drug with existing drugs, such as theophylline or inhaled steroids," to determine whether it is as beneficial and whether it has fewer side effects, he added.

Dr. Leslie Hendeles, Pharm.D., professor of pharmacy and pediatrics, University of Florida, Gainesville, voted against approval, but said he might have voted for approval "if there had been data presented showing this meager advantage in patients" who are on standard therapy. "That's the study that needs to be done that would convince me that there's a group of patients who would benefit from the addition of [roflumilast] to existing therapy," he said.

Voting in favor of approval, the panel chair, Dr. William Calhoun, said that he believed there was evidence of efficacy, although it was modest, and that the safety issues were "addressable," but should be monitored.

"For pulmonary physicians who care for patients with moderate to severe COPD … to have another option is a good thing," said Dr. Calhoun, the Sealy and Smith distinguished professor of internal medicine, University of Texas Medical Branch, Galveston.

He referred to the flexibility of having a nonsteroidal treatment option and, for patients, the importance of having the option of a pill taken once a day.

The FDA usually follows the recommendations of its advisory panels.

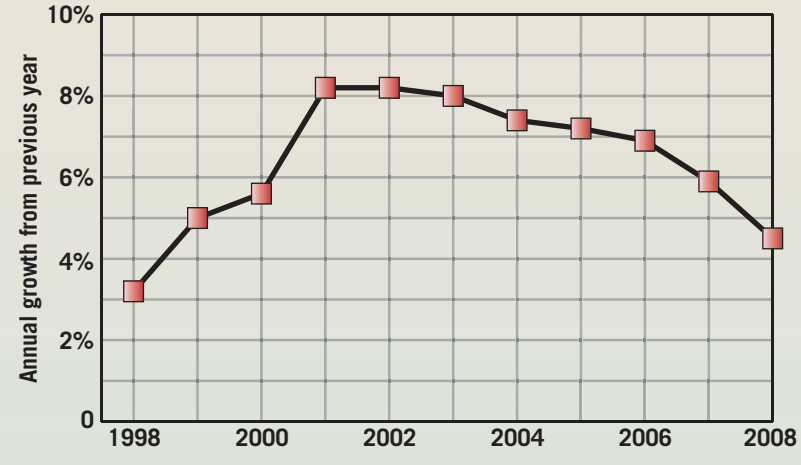
Members of advisory panels have been cleared for any potential conflicts of interest relevant to the product under review.

If roflumilast is approved by the FDA, Forest plans to market it as Daxas in a 500-mcg, immediate-release tablet. In April, a European Medicines Agency committee recommended approval of roflumilast in the European Union for maintenance treatment of COPD.

In 2003, the FDA's Pulmonary-Allergy Drugs Advisory Committee recommended against approval of another selective PDE-4 inhibitor, cilomilast, for the maintenance of lung function in patients with COPD, because of efficacy issues. The FDA has not approved the drug. ■

DATA WATCH

Hospital Care Spending Growth Continues to Decelerate



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ELSEVIER GLOBAL MEDICAL NEWS

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SLEEP STRATEGIES

Dealing With Jet Lag

Travel to foreign countries is fun and filled with new experiences and adventure. We see different cities, experience different cultures, and meet new people. However, many travelers also experience the frustration from poor sleep and daytime fatigue associated with a trip across several time zones.

Many of our patients also experience disturbing and persistent symptoms of jet lag when traveling to other countries across multiple time zones. If the trip is for a vacation, these symptoms are annoying and irritating. However, individuals who travel for business or professional reasons must be able to function on the first day of arrival, engaging in business negotiations or giving professional scientific presentations. The symptoms of jet lag are very serious and can interfere with their performance. Commercial airline pilots and airline flight attendants may suffer seriously from these symptoms that also may interfere with their job performance. Many patients ask us as sleep specialists about the optimal therapy for decreasing and treating the symptoms associated with jet lag.

Dr. James Parish, FCCP
Section Editor,
Sleep Strategies

Jet lag is recognized in the *International Classification of Sleep Disorders: Diagnostic and Coding Manual* (Rochester, MN; American Academy of Sleep Medicine, 2006) as an actual sleep disorder. Several recent review articles describe current research and best treatments (Sack. *N Engl J Med.* 2010;362[5]:440; Auger and Morgenthaler. *Travel Med Infect Dis.* 2009; 7[2]:60). In his review article, Dr Sack, from the Oregon Health and Science University, has reviewed the current state of knowledge regarding jet lag, including its mechanisms and potential treatment strategies. The symptoms of jet lag consist of insomnia in the destination country, as well as daytime sleepiness and fatigue. Symptoms can also include a depressed or dysphoric mood and, occasionally, significant cognitive impairment, including memory loss, for example, about events at a business meeting in the destination country.

Sleep Institute® American College of Chest Physicians

The pathophysiology of jet lag involves a misalignment between the brain's internal circadian clock and the local time. The internal circadian clock, located in the suprachiasmatic nucleus in the brain, receives input primarily in the form of light signals from the retina via the optic nerve. This influences the timing of many physiologic functions, such as hormone release. Jet lag symptoms may be frequent and severe in individuals who fly frequently across time zones, such as airline personnel or international business travelers.

Various factors contribute to the severity of jet lag. The more time zones that are crossed, the more severe the circadian desynchronization will be. Traveling in a north-south direction will not result in the same sleep disorder and sense of fatigue as an east-west flight of the same duration. In addition, flying east seems to result in more severe symptoms than flying the same distance in a west direction. The reason for this directional difference is that the actual circadian "day" is slightly longer than 24 hours, and it is easier to "lengthen" our day by flying west than it is to "shorten" our day when we fly east.

Treatment strategies for jet lag have been suggested and include the following: (1) an attempt to realign the circadian clock with the use of exposure to bright light; (2) the use of melatonin planning the optimal timing of the sleep period; and (3) the use of medications to counteract the symptoms of insomnia or daytime sleepiness (see sidebar on page 14).

The first method of reducing jet lag, according to Dr. Sack, is optimizing light exposure. Exposure to light is the most important external cue for setting the circadian rhythm.

The traveler flying in an eastward direction will have difficulty falling asleep

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at the usual sleep time in the destination city and then will have a difficult time getting up in the morning, feeling fatigued during the morning hours.

In contrast, the westward traveler will feel sleepy too early in the evening in the destination city and then will wake up too early in the morning, having trouble sleeping throughout the night, which also leads to daytime fatigue and sleepiness.

Exposure to light in the late afternoon or evening shifts the clock to a later time, and exposure to light in the morning has the opposite effect, shifting the internal clock to an earlier time. Exposure to bright light after arrival at the destination city can play an important role in determining the time it takes to resynchronize the circadian clock. The traveler, by seeking out bright light during the daytime hours in the destination city, may be able to accelerate resynchronization of the circadian clock. Therefore, seeking exposure to bright light in the morning after traveling east and in the evening after traveling west is recommended to reduce duration of jet lag.

Melatonin, a natural hormone that is secreted from the pineal gland in response to the light-dark cycle, can also be used to adjust to jet lag. Melatonin is normally released in the evening at the beginning of sleep and, therefore, in one sense, can be considered a darkness signal. Melatonin receptors are present on the suprachiasmatic nucleus. If melatonin is taken early in the evening, before its natural release, it can help to reset the internal circadian clock to an earlier time. In contrast, if melatonin is used in the morning, it resets the clock to a later time, again by imitating a darkness signal. Melatonin itself has minimal hypnotic activity, and most of its effects are related to its effect on the circadian rhythm.

Melatonin is marketed primarily as a nutritional supplement as a 3-mg tablet. Melatonin is generally well-tolerated without significant side effects. Ramelteon is also a melatonin receptor-agonist with a longer half-life and greater affinity for the melatonin receptors than melatonin, and it should be useful in the treatment of jet lag. However, there are few data on its use for this condition.

Hypnotics have also been used to attenuate the symptoms of jet lag. Hypnotics can be taken on the eastward flight to enhance sleep during the flight. Sleeping on the flight may enhance adaptation to the new time zone by reducing sleepiness caused by insufficient sleep on the flight. This sleepiness would promote sleep on

Continued on following page

Sleep Strategies To Attenuate Symptoms of Jet Lag

Prior to travel

▶ Begin to reset the internal clock by advancing or delaying sleep time by 1-2 h.

If traveling eastward, advance sleep time by 2 h, and seek sunlight exposure in the early morning.

If traveling westward, delay sleep time by 2 h, and seek exposure to sun or bright light in the evening.

▶ If considering the use of a sedative-hypnotic during the flight, take a test dose several days before to judge the drug's effects.

During flight

▶ Avoid caffeine in order to assist sleeping on the flight.

▶ Consider use of a short half-life sedative hypnotic, such as zaleplon, 5-10 mg, or zolpidem, 5-10 mg, during the flight to assist sleep. Avoid longer half-life drugs, and avoid traditional benzodiazepines because of concerns of subsequent amnesia or sleepiness.

▶ Avoid alcohol on the flight if using a sedative hypnotic.

▶ Move and stretch legs frequently; walk when possible to avoid DVT.

After arrival at destination

▶ In the case of eastward travel, seek sun or bright light in the morning hours; stay outside as much as possible to enhance adaptation.

▶ In the case of westward travel, seek sun or bright light in the evening hours in order to delay the major sleep period.

▶ Nap during the daytime, if necessary, for travel-related sleep deprivation, but try to restrict naps to 30 min or less.

▶ Drink coffee during daytime hours to maintain wakefulness during the daytime, but avoid caffeine in the late afternoon or evening to avoid interfering with sleep at night.

▶ Consider the use of short-acting hypnotic medications for the first several nights until adaptation to the new time zone has occurred.

▶ In the case of eastward travel, use melatonin, 3 mg, at bedtime in the new time zone to enhance adaptation. In the case of westward travel, use a low dose of melatonin, 0.5 mg, in the second half of the sleep period of the local time zone to enhance adaptation.

This Month in *CHEST*: Editor's Picks

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

▶ **Association Between a Silver-Coated Endotracheal Tube and Reduced Mortality in Patients With Ventilator-Associated Pneumonia.** *By Dr. B. Afessa, FCCP, et al.*

▶ **The Role of Chest CT Scanning in TB Outbreak Investigation.** *By Dr. S. W. Lee, et al.*

▶ **A Prospective Multicenter Study of Competency Metrics and Educational Interventions in the Learning of Bronchoscopy Among New Pulmonary Fellows.** *By Dr. M. M. Wahidi, FCCP, et al.*

▶ **Simulation-Based Objective Assessment Discerns Clinical Proficiency in Central Line Placement: A Construct Validation.** *By Dr. Y. Dong, et al.*

COMMENTARY

▶ **Details and Difficulties Regarding the New Lung Cancer Staging System.** *By Dr. F. C. Detterbeck, FCCP, et al.*

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FDA Announcement on Heparin Potency

Effective October 1, 2009, the FDA revised the USP unit for unfractionated heparin with the goal of improving the consistency and quality of heparin and bringing it into line with existing international standards. Since the potency was expected to be reduced by approximately 10%, the American College of Chest Physicians (ACCP) convened a task force of US, Canadian, and European experts in parenteral anticoagulants and thrombosis to discuss this issue and whether it would impact the implementation of the ACCP antithrombotic and thrombolytic guidelines.

Based on the deliberations of this task force, it was decided that the ACCP antithrombotic guideline recommendations would not be revised, but the FDA was requested to collect and assess additional data over subsequent months.

Those data have now been evaluated and have confirmed previous findings, and the FDA has posted a notice at www.fda.gov/Drugs/DrugSafety/PostmarketDrugSafetyInformationforPatientsandProviders/ucm207506.htm. ■

Mark Crowther, MD, MSc
Professor and Chair-Hematology and Thromboembolism
McMaster University

Continued from previous page

the day of arrival at the destination, which would impair adaptation to the new time zone.

Many eastward flights, for example, to Europe, leave in the late afternoon or early evening and arrive in the morning. It is best to avoid sleeping during the day of arrival in order to enhance circadian synchronization with the new time zone. Furthermore, when evening arrives at the new destination, the internal circadian clock may be "set" 6 to 8 hours earlier in accord with the original time zone, making sleep difficult the first several nights. This makes the use of hypnotics a potentially attractive solution to promote sleep in the new time zone.

A randomized controlled study demonstrated that zolpidem, 10 mg, attenuates the sleep disturbance symptoms of jet lag (Jamieson et al. *Sleep Med.* 2001;2[5]:423). Another study found that a benzodiazepine hypnotic could facilitate adaptation to an 8-hour westward time shift (Buxton et al. *Sleep.* 2000;23[7]:915).

However, the physician and the patient should take into account potential adverse reactions of sedative hypnotics, as well. Amnesia and confusion are possible side effects of these drugs, especially with the traditional benzodiazepines. A case of especially severe transient global amnesia secondary to triazolam has been reported (Morris and Estes. *JAMA*.1987;258[7]:945).

The newer nonbenzodiazepine hypnotics (zolpidem, zaleplon, eszopiclone) are probably safer in this regard, but complex sleep-related behaviors have been reported with these drugs. It is prudent to ask patients for whom these drugs are prescribed to take them at home in order to test their potential side effects.

Drugs that promote wakefulness could be anticipated to improve the daytime fatigue and sleepiness associated with jet lag. Caffeine is commonly used as a safe and easily available stimulant. Modafinil, and its R-isomer, armodafinil, could be safe and well-tolerated options to relieve sleepiness. While these drugs are approved for the treatment of narcolepsy, there are few data showing their efficacy and safety in treating jet lag sleep symptoms. One study found armodafinil to reduce sleepiness and improve alertness in patients with chronic shift work disorder (Czeisler et al. *Mayo Clin Proc.* 2009;84[11]:958).

These may be attractive options for the business professional or commercial pilot suffering daytime symptoms of jet lag, but there is currently little evidence for their use. ■

Dr. James Parish, FCCP
Mayo Clinic Arizona
Scottsdale, AZ
Section Editor, Sleep Strategies

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How to Keep COPD Exacerbations in Check

BY BRUCE JANCIN
Elsevier Global Medical News

KEYSTONE, COLO. — Preventing acute exacerbations is a top priority in patients with chronic obstructive pulmonary disease, and physicians can draw on three types of medication and one nonpharmacologic therapy of proven benefit for this purpose.

Each of the two drugs with Food and Drug Administration approval for the prevention of acute exacerbations is supported by a multiyear randomized trial of roughly 6,000 patients, which is unusually large for the field of COPD, Dr. Barry Make noted at a meeting on allergy and respiratory diseases.

Tiotropium (Spiriva, Boehringer-Ingelheim), a long-acting anticholinergic bronchodilator, received FDA approval for this indication last December. In the massive 4-year Understanding Potential Long-Term Impacts on Function with Tiotropium (UPLIFT) trial, use of tiotropium resulted in a 14% reduction in the annual rate of moderate to severe exacerbations, compared with usual care (N. Engl. J. Med. 2008;359:1543-54).

The other approved medication, fluticasone/salmeterol (Advair Diskus, GlaxoSmithKline), reduced moderate to severe exacerbations by 25% over 3 years in the Towards a Revolution in COPD Health (TORCH) trial (N. Engl. J. Med. 2007;356:775-89).

Long-acting beta-agonists are also of proven efficacy in preventing acute exacerbations, as shown in a large meta-analysis that demonstrated a 21% reduction in relative risk (JAMA 2003;290:2301-12), but they are not FDA approved for this purpose, noted Dr. Make, director of pulmonary rehabilitation at National Jewish Health and professor of medicine at the University of Colorado, Denver.

Pulmonary rehabilitation—a comprehensive program of education and physical exercise—is also of proven benefit in reducing acute exacerbations. A meta-analysis of six trials involving 230 patients demonstrated that pulmonary rehab reduced by 74% the relative risk of severe exacerbations entailing hospital admission (Respir. Res. 2005;6:54).

"For those patients who refuse to take medications, this is something else they can do," Dr. Make said at the meeting, which was sponsored by the National Jewish Medical and Research Center.

Pulmonary rehab, he stressed, is of value across the broad spectrum of COPD severity. "I don't wait for patients to reach GOLD [Global Initiative for Chronic Obstructive Lung Disease] stage 3 or 4 to turn to pulmonary rehabilitation," he observed. "I think patients who are symptomatic despite the medications you put them on are absolutely, positively candidates for pulmonary rehab."

Dr. Make disclosed serving on advisory boards for AstraZeneca, Boehringer-Ingelheim, Dey, Forest, GlaxoSmithKline, Novartis, Nycomed, and Schering-Plough. ■

COLLEAGUE COMMENTARY

Dr. Philip Marcus, MPH, FCCP, comments: The prevention of exacerbations in patients with COPD has been shown to be of almost equal importance to improving lung function and reducing symptoms. Tiotropium and the combination of fluticasone and salmeterol have been shown to have this effect, in addition to their beneficial effects on improving forced expiratory volume in 1 second and symptoms. New drugs being considered for the treatment of COPD are also being evaluated on their ability to reduce exacerbations, e.g., roflumilast. The role of pulmonary rehabilitation should not be minimized and is an important aspect of COPD care.

Identify Patients at High Risk for Acute COPD Exacerbations

BY BRUCE JANCIN
Elsevier Global Medical News

KEYSTONE, COLO. — Acute exacerbations of chronic obstructive pulmonary disease are a more important driver of mortality than generally appreciated.

Physicians often shrug off acute exacerbations of COPD as part of the natural course of the disease. Not so. There are several preventive therapies of proven efficacy, but to apply them most efficiently it's useful to turn to several large published studies that are instructive in identifying the high-risk subgroups, Dr. Barry Make, FCCP, said at a meeting on allergy and respiratory diseases.

"It's all about knowing how to prevent COPD exacerbations in the right COPD patient at the right time," emphasized Dr. Make, director of pulmonary rehabilitation at National Jewish Health and professor of medicine at the University of Colorado, Denver.

He was senior author of a large Veterans Affairs study that brought to light the serious consequences of acute exacerbations. The review involved 51,353 COPD patients discharged after a severe exacerbation, defined as one entailing hospitalization (Chest 2007;132:1748-55).

The key finding was that these patients had impressively high all-cause mortality: 21% over the subsequent year and 55% at 5 years. They also had COPD rehospitalization rates of 25% and 44% at 1 and 5 years, respectively. The more prior COPD hospitalizations, the higher the subsequent all-cause mortality.

Median survival after the index hospitalization was 4.2 years. The median length of stay during rehospitalization was 6.5 days. These hospitalizations are expensive; indeed, acute exacerbations account for the bulk of health care expenditures for COPD, which is arguably the costliest of all the respiratory diseases, Dr. Make said at the meeting, which was sponsored by the National Jewish Medical and Research Center.

Frequent COPD exacerbations also are an enormous burden on patients' health-related quality of life. This was underscored in a classic study in which patients with 3 or more exacerbations over the course of a year had a mean 14.8-point worse score on the St. George's Respiratory Questionnaire than those with 0-2 exacerbations (Am. J. Respir. Crit. Care Med. 1998;157:1418-22).

"There's nothing else that comes close to having that big an effect on quality of life," said the pulmonologist, who noted that medications typically improve St. George's scores by only about 3.5 points.

The VA study showed that patients who've had a COPD exacerbation are at increased risk for another. In another study, British investigators showed that these recurrent exacerbations are not random events over time, but rather they cluster such that the first 8 weeks after an initial exacerbation is a particularly high-risk period.

During 904 patient-years of follow-up in the British study, 27% of first exacerbations were followed by a discrete recurrent exacerbation within 8 weeks, despite what the investigators thought was full recovery from the first event (Am. J. Respir. Crit. Care Med. 2009;179:369-74).

The implication is that the first few weeks after an initial exacerbation are an important time for monitoring, initiating preventive therapy, and educating patients about early recognition of worsening cough, dyspnea, and/or sputum in order to catch acute exacerbations early, Dr. Make said.

He disclosed that he served on advisory boards for AstraZeneca, Boehringer-Ingelheim, Dey, Forest, GlaxoSmithKline, Novartis, Nycomed, and Schering-Plough. ■

COLLEAGUE COMMENTARY

Dr. Jeana O'Brien, FCCP, comments: Dr. Make's presentation on COPD exacerbations highlights the importance of education and prevention efforts to prevent recurrences. It is not surprising that those with more severe disease have more frequent exacerbations. Providing our patients with the tools for early detection and treatment (education and appropriate medication) to avoid exacerbation should be a significant component of every consultation and visit.

Most Adults Lacked Antibodies to H1N1 After First Flu Wave

BY MARY ANN MOON
Elsevier Global Medical News

Only 13% of adults in the general population in Singapore were found to have antibodies to influenza A(H1N1) after the first wave of the 2009 epidemic passed through there, according to a report in JAMA.

This finding, which indicates that most adults in Singapore remain susceptible to this novel flu strain, is similar to the result of a cross-sectional study of protection against the infection in the United Kingdom after the first epidemic wave there in 2009, said Mark I.C. Chen, Ph.D., of Tan Tock Seng Hospital, Singapore, and his associates.

In what they described as the first cohort study to assess H1N1 risk using serologic assays, the investigators took serial venous blood specimens to track antibody levels from the year before the outbreak began until it subsided in September 2009.

Antibody levels were tracked in four populations: 838 healthy, community-dwelling adults aged 21-75 years; 1,213 military personnel; 558 staff members at an acute care hospital; and 300 staff and residents at two long-term care facilities.

In all, 13% seroconverted in the community cohort, vs. 29% and 7% in the military and hospital staff cohorts, respectively. Young adults (aged 20-24 years) were at highest risk of infection, a pattern that has been reported in numerous epidemiologic studies elsewhere, Dr. Chen and his colleagues said (JAMA 2010;303:1383-91).

This indicates that if there are subsequent waves of H1N1 infection, targeted vaccination would be worthwhile, they added.

The study was funded by the National Medical Research Council of Singapore, the Melbourne World Health Organization Collaborating Centre for Reference and Research on Influenza, and the Ministry of Defense, Singapore. Dr. Chen's associate reported receiving unrelated research funding from GlaxoSmithKline. No other conflicts of interest were reported. ■

Biomarkers Suggest Asthma Differs in Children, Adults

BY HEIDI SPLETE
Elsevier Global Medical News

NEW ORLEANS — Children with severe asthma have significantly higher levels of serum IgE and exhaled nitric oxide than adults, based on data from 47 consecutive patients with severe asthma.

Severe asthma affects fewer than 10% of all asthma patients, but it accounts for a disproportionate number of asthma-related hospitalizations and emergency department visits, said Dr. Jonathan Malka of National Jewish Health in Denver.

Few studies have examined the phenotypic differences in severe asthma based on age, and recognizing the differences and similarities could help clinicians identify severe asthmatics, Dr. Malka said.

To compare levels of impairment and inflammation in children and adults, Dr. Malka and his colleagues evaluated 23 children and 24 adults with severe asthma who presented to National Jewish Health.

The average age of the children was 12 years, and the average age of the adults was 47 years. The mean asthma durations were 9 years in children and 27 years in adults. The results were presented in a poster at the annual meeting of the American Academy of Allergy, Asthma, and Immunology.

Serum IgE was significantly higher in children than in adults (about 600 IU/mL vs. about 200 IU/mL). Similarly, exhaled nitric oxide levels were significantly higher in children than in adults (about 54 parts per billion vs. about 27 parts per billion).

Children with severe asthma had significantly less lung function impairment than did adults, based on two measures of lung function. Forced vital capacity (FVC) in children was 94% of the predicted value vs. 72% in adults. Forced expiratory volume in 1 second (FEV_1) in children was 73% of the predicted value vs. 56% in adults.

Children also fared better than adults in terms of the FEV_1/FVC ratio and in changes in FEV_1 after using albuterol, but those differences were not statistically significant.

Children and adults showed no significant differences in three measures of asthma morbidity: weekly albuterol use, annual asthma exacerbations, and lifetime hospitalizations.

The study was limited by the small sample size, but the biomarker findings suggest pathophysiologic differences in asthma based on age—although adults and children alike were equally compromised, Dr. Malka said. Additional research may help clinicians adjust management of their severe asthma patients based on age, he said in an interview.

Dr. Malka had no financial conflicts to disclose. ■

To view a video interview of Dr. Malka, go to: www.youtube.com/ElsGlobalMedicalNews?feature=mhw5#p/a/u/0/6Vh2371I3Nc.

Top Asthma Studies Reviewed

Asthma • *from page 1*

asthma literature because the study provides a concrete answer to an important, previously unresolved clinical question.

"The long-time teaching has been to double the dose of inhaled corticosteroid when a patient notices the onset of an asthma exacerbation. That strategy has been shown to be totally ineffective in two large, well-done studies," noted Dr. Nelson of National Jewish Health and professor of medicine at the University of Colorado, Denver.

Among the other highlights he identified in the recent asthma literature are:

▶ **Low-dose theophylline enhances the anti-inflammatory benefits of steroids:** In a study of 68 asthmatic smokers, 4 weeks of theophylline at 400 mg/day plus beclomethasone at 200 mcg/day resulted in significantly greater improvements both in lung function and in asthma symptoms than either drug alone (Eur. Respir. J. 2009;33:1010-17).

The rationale for using low-dose theophylline in this setting is that cigarette smoke inhibits histone deacetylase, an enzyme that mediates the therapeutic response to corticosteroids. Low-dose theophylline increases histone deacetylase activity.

The notion that low-dose theophylline has a place in the treatment of smokers with chronic respiratory disease was reinforced in another recent study, which involved 35 patients hospitalized for acute exacerbations of COPD.

They were randomized to standard therapy—bronchodilators and systemic steroids while hospitalized, long-acting beta-agonists and inhaled corticosteroids after discharge—or to standard therapy plus 100 mg of theophylline twice daily. At follow-up 3 months later, the theophylline group had significantly greater improvement in forced expiratory volume in 1 second than those on standard therapy. They also had more than a threefold greater increase in macrophage histone deacetylase activity, compared with baseline, and much greater reductions in inflammatory cytokine levels in their sputum (Thorax 2009;64:424-9).

▶ **Tumor necrosis factor–alpha inhibition for treatment of severe persistent asthma:** This trial randomized 309 patients to one of three doses of golimumab (Simponi) or placebo. The study was scheduled to run for a year but stopped early after eight golimumab-treated patients developed cancers, including five patients in the highest-dose arm. There was also one death due to infection in the golimumab group. No cancers occurred in the placebo group.

The implication is that silent or minimally symptomatic GERD is not a likely cause of poorly controlled asthma.

DR. NELSON

Dr. Nelson noted that a couple of earlier small studies in the United Kingdom had suggested a possible benefit for anti-TNF therapy in severe asthma. In this much larger double-blind trial, however, there were no significant differences between the golimumab and placebo groups in the number of severe asthma exacerbations or forced expiratory volume in 1 second at 24 weeks, the two co-primary end points (Am. J. Respir. Crit. Care Med. 2009;179:549-58).

▶ **Esomeprazole for poorly controlled asthma:** In a study carried out by the American Lung Association Asthma Clinical Research Centers, 412 patients were randomized to 40 mg of esomeprazole twice daily or placebo for 24 weeks. There were no differences in outcomes between the two study arms in terms of number of episodes of poor asthma control, nocturnal awakening, quality of life, airway reactivity, or pulmonary function. Nor did the 40% of participants with silent gastroesophageal reflux disease benefit from esomeprazole in terms of the study end points (N. Engl. J. Med. 2009;360:1487-99).

The clear implication is that silent or minimally symptomatic GERD is not a likely cause of poorly controlled asthma, Dr. Nelson concluded.

▶ **Monitoring adherence to inhaled corticosteroid therapy in asthmatic children and teens:** Four methods of monitoring treatment adherence were evaluated in a 1-year study of 102 asthmatic 3- to 14-year-olds. Adherence deteriorated progressively over the course of the year. Parent and self-reports gave a wildly inflated picture of adherence. So did pharmacy dispensing records. Tracking canister weight proved to be the most practical and accurate method (Allergy 2009;64:1458-62).

▶ **Thermoplasty for treatment of severe asthma:** Thermoplasty delivers thermal energy to the airway wall to reduce airway smooth muscle mass. The regimen entails three treatment sessions at 2-week intervals. (See FDA approval story on page 3.)

In Dr. Nelson's view, the verdict remains out regarding this invasive procedure, despite a 288-patient multicenter, randomized, double-blind, sham-controlled trial. The primary study end point was clinically meaningful improvement in the Asthma Quality of Life Questionnaire score at 52 weeks. This occurred in 79% of patients who underwent thermoplasty and 64% in the sham-procedure arm.

During the 6-week treatment period, there were 19 hospitalizations for respiratory symptoms in the thermoplasty arm, compared with 2 in the sham-therapy arm. There were no differences between the two groups in pulmonary function tests, medication use, or asthma-free days (Am. J. Respir. Crit. Care Med. 2010;181:116-24). Dr. Nelson said he'd like to see longer follow-up to better assess the procedure's long-term benefits in light of the substantial short-term morbidity.

▶ **Serum vitamin D correlates inversely with childhood asthma severity:** Prior studies have shown an inverse relationship between maternal vitamin D levels in pregnancy and asthma symptoms in early childhood. Now a study in 616 older asthmatic children ages 6-14 years has shown that 28% had an insufficient serum vitamin D level of 30 ng/mL or less. Moreover, serum vitamin D was inversely correlated with hospitalizations for asthma in the previous year, bronchial responsiveness to methacholine, total IgE, and circulating eosinophil counts (Am. J. Respir. Crit. Care Med. 2009;179:765-71).

▶ **Daily telemonitoring of exhaled nitric oxide in the treatment of childhood asthma:** Dutch investigators randomized 151 children with atopic asthma to management directed by daily symptom monitoring alone or in conjunction with daily telemonitoring of exhaled nitric oxide, a marker of eosinophilic airway inflammation. Patients improved equally in both groups, meaning monitoring exhaled nitric oxide added nothing (Am. J. Respir. Crit. Care Med. 2009;179:93-7).

"There are now six studies in which exhaled nitric oxide was used to guide asthma management. None has shown a significant improvement with addition of exhaled nitric oxide," Dr. Nelson commented. "So, as a way to guide therapy, it doesn't appear to offer a lot, although it's probably an excellent way to pick up nonadherence to inhaled corticosteroid therapy, and for asthma diagnosis."

Dr. Nelson disclosed serving as a consultant to Abbott, AstraZeneca, Boehringer-Ingelheim, Dey, Dynavax Technologies, Dyson, Genentech, GlaxoSmithKline, Johnson & Johnson, MediciNova, Novartis, Schering-Plough, Sepracor, and Teva, and has received grant and research support from several of these companies. ■

COLLEAGUE COMMENTARY

Dr. Jeana O'Brien, FCCP, comments: Dr. Nelson nicely summarized several recent publications of interest in the care of patients with asthma. This body of literature offers guidance to the clinician in many regards—from old therapies (theophylline) to new (thermoplasty), diagnostic adjuncts (exhaled nitric oxide) to the impact of vitamin D levels on asthma severity. This brief listing reminds us again of the complexity created with this diagnosis.

Conventional Infection Control Slashed MRSA

BY MIRIAM E. TUCKER
Elsevier Global Medical News

A hospital-based strategy using multiple infection-control interventions resulted in more than a 90% reduction in health care–associated infections due to methicillin-resistant *Staphylococcus aureus* without the need for active MRSA surveillance.

Findings from a 7-year observational study add support to the argument that the controversial practice of active surveillance is excessively resource-intensive and of limited value because it targets only MRSA and not other common nosocomial pathogens, Dr. Michael Edmond said in a telebriefing held in advance of the Decennial International Conference on Healthcare-Associated Infections.

Other disadvantages and unintended consequences of so-called "active detection and isolation" (ADI) include high cost, ethical issues, increases in noninfectious adverse events (such as falls and decubitus ulcers), patient dissatisfaction, and prolonged length of stay. "MRSA infections can be controlled without active surveillance. …ADI should be viewed as an option of last resort to control multidrug-resistant organisms," said Dr. Edmond, chair of the infectious diseases division at Virginia Commonwealth University Medical Center, Richmond.

The overall MRSA rate in the hospital's medical, surgical, and neuroscience ICUs dropped by 93%.

DR. EDMOND

The setting for the study was an 820-bed urban academic medical center that serves as a level 1 trauma center and includes a cancer center, a burn unit, an HIV clinic, and organ transplant and artificial heart programs. Surveillance cultures for MRSA are limited to the neonatal intensive care unit and preoperatively for patients undergoing cardiac, joint replacement, and neurosurgical procedures.

The interventions were initiated over more than a decade, starting in 1998 with concurrent surveillance for health care–associated infections (HAIs) in ICUs, with feedback provided to unit leadership. Antiseptic-coated central venous catheters (CVCs) were introduced in 2002. In 2004, an ICU hand hygiene campaign was introduced, and feedback was provided on HAIs and infection-control practices.

Active interventions began in 2006, including a CVC insertion "bundle" and mandatory house staff education on CVC insertion. Roving "hand hygiene observers" were instituted hospital-wide in 2007, chlorhexidine bathing of ICU patients in 2008, and a "bare below the elbows" recommendation in 2009, which banned sleeves below the elbows, as well as ties or lab coats that serve to transmit germs.

Device-related infection rates per 1,000 ICU patient-days actually rose slightly from 1998 until 2003, from 16.8 to 21.4. But after that the rate dropped steadily, from 18.0 in 2004 to 9.4 in 2006, to 5.8 in 2008 and just 3.3 in 2009. Overall there was an 83% reduction from 2003 through 2009, Dr. Edmond and his colleagues found.

Other MRSA HAI rates also declined. Central line–associated bloodstream infections dropped by 85% (from 12.8/1,000 line-days in 2003 to 2.0 in 2009), catheter-associated urinary tract infections by 60% (8.4 to 3.4/1,000 catheter days), and ventilator-associated pneumonia by 86% (9.4 to 1.3/1,000 ventilator days).

The overall MRSA infection rate in all medical, surgical, and neuroscience ICUs dropped by 93% from 2003 to 2009, from 2.86 to 0.21/1,000 patient-days. The percentage of HAIs due to MRSA in those settings dropped from 11.7 in 2003 to 5.1 in 2009. And for the first time ever, in the latter half of 2009 there were no device-associated MRSA HAIs in any of the hospital's eight adult, pediatric, and neonatal ICUs, Dr. Edmond reported.

Dr. Edmond disclosed financial relationships with BioVigil and Cardinal Health. One of his associates has a financial relationship with Vestagen Technical Textiles. ■

VAP Rates

Tracheotomy • *from page 1*

the cumulative incidence of VAP at 28 days. The infection developed in 14% of the early tracheotomy group and 21% of the later tracheotomy group, a difference that did not reach statistical significance.

Similarly, median hospital length of stay was 31 days with early tracheotomy and 32 days with later tracheotomy, a nonsignificant difference. Mortality rates at 28 days and at 1 year were not different between the two groups.

Early tracheotomy did increase the number of ventilator-free days and the number of ICU-free days, as well as the rate of successful weaning from ventilation. But those benefits did not translate into shorter hospitalizations or improved survival, Dr. Terragni and his associates said.

There was an important drawback to early tracheotomy: It increased the number of tracheotomies performed, because a portion of patients would not have needed the procedure at all if they had been allowed to wait and recover on their own.

One-third of the patients who underwent tracheotomy experienced procedure-related complications, ranging from minor bleeding to hypoxemia, pneumothorax, and infection at the tracheotomy site. Early tracheotomy exposed more critically ill patients to those complications, the investigators noted.

"Perhaps the most important finding from this study … is that despite best efforts to predict which patients will require prolonged mechanical ventilation, many patients were successfully managed without tracheotomy," noted Dr. Damon C. Scales and Dr. Niall D. Ferguson in an editorial accompanying the report.

"This creates a compelling argument for waiting at least 2 weeks to be certain that a patient has an ongoing need for mechanical ventilation or assistance with pulmonary toilet before proceeding to tracheotomy," they noted.

The trial's results "should convince clinicians that routine early tracheotomy most likely will not lead to reduced VAP, shorter hospital stay, or lower mortality," added Dr. Scales, of Sunnybrook Health Sciences Centre, Toronto, and Dr. Ferguson, of Mount Sinai Hospital, Toronto (JAMA 2010;303:1537-8).

"Most importantly, it shows that performing tracheotomy for perceived weaning failure must be tempered by the knowledge that many patients will improve with additional time. Sometimes physicians just need to wait," they said.

Dr. Terragni's and his colleagues' study was supported by the Regione Piemonte Ricerca Sanitaria Finalizzata.

Dr. Terragni, Dr. Scales, and Dr. Ferguson reported no financial conflict of interest. ■

CHEST 2010: Experience the Value

Recognized around the world as the authority in clinical chest medicine, CHEST 2010 will feature a core learning program in pulmonary, critical care, and sleep medicine. Essential updates on patient care and practice management strategies will keep you at the forefront of chest medicine.

Additional learning opportunities, available through the Clinical Resource Center and other meeting features, will complement your knowledge and skills to provide a fully integrated education experience.

To maximize the education value, CHEST 2010 will offer both new and time-honored aspects of the annual meeting. Look for these features, designed to increase educational impact.

New Meeting Start Day With More Education Opportunities

General education sessions will begin on a Sunday, October 31, 1 day sooner than previous years. This new schedule adds a day of learning opportunities, which means:

- 5 days of clinical instruction
- 39 CME credits available
- Nearly 400 sessions

Education Extras

Optional education opportunities will complement your learning experience.

- The Clinical Resource Center and Experience ACCP will feature hands-on opportunities and presentations to enrich the education sessions.
- The ACCP Self-study Clinical Library will feature PCCU articles, minisessions from CHEST 2010 topic submissions, and other learning resources to be completed for additional CME credits.
- e-Posters presenting original research will be accessible online. In addition, posters in the Poster Grand Rounds area will be on display for viewing.

Clinical Care–Focused Tracks

Intensive study will be offered in PAH, interventional pulmonology, COPD, and advanced ultrasonography on Thursday, November 4, so you can immerse yourself in a focused clinical area.

Globally Relevant Focus

Globally relevant health topics will increase your knowledge, help you treat a diverse patient population, and empower you to follow the charge of ACCP President Kalpalatha K. Guntupalli, MD, FCCP: Care Locally. Reach Globally.

- Sessions addressing global heath issues will be presented beginning Sunday, October 31, and will continue throughout the meeting.
- An international faculty will include renowned experts from around the world. Premier physicians from the United States, Europe, and Asia have committed to present at CHEST 2010.
- Networking opportunities with attendees in the international lounge and international poster presenters during Poster Grand Rounds will allow you to gain a broader perspective of chest medicine.

Added Value

CHEST 2010 is packed with opportunities for education and professional growth to maximize your learning potential, all offered at the lowest cost for similar medical meetings.

Added value at CHEST 2010 includes:

- Generous extras included with the registration fee: free lunch, admittance to the Opening Ceremony, select special events and receptions, and more.
- A welcoming environment with an approachable faculty of experts ready to engage in personal conversation.
- A focus on practical, clinical instruction and commitment to improving patient care around the world.

Don't miss the value of CHEST 2010, October 30 – November 4, in Vancouver, BC, Canada. Register early to take advantage of the super saver discount, available through August 31. ■

www.chestnet.org/CHEST

Guidelines International Network Conference 2010

August 26-28, 2010 – Conference Dates
August 25, 2010 – Preconference Methodology Courses
Chicago, IL, USA
Host: American College of Chest Physicians

The American College of Chest Physicians (ACCP) is honored to be hosting the 2010 conference of the Guidelines International Network (G-I-N). All ACCP members are invited to attend at reduced member prices.

The theme this year, "Integrating Knowledge. Improving Outcomes." is designed to encourage collaboration, networking, and sharing of knowledge and methodologies between professionals in all aspects of evidence-based medicine from clinical research to patient care. This year's prestigious annual scientific conference will unite clinical researchers, evidence synthesizers, guideline developers, guideline implementers, and those who use guidelines for quality improvement, medical education, and health-care policy.

The G-I-N is an international not-for-profit association of organizations and individuals involved in the development and use of clinical practice guidelines. It supports international collaboration to improve the quality of health care by promoting systematic evidence review, rigorous development of clinical practice guidelines, and application into practice. Founded in 2002, G-I-N has grown to include 93 organization members and partners representing 38 countries from Africa, North America, South America, Asia, Europe, and Oceania.

In addition to the concepts and innovations presented and discussed at the conference, there will be two methodology courses offered the day before the main conference begins.

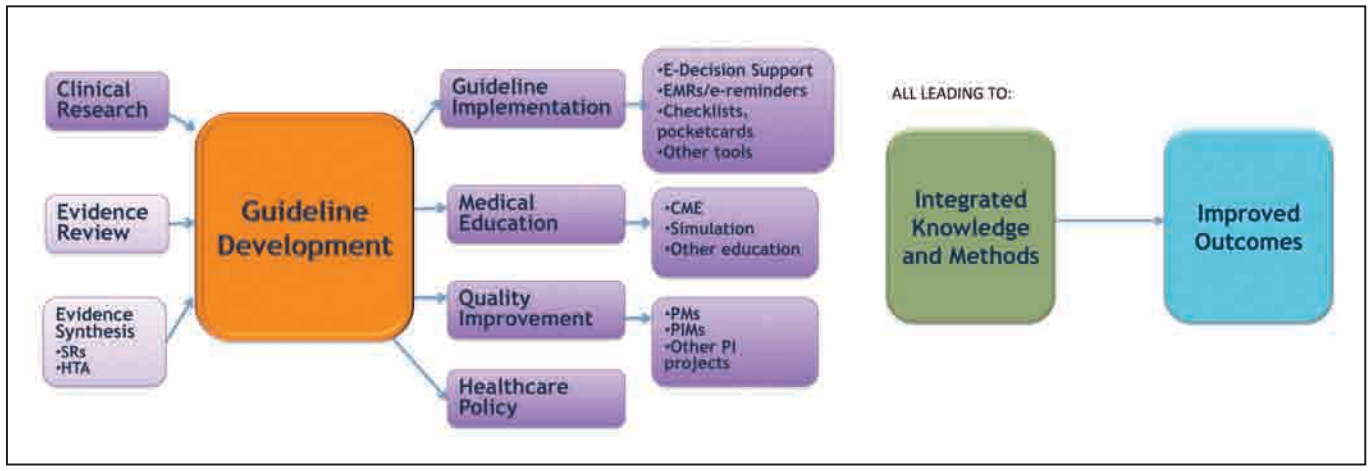
▶ The ACCP Guidelines Methodology Course will inform attendees of the internationally recognized processes employed by the ACCP Health and Science Policy Committee and guideline panels to develop over 20 years of well-known and widely used guidelines in the prevention, diagnosis, and treatment of VTE, lung cancer, PAH, cough, and many other cardiopulmonary conditions.

Those in attendance will receive materials to help their organizations model guideline development after the ACCP processes.

▶ G-I-N PUBLIC is a G-I-N Working Group whose main objective is to support effective patient and public involvement in the development and implementation of clinical practice guidelines. The group offers a forum for exchange between patient and public organizations, clinical practice guideline developers, and researchers.

Registration for these 1-day courses will be ticketed separately. ACCP members are being offered reduced prices for both the courses and the conference. This international conference will not be back in North America for many years.

For information about plenary speakers, and to register, please visit: www.GIN2010.org.
For questions, please contact: GIN2010_Chicago@chestnet.org. ■



PRESIDENT'S REPORT

Who Will Be My Doctor?

As I round in the ICU with what looks like a *maharajah* procession—two fellows, eight residents, two students, a pharmacist, and a respiratory therapist—in tow, I am hurrying to send the overnight team home before 10:00 AM, while simultaneously trying to assess the 27 patients who are overflowing our 16-bed unit.

Despite the ICU team's size, it is fragmented, as one intern has the day off, and one fellow and a resident are on their way to their continuity clinics. I begin to feel the pressure on me to finish rounds, have family meetings, and make triage/code decisions, so that I may have the turnover necessary to admit new patients.

BY DR. KALPALATHA K. GUNTUPALLI, FCCP

I am sure many of you can relate to this scenario, regardless of whether the setting is private or academic. The increasing complexity of the rules dictated by insurance companies, the rigor of the Accreditation Council for Graduate Medical Education (ACGME) regulations, increasing need for documentation, and the demands of computer proficiency have torn us all in many different directions. Balancing the 80-hour work rules, the demand for the equal inpatient and outpatient experiences, regulations of the sponsoring hospitals, didactic lectures, and research requirements for our trainees is also an art. As program director of the pulmonary/critical care program at my institution, I have prided myself on my ability to juggle these competing interests and give the fellows a comprehensive educational experience while ensuring continuity of patient care.

The Reality Today

The role of the attending physician has become much more hands-on. The thread of continuity of care has become the responsibility of the attending physician, rightfully so, as we are ultimately responsible for the care delivered to our patients.

The excess physician supply predicted for 2 decades has not withstood the test of time. The shortage of hundreds of thousands of physicians is now a reality. The ACGME predicts that although the absolute number of physicians will increase by 2020, it will fall short of the demand. The United States will face a shortage of 124,000 to 159,000 physicians by 2025. Universal health-care coverage will further increase the shortfall by another 25%. The "graying of America" will increase the demand for not only the primary care clinicians but also specialists.

Staffing of ICUs by critical care specialists saves lives and money. High intensity staffing of ICUs by trained critical care specialists leads to a reduced ICU mortality of 40% and hospital mortality of 30%. However, only one-third of patients in the ICU are cared for by trained critical care specialists. There is a decreasing supply of intensivists due to early retirement and burnout from the high stress environment. According to a HRSA estimate, we will have less than half of the 4,300 critical care specialists needed in the year 2020.

A multitude of new drugs or interventions cannot substitute for a specialist trained to deal with critically ill patients. An estimated 50,000 lives can be saved each year if the ICUs are staffed by trained intensivists. How can this compare to awaiting new drug development or other novel therapeutic interventions?

In 2007, 388 pulmonary/critical care fellows completed training (an increase of only 40 from 2003). We not only need more funded graduate medical education slots but also need more residents to choose our specialty. Of the fellows choosing critical care medicine, only 50% are US medical graduates, while more than 40% are international medical graduates. The numbers for choosing pulmonary are not any better, with the exception of certain diseases, pulmonologists provide less than 10% of outpatient pulmonary care.

Currently, patients over the age of 65 occupy more than half of all ICU days. As the baby boomers age, the demand for pulmonary/critical care specialists will rise. In order to address the workforce shortage, the ACCP helped introduce the Patient-Focused Critical Care Enhancement Act in the 110th Congress. However, the act did not get much traction and was reintroduced in the 111th Congress and is gaining more cosponsors with its reintroduction.

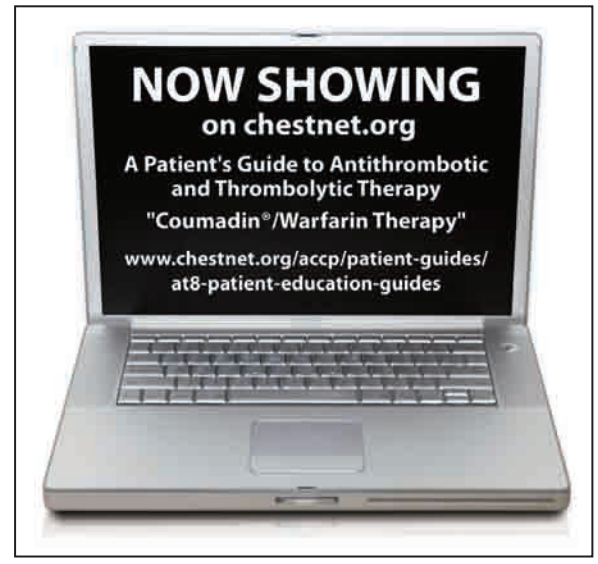
The recent enactment of the Patient Protection and Affordable Care Act (H.R. 3590) as amended by P.L. 111-152 (H.R. 4872) has provided the much-needed reform in health-care delivery to our citizens. The text of the bill recognizes the expected shortfall in physician and other health-care workforces in the near future. To proactively face the situation, the bill provides for the creation of a National Healthcare Workforce Commission that is responsible for developing a comprehensive review of almost all aspects of health-care delivery, including physician shortage and a report to the US Congress and administration annually.

Adding to the problem is the geographic maldistribution of physicians, with the Northeast region having the highest number of physicians per 100,000 population and the Pacific Northwest and the Southwest having lowest number of physicians per 100,000 population. As the baby boomers retire, they tend to migrate to warmer weather states, but these have the least number of physicians to care for them. In addition, more than one in three practicing physicians are over the age of 55 years and are likely to retire sooner than later. Many of us may be in that group already or fast approaching that magical age.

Meanwhile, at the national level, medical school enrollment is increasing by only about 16%. Consider the "pipeline inertia" that is due to the nearly 14 years required to educate and train a new doctor! Thus, the disparity between need and availability may be amplified in the near future.

We have all worked hard and contributed our best years to the welfare of our fellow citizens. We need to set the stage for a more vigorous debate on our national health-care policies, and physician input is needed now more than ever in planning the future of medicine. We must set the stage for a healthier America for future generations.

On a more personal note, I would like to have a well-trained physician care for me when I need one, and I am sure all of you have the same wish. Maybe the awareness of the looming problem will help us find the right solutions. With all the projections of work force shortage, increased longevity, demand overwhelming supply, and the younger generation choosing specialties based on lifestyle, I cannot help but wonder, "Who will be my doctor when I am really sick?" ■



NetWorks

Ideal Bronchoscopy Suites, Training RCPs

Interventional Chest/Diagnostic Procedures

The Interventional Chest/Diagnostic Procedures (ICDP) NetWork aims to evaluate, integrate, and initiate novel, procedure-related diagnostics and therapeutics. This NetWork consists of thoracic surgeons and interventional pulmonologists, both groups with the common interest of pursuing, promoting, and refining emerging technologies. Other goals are educating physicians and residents regarding new procedures and technology and providing information about appropriate clinical use as new interventional techniques are disseminated. Several projects have recently been completed or are nearing completion.

The design of an ideal bronchoscopy suite requires understanding the specific needs of both interventionists and diagnostic pulmonary physicians. Integration of fluoroscopy, ultrasonography, videobronchoscopy, and specimen preparation areas, as well as ergonomic localization of hardware, need to be considered. The NetWork is developing a document for its Web page that will provide a description of the fiscal and physical plant requirements for such an undertaking.

It is becoming increasingly apparent that bronchoscopy simulators are important training tools for residents. In a pilot study, residents trained with simulators demonstrated an improved grasp of airway anatomy and, importantly, appeared to require far less time "practicing on the patient" to become competent bronchoscopists. A manuscript detailing the results of this study is being published in the May issue of *CHEST*.

An initiative to formalize suggestions and metrics for interventional bronchoscopy fellowship training is underway. Currently, no such suggestions exist. Organizing and standardizing a curriculum is an important goal of the NetWork. A manuscript is currently being prepared.

Teaching endobronchial ultrasounds (EBUS) and integrating it into routine clinical practice is the focus of another NetWork project. Assessment of competency and training metrics is another goal. Core education and assessment modules are planned for the summer of 2010.

Two ICDP NetWork Highlight sessions will be presented at CHEST 2010, "Endobronchioal Ultrasound: Evolving Role in Chest Medicine" and "Airway Stents: The Good, the Bad, and the Ugly." The NetWork Open Meeting at CHEST 2010 will feature a lecture on natural orifice surgery.

Dr. Sudish Murthy, FCCP
NetWork Chair

Respiratory Care

The ACCP is one of the sponsoring organizations of the Commission on Accreditation for Respiratory Care (CoARC), which accredits respiratory care education programs. CoARC has recently adopted new standards for respiratory care training programs, creating an opportune time to review the expertise and training of respiratory care practitioners (RCPs).

RCPs are health-care professionals working with the health-care team in a wide variety of clinical settings to evaluate, treat, and manage patients with respiratory and cardiopulmonary disorders. Respiratory therapists complete two or more years of formal training and education, most commonly leading to an associate degree, though baccalaureate and graduate degree programs also exist. The knowledge and skills for performing these functions are achieved through formal college- or university-based programs of classroom, laboratory, and clinical preparation. Biological and physical sciences required include anatomy, physiology, chemistry, physics, microbiology, computer science, pharmacology, and pathophysiology.

RCPs provide patient care that includes clinical decision-making and patient education. Included within their basic scope of practice is performing and assisting in the performance of prescribed diagnostic studies, such as blood gas analysis and pulmonary function testing, polysomnography, assessing the appropriateness of prescribed respiratory care, and participating in the development and modification of respiratory care plans. Additionally, the scope of RCP practice also includes case management of patients with cardiopulmonary and related diseases, evaluating and monitoring patient responses to therapy, initiating and conducting prescribed pulmonary rehabilitation, and promoting evidence-based practice.

The future scope of RCP practice and its attendant training needs are being considered by a broad-based interdisciplinary group encompassing 37 organizations, including the ACCP, under the banner "2015 and Beyond." Their report, expected later this year, will likely predict a further expansion of the role of RCPs in the provision of increasingly complex patient care in both the hospital and outpatient arena, as well as in management and clinical research.

Dr. David Bowton, FCCP
Chair, Board of Commissioners
CoARC
Dr. Thomas Smalling, RRT, RPFT, RPSGT
Executive Director, CoARC

Why You Should Play CHEST Challenge!

The ACCP Affiliate NetWork wants you to play CHEST Challenge, and here are a few good reasons why! Compare NCAA Basketball to our 2010 CHEST Challenge:

	NCAA Basketball	CHEST Challenge
Player requirements	Be a highly trained college athlete. Preferably, tall.	Be in a pulmonary/critical care fellowship program and have access to a computer. No unfair height advantage.
Number of teams possible	65, from colleges in the United States. Half have won conference tournaments, half chosen by a "selection committee."	More than 280 from fellowships throughout the world. Play individually at your convenience at www.chestnet.org; totally merit-based.
What happens if one team member "drops the ball"?	Negative attention for that individual. Potential ruin for the team.	Nothing! No one, not even your program director, ever knows your online score. And since your program's ranking is calculated using only its highest scores, you can only increase the chances of winning by playing.
What happens if your team doesn't make the cut to the semifinal rounds?	Shame and disappointment. Players go home "empty-handed."	Nothing! No one even knows your program participated; players get board exam practice at no cost AND may win prizes just for entering.
What do the semifinalists get?	Thrill of competition. Large audience. Bus ride to the game.	Thrill of competition. Large audience. Free airfare, hotel, CHEST 2010 registration.
What do the finalists get?	Fame, trophies.	Fame, trophies, and a share of thousands of dollars in cash prizes.
What does the audience get?	Excitement, occasional dyspepsia for their team.	Excitement, occasional dyspepsia for their team, continuing medical education (CME) credits.
How can the fans contribute?	Cheer for players, yell at officials.	Cheer for players, yell at officials, submit an image, question, or idea beforehand (NOW) at www.chestchallenge.org.
Opportunity to participate	Way too late.	Play NOW at www.chestchallenge.org before time runs out! Mid-June deadline.

Source: ACCP

Meet the Ambassadors Group 2009 Poster Contest Winner

In June 2009, members of the Ambassadors Group Poster Contest Committee reviewed 29 entries for the CHEST 2009 Ambassadors Group Poster Contest. Based on the excellent use of color and best use of the theme "Love Your Lungs," Anastacia Maivia's design received the highest scores.

Anastacia attends the fifth grade at Kasuun Elementary School in Anchorage, Alaska. She

ACCP

Fifth-grade teacher Karen Bronga (left) with her student Anastacia Maivia, who designed the winning "Love Your Lungs" poster.

was thrilled to win the contest and is happy she entered the contest at the urging of her teacher, Karen Bronga. Anastacia's winning design was put on the CHEST 2009 Walk/Run T-shirts, the cover of the ACCP holiday card, and is one of the designs featured in the note cards available in ACCP's online catalog store.

Here's Your Chance

If you have a child, grandchild, niece, or nephew who is 8 to 14 years old and enjoys drawing, please encourage them to enter the CHEST 2010 Ambassadors Group Poster Contest. Download the rules and print out the submission form at www.chestfoundation.org/foundation/ambassadors/poster.php. All words on the design must be in English. Entries can be mailed to the attention of Sue Ciezadlo at The CHEST Foundation. **Deadline date is June 1, 2010.**