American Association for Respiratory Care's

Adult Acute Care

July / August 2002 Bulletin

Notes from the Editor

by Nick Widder, RRT

A few months ago, the AARC published a white paper on concurrent therapy. The AARC is joining JCAHO and others in saying that treating multiple patients at the same instant in time is neither safe nor efficacious, nor does it come close to optimizing patient care. The AARC goes further than JCAHO in advising hospitals, administrators, and department directors on how to implement programs to reduce or eliminate the number of unnecessary therapies, while concentrating our resources on the patients who will benefit from our services.

Shortly after the publication of the white paper, I noticed a few comments on the section listserve (which all of you as section members are welcome to join). I was somewhat troubled by some of them. One posting discussed the frustrations felt by a therapist who is trying to initiate protocols on her ventilated patients. Chief among

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Special Times, Special Measures

by Keith D. Lamb, RCP, RRT, charge respiratory therapist, Christiana Care Health Services, Newark, DE

For patients in extremis, the stops must be pulled and all resources should be explored and utilized if appropriate. For the respiratory therapist, this arsenal may be limited or not, depending on the type facility that they practice in.

The following patient arrived at our ICU in what most would call extremis. How would you treat this patient differently given the resources available to you within your facility?

The patient was a 52-year-old Caucasian male s/p MVC. He was the unrestrained driver in a vehicle versus telephone pole crash and was ejected. Upon arrival, medics found the patient apneic and he was intubated orally with a #8.0 endotracheal tube without complication. Two large bore AC IVs were started. Crystalloids were started. He was collared, boarded and transported via Lifeflight to our emergency department.

Upon arrival at our ED, the initial survey revealed a GCS of 3, HR 140 sinus tachycardia, and BP 75/35. Frank blood was found in the airway. Pupils were unresponsive. Obvious scull fracture was noted, along with abrasions on the forehead and severe laceration on the posterior scull. Breath sounds were decreased on the right and absent on the left. Diffuse crepitice was evident throughout both lung fields. Subcutaneous air was palpable throughout the neck area, and bilaterally throughout the thorax. Obvious severe chest and abdominal abrasions were seen. Obvious long bone fractures were noted in all extremities.

The patient was placed on a Drager Evita-4 mechanical ventilator. CXR revealed bilateral flail segments, bilateral hemopneumothoracies, severe pulmonary contusions, widened mediastinum, and clavicular fractures. A FAST exam showed free fluid in the belly, which was confirmed by gross DPL.

A trauma panel was drawn and sent to the lab. An ABG was obtained and analyzed at the bedside. Mixed acidemia, with profound hypoxemia, was the interpretation. Ventilator settings were changed accordingly. Vent settings were AC 16/700/100/+10. Static airway pressures were ~ 40cwp.

Bilateral chest drains were placed, after which frank blood was drained and auto-transfused. Central venous access was obtained via the femoral vein. Whole blood infusion was started by level-one rapid infuser.

The patient was stabilized hemodynamically and taken to CT, where scans were done of the head, chest, abdomen, and spine. Results showed a large intracranial bleed, multiple organ injuries, and large pockets of free fluid in the belly. The patient was taken to the operating theatre where a thoracostomy was performed. No large vessel injury was found. A pericardial effusion was drained. No tracheal or bronchus injury was found. An open laparotomy was performed where bowel, spleenic, hepatic, pancreatic, and renal injuries were found. A splenectomy and bowel resection were performed, as well as interventions involving the renal and pancreatic injuries. Neurosurgery performed a cranieotomy and evacuated gross blood. The patient's abdomen was left open and covered with a bagota bag. A femoral arterial line was placed intraoperatively.

The patient was taken to the surgical critical care complex. Throughout the next three hours, he began to deteriorate. Despite actively receiving whole blood, fresh frozen plasma, and continuous fluid administration, the patient became hypotensive. A noradrenaline infusion was started, as well as other pressors.

Bilateral chest drains remained in place and on continuous suction. Fulminant pulmonary edema was intermittently suctioned. An ABG was drawn and revealed that there was still a severe mixed acidemia and profound hypoxemia. The frequency was increased to 22 bpm, and PEEP was increased to 15cwp.

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Dental Problems Linked to Aspiration Pneumonia

Elderly patients who have dental plaque or certain types of bacteria in their mouths may be at increased risk for aspiration pneumonia, finds a new study presented at a recent meeting of the American Geriatrics Society. Although the authors of the report emphasize more study is needed to determine a link between the two conditions, they suggest nursing homes and other providers stress the need for good oral hygiene among their older patients. Use of mouthwashes to reduce the amount of bacteria present in the mouth may be a worthwhile, preventive measure.

The study was conducted by investigators from the University of Michigan and the Veterans Administration. ◆

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SPECIAL TIMES, SPECIAL MEASURES

Other labs continued to deteriorate. Lactate levels continued to increase. Hb was 9, despite continuous infusion of blood products. Twenty minutes after the above vent changes were made, another ABG was drawn off of the femoral A-line and revealed the following: pH 6.9, $pC0_2$ 78, $HC0_3^-$ 16, $pa0_2$ 35. The results were questioned, and another sample was drawn by the RRT from the right radial artery. The results were identical. A HCO_3 drip was started.

Vent changes were again made. PCV and APRV were attempted, then abandoned due to worsening hypotension. Options were discussed with the trauma attending surgeon and an agreement was reached to attempt other interventions. The first step would be tracheal gas inssufflation.

A HFJV catheter was cut to size using a #8.0 endotracheal tube. It was trimmed so that 0.25cm of the catheter extended past the distal end of the endotracheal tube. It was then placed into the patient's endotracheal tube at the same position using the appropriate HFJV adapter. The "jet" extension was capped with a luer lock cap. An oxygen blender was set up using a standard flow meter, and flow was passed through a Fisher-Paykel water chamber half filled with sterile water. The "feeder" tubing to the water chamber was clamped with hemostats. Oxygen supply tubing was attached to the water chamber using an oxygenation "T" device, then attached to the HFJV catheter. A flow of 6 L/m was set, and another ABG was obtained in half an hour which revealed the following: pH 7.11, $pC0_2$ 50, HCO_3^- 16, paO_2 50. The HCO_3 drip was stopped.

Flow through the TGI catheter was increased to 8 L/m, and a decision was made to start nitric oxide. Again, PCV was attempted and abandoned as hypotension worsened.

Nitric oxide was started via INOvent; 20 ppm was continuously administered. Another ABG was drawn 30 minutes after beginning the NO and revealed the following: pH 7.26, $pC0_2$ 40, HCO_3^- 18, paO_2 76. Based on these gasses, the NO was increased to 40 ppm. No other changes were made. Within a couple of hours, the paO_2 was ~200, and the pH was 7.3. No other changes were made throughout the day.

A second central venous line was placed via the right sub-clavian vein. A Swan-Ganz catheter was placed.

Later in the day the patient again began to deteriorate. Lactate levels sky rocketed, hypotension worsened despite pressors being at their maximum levels, and the patient's neurological status was dismal. DIC screens showed extreme coagulopathy.

Fearing a dead bowel, the surgeons removed the irrigation bag from the abdomen at the bedside and found that, indeed, the entire bowel was ischemic and dead.

The family was spoken to and informed that the injuries suffered by their loved one were irreversible and that mortality from such a condition was 100%. After lengthy discussion with family and staff, pharmacological support was removed and the patient expired within 30 minutes.

Conclusion: This patient's chances of survival were slim from the beginning. Any one of his multiple injuries was potentially fatal. Mortality from such polytraumatic injures are extremely high and worsen with age.

As respiratory therapists, we must learn to understand the "unusual" circumstances that may arise within our patient population and utilize our resources to the fullest extent. We should offer to alter our usual treatment of patients and seek to find the most applicable interventions on an individual basis. ◆

Reducing ER Visits for Asthma

Using intranasal steroids to treat asthmatics who also have upper airway conditions reduces the risk of emergency room visits for asthma attacks, say researchers publishing in the April issue of the *Journal of Allergy and Clinical Immunology*.

They reviewed the medical records of 13,844 patients five years of age or older who had been diagnosed with asthma and rhinitis, sinusitis, or otitis media. About 1,000 had an emergency department visit for asthma.

Researchers associated a reduction in emergency department visits with use of nasal steroids or prescription antihistamines. The reduction was seen both for asthmatics taking inhaled corticosteroids for asthma and those not using inhaled steroids for asthma. ◆

OSA Linked to Heart Disease

The first long-term, clinic-based epidemiologic study of the development of cardiovascular disease in middle-aged men either with or without obstructive sleep apnea (OSA) showed that the sleep problem caused almost a 5-fold increase in heart disease, independent of age, weight, blood pressure and current smoking status. Swedish researchers found at least one cardiovascular problem in 22 of 60 men, aged 30 to 69, with OSA, compared with 8 of 122 without OSA.

All men were free of heart and pulmonary disease, diabetes, psychiatric disorder, alcohol dependency, or malignancy when the study began in 1991. They were then followed over a 7–year period. According to the investigators, the most significant predictor of the development of cardiovascular disease was the presence of OSA at baseline.

Patients with excessive daytime sleepiness were offered treatment with either continuous positive airway pressure, surgery, or an oral appliance. In the OSA group, cardiovascular disease was observed in 21 of 37 incompletely treated cases, but it occurred in only 1 of the 15 effectively treated patients.

The study appeared in the second July issue of the *American Journal of Respiratory and Critical Care Medicine.* ◆

Pulmonary Doc Appointed to MedPAC

The U.S. Comptroller General has appointed a pulmonary physician to serve on MedPAC, the independent federal body responsible for advising Congress on Medicare revisions and rates. Dr. Nicholas Wolter, pulmonary and critical care physician and chief executive officer of Deaconess Billings Clinic in Billings, MT, will join three other new appointees on the 17-member commission. ◆

Get the Latest 4-1-1 From the AARC

Did you know the AARC sends weekly news updates to AARC members through its *News Now@AARC* email newsletter? Or that the executive office staff sends surveys, AARC Store sales announcements, and other general messages via e-mail? If you aren't receiving these important updates, it's probably because your current email address isn't in your membership record. To update your membership information and receive all the AARC 4-1-1, contact Catalina at mendoza@aarc.org. ◆

U.S. Comes Out on Bottom

The United States came out on the bottom in a new survey comparing health care access in five developed nations. According to the Commonwealth Fund study, one in five Americans had problems getting the care they needed in the past year, mainly due to the costs of the services involved. Results showed 21% of Americans had trouble paying medical bills, compared to 20% of New Zealanders, 17% of Australians, 9% of Canadians, and 4% of people in the United Kingdom. Among those who didn't fill prescriptions because of the costs, 39% were in the U.S., 22% in Canada, 21% in Australia, 20% in New Zealand and 7% in the U.K. The study was conducted in conjunction with researchers from Harvard and published in a recent issue of *Health Affairs*. ◆

The AARC Needs You!

Did you know it takes more than 500 active volunteers to successfully run the vast and varied programs and services offered by the AARC every year? Who should take on these responsibilities? How about you?

President-elect David Shelledy, PhD, RRT, is currently seeking volunteers to serve on various AARC committees and in numerous other capacities during his presidency in 2003. If you'd like to sign up – or just find out more about how you can become more involved in your professional association – check out the following link on AARC Online: aarc.org/headlines/volunteer. ◆

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NOTES FROM THE EDITOR

her complaints were the changes coming about in the profession and the inequities she has seen between salary and costs of living in her area.

Some of these concerns are beyond my scope to assist with, but others are easily within our grasp. The AARC is OUR professional organization, representing the respiratory therapists of the nation. Suggestions and recommendations on how to initiate positive changes are available to our members. Help is available on the AARC web site's "Help Line" (found in the "Community" section), via the section listserve (found in the "Community" section, under the "Specialty Sections" heading) and, when all else fails, you can reach me (see the contact information on page 2) or the AARC office in Dallas.

Another post on the section listserve stated that the white paper on concurrent therapy was, "So far away from reality." Unfortunately, I must disagree with that statement. I am still a therapist, spending at least half my shift at various patient bedsides in an effort to improve their care and treatment. It would be difficult for me to assess the needs — much less the response to therapy — if I simply poured medications into a nebulizer, turned on a flowmeter, slapped a mask on the patient and walked away. I have the ear of my medical staff because they know who I am and how I care for my patients. This allows me to find physicians who can champion our causes among their peers when necessary.

When we, as professionals, tolerate low–level standards among our coworkers, how can we expect to be respected? Just because we passed national registry examinations? That will never work.

The only ambassadors we, as a profession, have to combat negative impressions are ourselves. Unfortunately, many therapists go out of their way to avoid contact with their patients' families; because of workload, or simply due to an unwillingness to discuss matters of concern that they, as therapists, may or may not have control over. The only way we can find a basis of support among the patients and families we care for is to take the small amount of time necessary to establish a relationship with those who, in the long run, control the purse strings.

There are some wonderful ideas in the white paper to help demonstrate our expertise to patients, families and the medical community. Perhaps we are best served by taking advantage of what we can learn from these things. ◆

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Updated Asthma Guidelines Highlighted in *AARC Times*

Check out your August issue of *AARC Times* for an analysis of the updated Guidelines on the Diagnosis and Management of Asthma issued earlier this summer by the National Asthma Education and Prevention Program (NAEPP).

Tom Kallstrom, RRT, the AARC's representative to the NAEPP and director of respiratory care services, cardiac rehab, and biometrics at Fairview Hospital in Cleveland, OH, provides an overview of the changes and what they mean to RTs and their patients. Specifically, he explains the rationale behind the major change in the updated version: a recommendation stating that inhaled corticosteroids are safe, effective, and the preferred first-line therapy for children and adults with persistent asthma.

The NAEPP Guidelines were first released in 1991 and updated in 1997. The current update is the first in a series of periodic revisions on selected topics aimed at ensuring the guidelines reflect the latest scientific advances in asthma care. ◆

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Photos courtesy of the Tampa Bay Convention and Visitors Bureau

Seeking New Tests for Lung Cancer

Researchers at Ohio State University have identified more than two dozen genes that behave abnormally in cancerous lung cells. About half of the 26 genes pinpointed in the study have never before been linked to lung cancer. The finding could lead to new tests for diagnosing lung cancer.

For the study, investigators analyzed samples of cancerous lung tissue taken from patients who had died of the ailment, then compared them to normal lung tissue from the same patients. Using standard tests, they found that the level of certain proteins in the tumor cells was higher than normal. They traced the increased level of these proteins to the over-expression of 14 genes. In the same way, the researchers traced the low level of another set of proteins to 12 genes that were under expressed in the tumor cells.

Among the genes identified in the study are those that regulate intra-cellular communication, cell growth, and apoptosis, or programmed cell death. The list includes some known oncogenes — genes that promote cancer when they go into overdrive — and some known tumor-suppressor genes, which fail to check tumor growth when they are under expressed.

The next step in the research will be to find out which of the 26 genes identified in this study start behaving abnormally at a relatively early stage in the onset of lung cancer. The study appeared in a recent issue of the journal the *Neoplasia*. ◆