



Transport

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American Association
for Respiratory Care

Notes from the Editor

by Steven E. Sittig, RRT

As I sit down to write this, my first column of the new year, I have just returned from San Antonio and the AARC International Congress. The meeting featured many great talks, and there were a lot of new things to look at in the exhibit hall. I also had the opportunity to help man the AARC booth during a session called "Meet the Specialty Section Representatives," where I handed out copies of past *Bulletins* to many who did not even know that the AARC has a specialty section devoted to transport.

I attended the AARC business meeting on Saturday and was surprised to learn the number of RTs nationwide (around 100,000) and the percentage of them who belong to the AARC (only about a third). This is one area that needs improvement. In these times of health care reform and reorganization, we need a strong national organization to protect our profession from a non-degreed and a less trained workforce. I realize that most states now have some form of licensure, and with that comes an additional outflow of hard-earned money to pay for that state RCP license. But it is important both professionally and personally to be involved with and supportive of those who strive to advance and protect this valuable profession. So let's do our best to encourage our coworkers to join and support the AARC.

I was very pleased with the attendance at

the section business meeting, which took place after our group of lectures on Tuesday. Our meeting was one of the last items on the agenda at the Congress, but despite the late hour, we had a good turnout. Several items were discussed, including topics for future *Bulletin* articles, issues relating to the growth of the section, and future goals for RTs in the transport arena. We even traded a few war stories/tricks of the trade. One of the suggestions was to begin featuring case studies of transports in the *Bulletin*. If you have an interesting transport story, please feel free to forward it to me via email, or contact me by phone to find out more about submitting it for publication. I am, as always, open to suggestions and willing to help new or seasoned authors.

Finally, I would like to thank the person/persons who nominated me for the Transport Section Specialty Practitioner of the Year — it was a great honor and a huge surprise — and remind you that it is not too early to begin thinking of those colleagues who go the extra mile every day and consider nominating them for the 2002 award. This year's Congress is coming up in October, so we will have less time to pick a deserving transport therapist.

Until next time, I hope all of your transports end safely for both you and your patients. ■

Specialty Practitioner of the Year: Steven Sittig, RRT

The Transport Section was pleased to honor Steven Sittig, RRT, as its Specialty Practitioner of the Year at the Awards Ceremony held during the AARC International Congress in San Antonio last December. In addition to serving as the very capable editor of this *Bulletin*, Steven assists the section in numerous capacities, and he plays a key role in working within the larger community at the AARC on issues related to our practice area.

Steven, who flew in helicopters as part of the First Marine Airwing, has been working in the transport area since graduating from respiratory therapy school in

1986, first at Sioux Valley Hospital in Sioux Falls, SD, and then at the Mayo Clinic in Rochester, MN, his current place of employment. When he's not busy caring for patients in the air, he conducts two-hour outreach education classes at local referral hospitals for the pediatric critical care program and is also a PALS and clinical instructor for the Mayo respiratory therapy program.

Says Steven, "I feel it is important to participate in committees and issues with other health professionals, increasing our visibility and laying groundwork to help the profession grow." ■

Conference Report: Neonatal/Pediatric Transport

by Carrie McKenzie, RRT, and Edward Schneider, RRT

Last May, we attended the All Children's Hospital Neonatal/Pediatric Transport Conference in Clearwater Beach, FL. It was a great opportunity to meet with others and share ideas and techniques. As respiratory therapists, it was also exciting to see how our profession is growing and how RTs are being used more often in the transport setting. Many teams are using the nurse/therapist composition, and there were a large number of RTs at the conference, many of whom were presenting as well.

The conference opened with a presentation by Dirk Danschutter, RN, CCRN, PCCRN, from Brussels, Belgium. He gave

a great overview of transport in Belgium. It was truly a moment to stop and appreciate our EMS system in the United States. In Belgium the transport can take hours, not minutes — even scene transports.

Nitric oxide on transport using the Datex-Ohmeda INOvent delivery system with either the Bio-Med MVP-10 or Infrasonics Infant Star 100 ventilator was featured during another session. High frequency jet ventilation on rotor wing flights using the Bunnell Life Pulse Ventilator and Mobile ECMO was also presented. Other basic techniques covered included x-ray interpretation, c-spine immobilization, and

intubation.

Much of the conference was devoted to support of the team members. Team composition and the need for specialty teams were covered and supported. Ken Grimes, MPH, EMT-P, presented "Lessons Learned; the Crash of Bayflite 3" — a somber but important speech that reinforced many communications and safety issues.

The conference ended on a light note, with an entertaining talk by Diane Fojt, MSc. She reminded us just how great our jobs are and why we work as hard as we do!

Hepatitis C: A Silent Epidemic

by Steven E. Sittig, RRT

We are at the edge of a very significant public health challenge — not unlike the AIDS epidemic. We have an infectious disease that is an undisputed threat to the public health. It is a viral disease that millions

of people harbor without knowing they have it. It is a disease these millions will carry for a decade or more — possibly spreading to others — while it develops into a serious threat to their health. We can treat the disease during this quiescent period and we can eliminate the infection for a large portion of the infected, preventing progression to serious disease.

— C. Everett Koop, MD, SC.D.

Hepatitis C, also called HCV, is a virus spread by contact with infected blood.¹ Over 4.5 million people in the United States are infected with this virus. Only about 5% of those infected know it. And an even smaller percentage, about 1%, have received treatment. Because so many people do not realize they are infected, they may infect others.

The hepatitis C virus rarely causes immediate symptoms. That is why it often goes undetected for years or even decades. It commonly develops into a chronic disease that eventually can cause serious health problems.¹

Although the incidence of HCV has been dropping in the past decade, about 30,000 new cases occur every year. Less than one third of these new cases are diagnosed. HCV continues to cause up to 10,000 deaths every year. That number could triple in the next few decades without appropriate diagnosis and treatment of those infected.² Unlike hepatitis A and B, there is no vaccine against hepatitis C.

It is not as easily transmitted as hepatitis A and B, but if you are exposed to the virus you usually become infected.¹

Hepatitis C is quickly becoming a major health care problem.³ In fact, according to the Centers for Disease Control, it has now

reached epidemic proportions, ranking only slightly below chronic alcoholism as a cause of chronic liver disease, liver failure, and liver cancer in the United States.⁴ In fact, HCV is now the leading cause of liver transplantation in the United States.²

After being exposed to HCV, initial infection usually occurs within six to seven weeks.³ Within approximately two months, most of those infected have injury to their liver cells. Only up to 35% of those infected experience symptoms, including tiredness, weakness, and weight loss. HCV resolves without treatment in only 15% of cases. Six months after initial infection, HCV remains in 85% of those infected.

These individuals develop chronic HCV.² The course of HCV remains somewhat unpredictable. It may progress slowly, or it can progress quickly, with damage occurring within ten years of infection. The prognosis for those with HCV varies and is difficult to determine.⁵ It has been estimated that 20% to 30% of patients ultimately end up with serious damage to the liver.⁶ Symptoms such as jaundice, significant weakness and weight loss, and bleeding in the gastrointestinal system do not appear in many patients until advanced liver disease has already developed.^{2,6}

The liver is the organ most commonly affected by chronic hepatitis C virus. Chronic HCV leads to cirrhosis in about 20% of patients within the first two decades after initial infection.² Cirrhosis is a disease of the liver that causes extensive damage to liver cells, interference with blood flow to the liver, and ultimately liver failure.⁷ Cirrhosis may develop more rapidly among patients who drink alcohol.²

Chronic infection with HCV is also associated with an increased risk of hepato-

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cellular carcinoma, or liver cancer. This type of cancer can occur three or more decades after infection with HCV. The risk of liver cancer appears to be 1% to 5% after 20 years of HCV infection. Liver cancer occurs more frequently in men than in women, and more often in older than in younger patients.²

Injection drug use accounts for half of the new HCV infections each year. Those who received blood transfusions prior to 1990 are also at risk. Tests to screen donated blood for HCV were not available until after 1990. Others at risk include those who are exposed to blood or blood products on the job, such as hospital personnel or emergency medical technicians. The route of transmission may be unknown. In these cases, infected individuals have no known risk factors.²

Hepatitis C has been called the silent epidemic.¹ That is, people who have the disease often do not know it. In fact, chronic hepatitis C may be discovered during a routine blood test, when it was not suspected.⁵ Effective tests for detecting HCV in the blood were developed during this past decade.¹

A commonly used test is called an enzyme immunoassay (ELISA) for hepatitis C virus antibody.⁵ These test results can be confirmed with other more scientifically advanced blood tests.

The following is a list of factors that may allow HCV treatment with combination therapy to be especially effective.⁵

- Non-genotype 1 patients (genotype refers to the basic combination of genes of an organism).
- Low levels of the virus in the patient's blood.
- Patient is less than 45 years of age.
- Patient has been infected with hepatitis C for less than five years.
- No cirrhosis or liver failure.

It is important to note, however, that even if none of the factors in the list apply, an indi-

vidual may still respond to hepatitis C treatment.

The most common side effect of combination therapy is flu-like symptoms, which are most severe during the first few weeks of treatment. These symptoms usually subside, but may persist in others. Other side effects include cough, rash, insomnia, fatigue, and depression.^{4,9} Some patients may also experience anemia while undergoing treatment. It is important to note that the side effects associated with this treatment are manageable and temporary.

Combination therapy must not be used by women, or male partners of women, who are or may become pregnant during therapy or during the six months after therapy has been stopped. This is because studies have shown that combination therapy can cause serious birth defects.

In the United States, four forms of interferon alfa are approved for treatment of chronic HCV infection. All forms of interferon alfa appear to have similar effectiveness.² The standard dose for interferon alfa is 3 million units (MU) given by injection three times per week.² A 12-month course of treatment with interferon alfa alone was found to make 15% of patients have undetectable viral levels in the blood and improve liver function.⁵ Although higher doses may increase initial response and temporary benefit, they may be associated with increased side effects. In addition, higher doses have not been shown to increase a response that lasts. As with combination therapy, the side effects associated with interferon alfa treatment alone are manageable and temporary.⁹

Side effects occur more commonly when higher doses of interferon alfa are used for treatment.^{4,9,10} During the first weeks, the most common side effect of treatment is flu-like symptoms.¹¹ Later in the course of treatment, tiredness and depression are more common.

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Drug Capsule: Propofol

by Steven E. Sittig, RRT

Propofol is an intravenous sedative hypnotic agent useful in the induction and maintenance of general anesthesia; MAC sedation; and sedation of adult, mechanically ventilated patients in the ICU. Propofol should not be used for sedation in pediatric ICU patients. Propofol is NOT recommended for general anesthesia in children under the age of three years or for ICU or MAC sedation in children less than 12 years of age. Propofol is effective in both adults and children (aged three and above) for inducing and/or maintaining general anesthesia in most surgical procedures, either in com-

bination with other anesthetics or as the sole hypnotic agent. Propofol is also effective for IV sedation in the ICU setting in adult patients.

Pain or burning at the injection site is common, especially when the IV is in a small peripheral vein.

Dosing information

The usual adult induction dose is 2 to 2.5 mg/kg. For anesthesia maintenance, continuous Propofol infusions of 6 to 12 mg/kg/hour (0.1 to 0.2 mg/kg/min) have been used. For monitored anesthesia care

(MAC), also called conscious sedation, most patients require an infusion of 6 to 9 mg/kg/hr; maintenance rates of 0.3 to 3 mg/kg/hr or higher may be required for ICU sedation. Propofol should not be used for sedation in pediatric ICU patients.

Pharmacokinetics

Onset of anesthesia usually occurs within 30 seconds of the end of the bolus infusion, and the duration of effect is 3 to 10 minutes depending on the dose and the rate

"Drug Capsule" continued on page 4

"Drug Capsule" continued from page 3

of administration. Propofol is highly lipophilic, with a large volume of distribution. The drug is 97% to 99% protein bound. The half-life of the initial elimination phase is approximately 40 minutes, while the terminal elimination phase half-life is approximately 200 minutes.

Cautions

Pain on injection is one of the most common adverse effects associated with Propofol when the drug is administered via the small veins on the dorsum of the hand or wrist. Apnea and reduction in blood pressure are also relatively common with Propofol anesthesia. Propofol should not be used for sedation in pediatric ICU patients.

Contraindications

- Hypersensitivity to Propofol emulsion or any of its components.
- Patients in whom sedation or general anesthesia are contraindicated.

Precautions

- Severe cardiac or respiratory disease.
- Epilepsy or seizures.
- A lower induction dose and slower maintenance infusion rate should be used in elderly or debilitated patients, and those rated ASA Physical Status Classes III or IV.
- Propofol is NOT recommended for use in obstetrics or lactating women.
- Soybean fat emulsion is used as a vehicle and contains no preservatives. Strict aseptic technique must be maintained in handling because this vehicle is capable of supporting bacterial growth.

Hemodynamic effects

Intravenous Propofol produces a dose-related degree of hypotension and decrease in systemic vascular resistance which is not associated with a significant increase in heart rate or decrease in cardiac output.

In children with congenital heart defects, the principle hemodynamic effect of Propofol is a decrease in systemic vascular resistance. Children with no shunt (n=16), left-to-right shunt (n=6), or right-to-left shunt (n=8) received a Propofol 2 mg/kg bolus with a 50 to 200 mcg/kg/minute infusion. Mean arterial pressure and systemic vascular resistance decreased and systemic blood flow increased in all patients. In patients with no shunt or left-to-right shunt, pulmonary to systemic resistance ratio increased significantly (p=0.005 and p=0.03, respectively). In patients with a left-to-right shunt or right-to-left shunt, Propofol decreased left-to-right flow and

increased right-to-left flow (p=0.005 and p=0.01, respectively). In children with a right-to-left shunt, arterial blood gas measurements revealed significant declines for pressure and oxygen saturation (p less than 0.01) and oxygen tension (p=0.008). Arterial desaturation may occur in patients with cyanotic heart disease (Williams et al, 1999).

Respiratory effects

Apnea during anesthesia induction with Propofol is the most common respiratory adverse effect and has been reported in 1% to 3% of patients receiving Propofol (Prod Info Diprivan(R), 2000). Apnea of more than 30 seconds occurred in 24% and 44% of 100 unpremedicated patients receiving Propofol 2 and 2.5 mg/kg, respectively, for anesthesia induction (McCollum & Dundee, 1986).

The occurrence of apnea is quite high and variable, as it is reported in 50% to 84% of patients (Langely & Heel, 1988). This may be dependent on a variety of factors, such as premedication, speed of administration, dose, and presence of hyperventilation and hyperoxia. These last two effects can result from the common practice of administering 100% oxygen to patients just prior to induction (Goodman et al, 1987). A transient decrease in arterial oxygen saturation has been observed in pediatric patients following the administration of Propofol for conscious sedation (Frankville et al, 1993). Coughing occurred in 1.9% of 1463 patients receiving Propofol for anesthesia induction (Stark et al, 1985).

Adverse effects

Airway

- Copious secretions
- Laryngospasm

Respiratory

- Apnea, respiratory depression
- Hiccough
- Bronchospasm

Cardiovascular

- Hypotension
- Dysrhythmias, bradycardia, or tachycardia

Central nervous system

- Headache
- Dizziness, euphoria, confusion
- Clonic/myoclonic movements
- Seizures, disinhibition

Propofol is extensively distributed throughout the body. It is eliminated from the body by the liver and the pulmonary system. No dosage adjustments are needed for patients with renal or hepatic failure. Propofol potentiates CNS, respiratory, and cardiovascular depressant effects of narcotics and sedatives hypnotics.

Monitoring parameters

- BP, HR, RR
- Level of sedation and oxygen saturation

Upcoming Conferences

2002 Critical Care Transport Medicine Conference

Hosted by:

- Air Medical Physician Association
- Air & Surface Transport Nurses Association
- American Association for Respiratory Care Transport Section
- National Flight Paramedics Association

With Participation by:

- National Association of Airmedical Communication Specialists
- Jointly Sponsored by AMPA and Brown Medical School

Location: Las Vegas, NV

Dates: April, 2002

Course Description: Physicians, nurses, paramedics, respiratory therapists, and allied health care professionals will be provided information that offers them a deeper understanding of the essentials of care required for the complex patient requiring critical care air and ground transport. Adult and pediatric issues will be presented, as well as topics geared to enhance your professional image.

Registration

Info:

<http://www.ampa.org/html/register.html>

For more information, contact: Pat Petersen, (800) 381-6372.

AARC International Respiratory Congress

Hosted by: The American Association for Respiratory Care

Location: Tampa, FL

Dates: October 5-8, 2002

Contact: www.aarc.org, (972) 243-2272

3rd International Pediatric Cardiovascular Symposium: Prenatal/Neonatal Congenital Heart Disease

Hosted by: Children's Healthcare of Atlanta, Sibley Heart Center

Location: Crowne Plaza Hotel, Buckhead, Atlanta, GA

Dates: October 11-13, 2002

Contact: jane.darrish@choa.org, (404) 929-8645 ■

USDOT Guidelines for Air Medical Crew Education

Star Mountain Inc., at the request of the U.S. Department of Transportation-National Highway Traffic Safety Administration (USDOT-NHTSA), and in collaboration with representatives from the air medical industry, is in the process of reviewing and revising the 1988 edition of the "Air Medical Crew National Standard Curriculum." The shared goal of all concerned is to identify and set the standard for the knowledge and competencies that all air medical ALS providers should maintain specific to their mission and program scope

of practice. In recognition of the fact that many organizations and individual programs have already worked toward this end, the revision, entitled the "USDOT Guidelines for Air Medical Crew Education" gave those individuals a mechanism to assist in setting practice standards nationwide.

The authors and reviewers were selected from an experienced group of industry providers and administrators representing programs from every geographical region. Private, municipal, and military agencies,

and providers from all involved disciplines, including respiratory care practitioners, were included to ensure that the guidelines reflect the very diverse needs of the air-medical industry.

The USDOT-NHTSA and the Government Printing Office expect to publish the document and make it available online early in 2002. For more information, visit the Star Mountain web site at: www.starmountain.com. ■

Medical Humor

Brain Transplant

In the hospital, a patient's relatives gathered in the waiting room, where their family member lay gravely ill. Finally, the doctor came in looking tired and somber. "I'm afraid I am the bearer of bad news," he said as he surveyed the worried faces. "The only hope left for your loved one at this time is a brain transplant. It's an experimental procedure, semi-risky, and you will have to pay for the brain yourselves."

The family members sat silent as they absorbed the news. At last, someone asked, "Well, how much does a brain cost?"

The doctor quickly responded, "\$200 for a female brain, and \$500 for a male brain."

The moment turned awkward. Men in the room tried not to smile, avoiding eye contact with the women, but some actually smirked. A girl, unable to control her curiosity, blurted out the question everyone wanted to ask, "Why is the male brain so much more?"

The doctor smiled at her childish innocence and then to the entire group said, "It's

a standard pricing procedure. We have to mark the female brains down, because they're used!"

The Memory Test

Three elderly men are at the doctor's office for a memory test. The doctor asks the first man, "What is three times three?"

"274," is his reply.

The doctor rolls his eyes and looks up at the ceiling, and asks the second man, "It's your turn. What is three times three?"

"Tuesday," replies the second man.

The doctor shakes his head sadly, then asks the third man, "Okay, your turn. What's three times three?"

"Nine," says the third man.

"That's great!" says the doctor. "How did you get that?"

"Simple," he says, "just subtract 274 from Tuesday."

Charting Humor

• "When she fainted, her eyes rolled

around the room."

- "By the time he was admitted, his rapid heart had stopped and he was feeling better."
- "Discharge status: Alive but without permission. Patient needs disposition; therefore, we will get Dr. Blank to dispose of him."
- "Healthy-appearing, decrepit 69-year-old male, mentally alert but forgetful."
- "The patient refused an autopsy."
- "The patient has no past history of suicides."
- "The patient expired on the floor uneventfully."
- "Patient has two teenage children, but no other abnormalities."
- "Patient's history is insignificant, with only a 40 pound weight gain in the past 3 days."
- "The patient left the hospital feeling much better except for her original complaints."
- "She is numb from her toes down." ■

Get it on the Web

Want the latest news from the section in the quickest manner possible? Then access the *Bulletin* on the Internet! If you are a section member and an Internet user, you can get your section newsletter a week and a half to two weeks earlier than you would get it in the mail by going to your section homepage at: <http://www.aarc.org/sections>

/section_index.html. You can either read the *Bulletin* online or print out a copy for later.

The AARC is encouraging all section members who use the Internet to opt for the electronic version of the *Bulletin* over the mailed version. Not only will you get the newsletter faster, you will be helping to save the AARC money through reduced

printing and mailing costs. These funds can then be applied to other important programs and projects, such as ensuring effective representation for RTs on Capitol Hill.

To change your option to the electronic section *Bulletin*, send an email to: men-doza@aarc.org. ■

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