Transport Bulletin
March/April '02

American Association for Respiratory Care

Notes from the Editor

by Steven E. Sittig, RRT

As I sit down to compose this edition of my Notes in early February, I am trying to unwind from an extremely busy January. We had an exceedingly hectic first month of the year, with transport after transport in the midst of a very severe RSV season. We do not have a dedicated transport team at my facility, so we also have coverage responsibility in the PICU/NICU/general pediatric floor. However, I am very fortunate to work with 11 other very dedicated transport RCPs and a supervisor who is not afraid to help out when we need it.

Just last week we had half of our staff working at the same time, handling seven transport requests, along with high acuity patients in our ICUs. Only two were scheduled to work that day shift and three others came in on their day off to help. Even our supervisor was working clinically, setting up the Sensormedics oscillator on a postoperative congenital heart infant, among other tasks. As I have met members of this section, either through email correspondence or at conferences, one thing has become quite clear to me. Those of us who take on the added responsibility that goes with transport are a very committed group. Working in the transport environment can be stress-filled, yet rewarding.

The first quarter of 2002 will be nearly over by the time you receive this *Bulletin*, but I would like to put forth a new year's challenge to the section members. I feel that RCPs are an under-recognized but very important component of many transport programs. Along with the obvious need to recruit more members for the Transport Section and especially the AARC, we should be promoting RCPs in the transport role. Many respiratory therapy programs are struggling to recruit students. Most recruiting efforts I have seen rarely even mention transport as an area where RCPs may specialize. So, when you are putting together recruiting efforts or have a potential student shadowing you at work, do not be afraid to highlight this area. If I had a dime for every time I have heard the comment, "You're a respiratory therapist and you fly on the helicopter and plane?" I wouldn't even have to try to win the Powerball lottery! The general public and even nursing, needs to be educated about our role, and we are our profession's best ambassadors.

Now comes my bi-monthly call for potential authors or suggestions as to what you would like to see more of in **your** *Bulletin*. The *Bulletin* offers an easy route to becoming published and it's a great way to highlight your program. It has been some time since we last had a *Program Focus*, and I am sure everyone would like to hear about what is going on in your institution. Whether you are part of a large transport program or one just getting starting, we'd love to know more about it.

The Transport Section also serves as an important resource for the sharing of information and networking with experienced transport RCPs and I welcome any and all correspondence. My work phone number and email address are listed on page 2 and I look forward to hearing from you. Until next time, may all your transports end safely for you and your patients. ■

AARC Responds to Paramedic/EMT Issue

Transport RTs in some areas of the country have been concerned about recent initiatives aimed at allowing EMTs and/or paramedics to assume RT duties in the hospital setting, either during their off hours or on a full-time basis.

Specifically, a bill has been introduced in Nebraska that would permit both EMTs-Intermediate and paramedics to perform duties defined by their scope of practice, which does include numerous RT procedures such as ventilator management, anywhere in the hospital under nursing supervision. A similar bill allowing paramedics to perform

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these duties in the emergency room is pending in Kentucky. Neither bill would require any additional formal education, credentialing or competency testing. Hospitals would simply have to provide additional "training."

According to AARC Director of State Government Affairs Cheryl West, MHA, the impetus for these bills is coming mainly from hospital associations, which see the measures as a quick way to alleviate the health care personnel shortage, especially in rural areas.

The AARC is working with RTs in both Nebraska and Kentucky to help them respond to the legislation. In addition, the Association has acquired copies of the EMT and paramedic curriculums (available on CD-ROM) and is making them available to state societies that want to compare these training programs to the RT curriculum and present comparisons to their state representatives. ■

Drug Capsule: *Ativan & Phenobarb*

by Steven E. Sittig, RRT

Ativan (Lorazepam)

Lorazepam shares the actions of other benzodiazepines and is used for the management of anxiety disorders or for the short-term relief of symptoms of anxiety or anxiety associated with depressive symptoms. Anxiety or tension associated with the stress of everyday life usually does not require treatment with an anxiolytic. The efficacy of lorazepam for long-term use (i.e., longer than 4 months) as an anxiolytic has not been evaluated. The need for continued therapy with the drug should be periodically reassessed. Lorazepam has also been used in the management of delirium.

Lorazepam injection is used preoperatively in adults to produce sedation, relieve anxiety and provide anterograde amnesia. Administration of lorazepam injection is especially useful in patients with preoperative anxiety who prefer diminished recall of events associated with the day of surgery. Lorazepam injection may be used in conjunction with atropine sulfate, opiate analgesics, other parenterally administered analgesics, commonly used anesthetics and skeletal muscle relaxants.

Lorazepam is also used intravenously for the management of status epilepticus. Although IV diazepam has been used more extensively, some clinicians prefer IV lorazepam because of its more prolonged duration of effect. For continuing seizures, a long-acting anticonvulsant (e.g., IV phenytoin, IV fosphenytoin) can be added presumptively to IV benzodiazepine therapy for the management of status epilepticus. Lorazepam has also been used alone, but usually is used in combination with other drugs.

Administration: Lorazepam is administered orally or by IM or IV injection. The drug should not be administered by intra-arterial injection since arteriospasm can occur, which may cause gangrene and possibly require amputation. Prior to intravenous administration, lorazepam injection must be diluted with an equal volume of compatible diluent, such as sterile water injection, 0.9% sodium chloride injection, or 5% dextrose injection. Following dilution of the drug, lorazepam may be injected directly into a vein or into the tubing of a free-flowing compatible IV infusion (e.g., 0.9% sodium chloride, 5% dextrose) at a rate of injection not exceeding 2 mg/minute. Direct IV injection with the drug should be made with repeated aspiration to ensure that none of the drug is injected intra-arterially and that perivascular extravasation does not occur.

Dosage: For the management of status epilepticus, the usual IV dosage of lorazepam for children and adults is 0.05-0.1 mg/kg. Doses may be repeated at 10- to 15-minute intervals as necessary for seizure control. Alternatively, adults may be given IV doses of 4-8 mg.

Most frequent adverse effects: Ataxia, dizziness, drowsiness, slurred speech.

Phenobarb

As an anticonvulsant, phenobarbital is used principally in the management of tonic-clonic (grand mal) seizures and partial seizures. Phenobarbital may be used as the initial drug, particularly in infants and young children, but more often is administered concomitantly with phenytoin or other anticonvulsants. In infants and young children, phenobarbital is effective in the prevention of febrile seizures. Routine use of phenobarbital for long-term prophylactic treatment of febrile seizures in children is controversial; most clinicians recommend selective use of the drug in these children and a careful assessment of the potential risks versus benefits.

Although IV phenobarbital sodium is occasionally used as initial therapy, IV diazepam is generally considered the drug of choice for termination of status epilepticus; parenterally administered phenobarbital sodium may be useful to prevent seizure recurrence after seizures are initially terminated with other anticonvulsants (e.g., diazepam, phenytoin sodium) or for termination of status epilepticus that does not respond to initial therapy with other anticonvulsants. The usefulness of parenteral phenobarbital sodium in terminating acute seizure episodes is limited by the slow onset of action of the drug.

Administration: Phenobarbital is administered orally. Phenobarbital sodium is administered by IM or slow IV injection. Subcutaneous injection or extravasation of the commercially available injections causes tissue irritation, which can result in local

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reactions varying in severity from slight redness and tenderness to necrosis. If such extravasation or inadvertent injection occurs, treatment that includes application of moist heat and injection of 0.5% procaine hydrochloride at the affected site has been recommended. IV administration of the drug should be reserved for emergency treatment of acute seizure states; however, usefulness of the drug in these conditions is limited. When the drug is administered intravenously, the patient should be hospitalized, under close supervision. The drug must be administered intravenously slowly at a rate not greater than 60 mg/minute. Inadvertent intra-arterial injection of commercially available phenobarbital sodium injections can cause spasm and severe pain along the affected artery, which can result in local reactions varying in severity from transient pain to gangrene. The injection should be stopped if the patient complains of pain or if signs of inadvertent intra-arterial injection occur, such as patches of discolored skin, a white hand with cyanosed skin or delayed onset of action.

Dosage: Dosage must be carefully and slowly adjusted according to individual requirements and response. Phenobarbital should be withdrawn or dosage reduced slowly to avoid precipitating seizures or status epilepticus. The usual oral dosage of phenobarbital for adults is 100-300 mg daily. The drug frequently is given at bedtime. There is no advantage in dividing the daily dosage because of the long half-life of phenobarbital. For children, the usual oral dosage is 3-5 mg/kg or 125 mg/m2 daily. For the prevention of febrile seizures, maintenance dosage of 3-4 mg/kg daily has been effective. A period of 2-3 weeks of therapy may be required to achieve full anticonvulsant effects. For management of status epilepticus and other acute seizure states, phenobarbital sodium is administered parenterally in doses of 200-600 mg for adults and 100-400 mg for children. Since up to 30 minutes may be required for maximum effect, it is important to allow the anticonvulsant effect to develop before administering additional doses, in order to prevent overdosage. Some clinicians administer phenobarbital sodium IV until seizures stop or a total dose of 20 mg/kg has been given. IV injections should be discontinued as soon as the desired effect is obtained.

Most frequent adverse effects: Clumsiness, dizziness, drowsiness. ■

Febrile Seizures

Editor's Note: *The following Q&A is reprinted courtesy of the National Institute of Neurological Disorders and Stroke at the National Institutes of Health.*

What are febrile seizures?

Febrile seizures are convulsions brought on by a fever in infants or small children. During a febrile seizure, a child often loses consciousness and shakes, moving limbs on both sides of the body. Less commonly, the child becomes rigid or has twitches in only a portion of the body, such as an arm or a leg, or on the right or the left side only. Most febrile seizures last a minute or two, although some can be as brief as a few seconds while others last for more than 15 minutes.

The majority of children with febrile seizures have rectal temperatures greater than 102 degrees F. Most febrile seizures occur during the first day of a child's fever. Children prone to febrile seizures are not considered to have epilepsy, since epilepsy is characterized by recurrent seizures that are not triggered by fever.

How common are febrile seizures?

Approximately one in every 25 children will have at least one febrile seizure, and more than one-third of these children will have additional febrile seizures before they outgrow the tendency to have them. Febrile seizures usually occur in children between the ages of 6 months and 5 years and are particularly common in toddlers. Children rarely develop their first febrile seizure before the age of 6 months or after 3 years of age. The older a child is when the first febrile seizure occurs, the less likely that child is to have more.

What makes a child prone to recurrent febrile seizures?

A few factors appear to boost a child's risk of having recurrent febrile seizures, including young age (less than 15 months) during the first seizure, frequent fevers and having immediate family members with a history of febrile seizures. If the seizure occurs soon after a fever has begun or when the temperature is relatively low, the risk of recurrence is higher. A long initial febrile seizure does not substantially boost the risk of recurrent febrile seizures, either brief or long.

Are febrile seizures harmful?

Although they can be frightening to parents, the vast majority of febrile seizures are harmless. During a seizure, there is a small chance that the child may be injured by falling or may choke from food or saliva in the mouth. Using proper first aid for seizures can help avoid these hazards

There is no evidence that febrile seizures cause brain damage. Large studies have found that children with febrile seizures have normal school achievement and perform as well on intellectual tests as their siblings who don't have seizures. Even in the rare instances of very prolonged seizures (more than 1 hour), most children recover completely.

Between 95% and 98% of children who have experienced febrile seizures do not go on to develop epilepsy. However, although the absolute risk remains very small, certain children who have febrile seizures face an increased risk of developing epilepsy. These children include those who have febrile seizures that are lengthy, that affect only part of the body or that recur within 24 hours, and children with cerebral palsy, delayed development or other neurological abnormalities. Among children who don't have any of these risk factors, only one in 100 develops epilepsy after a febrile seizure.

What should be done for a child having a febrile seizure?

Parents should stay calm and carefully observe the child. To prevent accidental injury, the child should be placed on a protected surface such as the floor or ground. The child should not be held or restrained during a convulsion. To prevent choking, the child should be placed on his or her side or stomach. When possible, the parent should gently remove all objects in the child's mouth. The parent should never place anything in the child's mouth during a convulsion. Objects placed in the mouth can be broken and obstruct the child's airway. If the seizure lasts longer than 10 minutes, the child should be taken immediately to the nearest medical facility for further treatment. Once the seizure has ended, the child should be taken to his or her doctor to check for the source of the fever. This is especially urgent if the child shows symptoms of stiff neck, extreme lethargy, or abundant vomiting.

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How are febrile seizures diagnosed and treated?

Before diagnosing febrile seizures in infants and children, doctors sometimes perform tests to be sure that seizures are not caused by something other than simply the fever itself. For example, if a doctor suspects the child has meningitis (an infection of the membranes surrounding the brain), a spinal tap may be needed to check for signs of the infection in the cerebrospinal fluid (fluid that bathes the brain and spinal cord). If there has been severe diarrhea or vomiting, dehydration could be responsible for seizures. Also, doctors often perform other tests such as a CBC and urinalysis to pinpoint the cause of the child's fever.

A child who has a febrile seizure usually doesn't need to be hospitalized. If the seizure is prolonged or is accompanied by a serious infection, or if the source of the infection cannot be determined, a doctor may recommend that the child be hospitalized for observation.

How are febrile seizures prevented?

If a child has a fever most parents will use fever-lowering drugs such as acetaminophen or ibuprofen to make the child more comfortable, although there are no studies that prove that this will reduce the risk of a seizure. One preventive measure would be to try to reduce the number of febrile illnesses, although this is often not a practical possibility.

Prolonged daily use of oral anticonvulsants, such as phenobarbital or valproate, to prevent febrile seizures is usually not recommended because of their potential for side effects and questionable effectiveness for preventing such seizures.

Children especially prone to febrile seizures may be treated with the drug diazepam orally or rectally, whenever they have a fever. The majority of children with febrile seizures do not need to be treated with medication, but in some cases a doctor may decide that medicine given only while the child has a fever may be the best alternative. This medication may lower the risk of having another febrile seizure. It is usually well tolerated, although it occasionally can cause drowsiness, a lack of coordination or hyperactivity. Children vary widely in their susceptibility to such side effects.

What research is being done on febrile seizures?

The National Institute of Neurological Disorders and Stroke (NINDS), a part of the National Institutes of Health (NIH), sponsors research on febrile seizures in medical centers throughout the country. NINDS-supported scientists are exploring what environmental and genetic risk factors make children susceptible to febrile seizures. Some studies suggest that women who smoke or drink alcohol during their pregnancies are more likely to have children with febrile seizures, but more research needs to be done before this link can be clearly established. Scientists are also working to pinpoint factors that can help predict which children are likely to have recurrent or long-lasting febrile seizures.

Investigators continue to monitor the long-term impact that febrile seizures might have on intelligence, behavior, school achievement and the development of epilepsy. For example, scientists conducting studies in animals are assessing the effects of seizures and anticonvulsant drugs on brain development. Investigators also continue to explore which drugs can effectively treat or prevent febrile seizures and to check for side effects of these medicines.

Where can I get more information?

Additional information for patients, families and physicians is available from: Epilepsy Foundation of America, 4351 Garden City Drive, Landover, MD 20785, (301) 459-3700, (800) EFA-1000 or (800) 332-1000. For more information on research on febrile seizures, contact: Office of Scientific and Health Reports, NIH Neurological Institute, P.O. Box 5801, Bethesda, MD 20824, (301) 496-5751. ■

Saving Lives with CPR and Defibrillation

Death from sudden cardiac arrest (SCA) can be significantly reduced if cardiopulmonary resuscitation (CPR) and defibrillation are administered before emergency medical services (EMS) arrive, according to an editorial in the November issue of *Circulation*. In the United States, cardiac arrests suffered outside a hospital kill about 220,000 people a year.

In the editorial, Douglas P. Zipes, MD, notes that studies involving casinos and airplanes that have installed automated external defibrillators (AEDs) and trained people to use them show that people who suffer SCA there have a greater than 50% chance of being resuscitated and surviving to hospital discharge. However, in most cities only 3-5% of those who have cardiac arrest at home survive until they are discharged from the hospital. People at home lose precious minutes before resuscitation either because they are alone or because they must await the arrival of EMS," he says.

"The most important point is that 75% of sudden deaths occur in the home, and we need to create an approach that can rapidly deliver CPR and defibrillation to the home. For every minute lost in the resuscitation process, the risk of death increases by 10%," says Zipes, a professor at Indiana University School of Medicine in Indianapolis and president of the American College of Cardiology.

Zipes suggests a new approach called Save A Victim Everywhere (SAVE). In the SAVE model, which has been used successfully by volunteer firemen and neighborhood crime watch groups, neighborhood teams would be trained to administer CPR and deliver treatment with AEDs.

According to a study that appeared in the same *Circulation* issue, even those not trained in CPR can make a difference. In the first investigation to evaluate whether dispatcher assistance was associated with improved survival in cardiac arrest, researchers found that the chances of survival among those who received dispatcher-assisted CPR from a citizen not trained in CPR approached that of persons who received bystander CPR from citizens previously trained in CPR without dispatcher assistance.

Using survival-to-hospital discharge data among a group of 7,265 people who experienced cardiac arrest, researchers found that dispatcher-assisted bystander CPR was associated with an approximately 45% improvement in survival to hospital discharge compared to those who received no CPR before EMS arrival. ■

Automated external defibrillators (AEDs) have the potential to save as many

AEDs to Become as Widespread as Fire Extinguishers

as 50,000 lives a year and are expected to become as widespread as fire extinguishers, say researchers from UT Southwestern Medical Center at Dallas.

Unlike larger versions found in ambulances, clinics and hospitals, portable AEDs are designed to allow people with modest training to safely deliver effective cardiac defibrillation, says Dr. Jose Joglar, lead author of a review article regarding the clinical promise of AEDs in the December issue of *Annals of Internal Medicine*.

An initiative to place AEDs in strategic locations was spurred by the American Heart Association in 1994. The goal is to place AEDs in locations such as international airports, county jails, large shopping malls, public sports arenas and large industrial sites so that persons with minimal training can promptly defibrillate victims of cardiac arrest. "Any lay person can use the device. The only limitation would be for the device to actually be available," Joglar says.

It's estimated that only 3-5% of the 250,000 Americans who experience out-of-hospital cardiac arrest actually survive. Once sudden cardiac arrest occurs, the chances of survival are reduced about 10% every minute after the arrest. "Early defibrillation is the most effective treatment in patients experiencing cardiac arrest due to ventricular fibrillation, which is a leading cause of death in the United States. As AEDs become widespread, more lives will be saved," Joglar says.

An operator of an AED is guided by an automated system that instructs the operator to attach electropads. After the pads, are attached the device analyzes the heart rhythm and, if the rhythm is ventricular fibrillation, a voice-activated prompt advises the operator to administer the shock.

In a 1997 study, conducted by researchers at UT Southwestern, devices placed aboard American Airlines aircraft were used on 200 passengers as monitors and to administer shock. Study results indicated that 40% of individuals treated with an AED survived during a two-year period. In a second study, AEDs were placed in selected casinos in Nevada and Mississippi. Results from the study showed that, of the 105 individuals who experienced ventricular fibrillation, 74% of those defibrillated in three minutes or less survived.

Both studies confirmed that AEDs were effective not only in delivering a shock when necessary, but also in identifying heart rhythms unrelated to sudden cardiac arrest and advising the operator of the AED not to deliver a shock, Joglar says.

The effectiveness of the AED recently prompted governmental agencies and Congress to pass laws regarding the availability and usage of the devices. In April 2001, the Federal Aviation Administration ruled that all U.S. airlines be required to carry defibrillators and upgrade emergency medical kits within three years. In 2000, Congress passed the Cardiac Arrest Survival Act, which extends Good Samaritan protection to AED users in states that do not currently have protective legislation. Guidelines are currently being developed for placement of AEDs in all federal buildings. ■

Upcoming Conferences

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 ■

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: mendoza @aarc.org. ■

Transport Section Survey

We want to provide you with the information and service you desire for your specialty section membership. Please take a minute to fill out this small survey and fax it back to: 972-484-6010

Why did you join this specialty section?

___ To receive information about my specialty area of practice.
___ To participate in designing programs and information about my specialty.
___ To network with and learn from others working in my specialty.

How many times a year do you want to receive a newsletter?

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