Happy New Year to all! With the dawning of 2001 come many new developments in neonatal/pediatric care. The first new surfactants in almost a decade have appeared on the horizon with the introduction of Curosurf® and Infasurf®. In addition, “neonatal modes” are now available on the so-called fourth generation mechanical ventilators. These modes will provide graphics, mechanics, and a host of other options for our tiniest patients.

The section has submitted some exciting proposals for neonatal and pediatric topics at the next AARC International Congress, scheduled for December 1-4 in San Antonio. You won’t want to miss this exciting meeting, so start making plans now to attend.

I want to encourage all section members to consider contributing an article to the Bulletin this year. If you’d like to submit an article, or if you just want to find out more about the process, contact me or my co-editor, Doug Petsinger, at the addresses or numbers listed on page 2. I would also like to encourage any of you out there who haven’t already joined us on the perinatal-pediatric e-mail listserv to do so. This is an excellent way to share ideas with your fellow section members around the country.

With the year comes a new chair for our section and the promise of another round of educational and thought-provoking Bulletins. I plan to continue presenting what I hope are interesting and informative case studies from my hospital, but I’d also like everyone to remember that intriguing and challenging cases are not restricted to Children’s of Atlanta. So, please, get busy writing up your interesting cases and submit them to me at the addresses/numbers listed on page 2. Not only is this process fun, it helps to define you as the professional that you are.

This issue’s case study is more or less an extension of Peter Betit’s article in our September-October issue concerning the use of ETCO2 monitoring. Instead of monitoring Vd/Vt for the appropriateness for a successful extubation, we utilized both Vd/Vt and VCO2 for optimizing PEEP. More fun and games at the bedside with Doug!

The response that I have received from my article on utilizing respiratory therapists as “charge” personnel (“Where Do We Go from Here?”, September-October issue) has been very good so far. Queries have come from both therapists and nurses, and the theme has been the same: how can we find creative ways to deliver the same quality of care to our patients? Should we cross-train therapists to deliver total patient care? These are very difficult questions. However, I believe the answer is, at least in part, how creative do you want to be? It is time to start thinking “outside of the box” and gladly welcome the possibility that our role as a clinician is going to grow.

Finally, I have a point to make regarding what I feel is conflicting terminology. Although I realize that this may simply be a case of nomenclature, it really bothers me when bi-level nasal ventilation is labeled “non-invasive ventilation.” Just because the patient is not intubated does not mean that artificial mechanical ventilation is not invasive. When you place a patient on a ventilator with the ability to ramp peak mechanical flows upwards of 130 lpm, ladies and gentlemen, you are being invasive. When you are titrating CPAP to improve the patient’s FRC, you are being invasive. Anytime that you could possibly decrease venous return by a ventilator manipulation, it’s invasive. And what about the mask? How many pressure sores and skin breakdowns have
you seen in your career? There is nothing “non-invasive” about nasal ventilation. It is a wonderful modality, and a lot of good saves have come from its proper use, but we must never be lulled into thinking it is a benign treatment. Mechanical ventilation is a powerful tool. Please treat it with respect.

Perinatal-Pediatric Specialty Section Meeting
by Jenni L. Raake, BS, RRT

The AARC International Congress was held in Cincinnati, OH, on October 7-10. Several important events took place during the meeting. One of the most important occurred on Tuesday when the Perinatal-Pediatric Specialty Section meeting was held. The section meeting provides an opportunity for members to recognize fellow practitioners, network with peers, and acknowledge important issues in our area of the profession.

Peter Betit, our section chair for the last two years, presided over the meeting. Peter has done an outstanding job and should be commended for all of his hard work and effort. Thank you, Peter, for your service to your profession.

Two important people were recognized during the meeting. The first was Timothy Myers, our incoming chair. Unfortunately, Tim was unable to attend because he was busy being inducted as the new section chair. However, a big round of applause went out to Tim for taking on this big responsibility. I know he will do a wonderful job as section chair — although he will need lots of support from all of his peers over the next four years to ensure our continued success.

The second person being recognized was Justin Twitchell from Utah, who was selected as our 2000 Specialty Practitioner of the Year. This is a wonderful honor for Justin and one that is well deserved.

As Peter Betit mentioned during his presentation, the Perinatal-Pediatric Section is one of the largest specialty sections in the AARC. As a result, many tasks must be carried out. One such task is getting the Bulletin out to all the section members. Doug Petsinger, from Atlanta, GA, has been co-editor of the Bulletin for the last year and has been doing a wonderful job. Articles for submission are always welcome, and members are also encouraged to volunteer to serve as a guest editor for a specific issue. The Bulletin is published bimonthly. If you are interested in participating or helping in this area, please contact Doug at the address/numbers listed on page 2.

The meeting agenda included time for suggestions for the next AARC Congress, scheduled for December 1-4 in San Antonio, TX, and several suggestions were made. From there, we focused on the Perinatal-Pediatric Resource Directory. This directory provides contact information for experts on clinical topics that are relevant, controversial, or problematic for hospitals. Fellow clinicians experienced in these areas are available, and their names, phone numbers, and e-mail addresses are posted on the Perinatal-Pediatric area of the AARC web site (www.aarc.org). If you can provide expertise in one of these areas, or if you already are a member of the directory and need to update your contact information, please submit your information (name, title, address, phone number, e-mail address, and area(s) of interest) to Timothy Myers at the addresses/numbers listed on page 2.

The areas of interest listed in the Resource Directory are:

- Aerosolized medications/MDI
- Airway Management
- Emergency/Tracheostomy
- Asthma: Critical Care
- Asthma: Education
- Asthma: Protocols
- Cystic Fibrosis
- Delivery Room Care
- Extra Corporeal Membrane Oxygenation
- High Frequency Oscillatory Ventilation
- Home Care/Subacute Care
- Inhaled Nitric Oxide
- Management/Staff
- Education/Quality Assurance
- Newborn Mechanical Ventilation
- Non-Invasive Ventilation
- Pediatric Mechanical Ventilation
- Mixed Gas Administration
- Helium-Oxygen Therapy
- Mixed Gas Administration
- Hypoxic Gas Therapy
- Monitoring Gas Exchange
- Invasive
- Monitoring Gas Exchange
- Non-invasive
- Newborn CPAP
- Oxygen Delivery
- Pulmonary Function
- Testing/Calorimetry
- Pulmonary Rehabilitation/Outpatient Care
- Sleep Medicine/Apnea Management
- Surfactant Replacement
- Therapist Driven Protocols/Clinical Pathways
- Transport: Interhospital
An eight month old, 7.3-kg female with a history of pneumonia was admitted to the emergency department at a local hospital. She presented with tachypnea, diaphoresis, and a decrease in appetite. The chest film revealed mild cardiomegaly and pulmonary edema.

The patient’s examination was significant for hepatosplenomegaly. A cardiac consult was obtained. The cardiac echo revealed a 10% ejection fraction, both tricuspid and mitral valvular regurgitation, and severe congestive heart failure (CHF). The diagnosis was dilated cardiomyopathy with profound left ventricle dysfunction. She was immediately started on inotropic support and transferred to the Egleston Campus of Children’s Healthcare of Atlanta’s PICU.

Despite optimizing inotropic support, her condition deteriorated, requiring intubation and mechanical ventilation. Over the next several days cardiac function remained dismal, as evidenced by serial echocardiograms. She was taken to the cardiac cath lab for a biopsy. The rapid turnaround was also influenced by several factors. A proactive use of earlier manipulations of PEEP/Paw in the face of a worsening compliance secondary to several contributing factors. She went into surgery in respiratory failure with a long-standing CHF and mitral regurgite (peri-bronchial-cuffing). Lastly, a car-

dio-pulmonary bypass run is not a benign event. Inflammatory responses from humoral mediators wreak havoc on both the kidneys and the lungs. Fortunately, the hemodynamics were stellar, so she did not receive a large quantity of intervascular volume replacement.

The rapid turnaround was also influenced by several factors. A proactive use of earlier manipulations of PEEP/Paw in the face of a worsening compliance, along with the ability to see if the changes were appropriate in real time, assisted the situation. Utilizing VCO₂ to optimize PEEP/Paw has been extremely specific aspect of palliative care, respiratory care clinicians have long played a vital role in this arena. The material presented in these special issues breaks new ground, and is sure to become a valuable and practical reference source for everyone participating in the care of patients with severe respiratory disease.”


For 46 years the AARC has plowed its resources back into the profession, expanding the practice and influence of respiratory therapy in the health care system.

Don’t miss out on the largest and most comprehensive care meeting in the world, coming in 2001 to one of the most entertaining cities in the US, San Antonio. For additional information, please call (972) 243-2272, or e-mail clay@aarc.org.

For more information on the proceedings of a unique conference convened by the Journal in May of last year, the conference, “Palliative Respiratory Care,” brought together a faculty of internationally-recognized experts to review and discuss aspects of end-of-life care pertaining to the respiratory field.

Among the topics addressed at the conference were: how to assess and treat dyspnea in terminally ill patients, how to talk to families about death and dying in the ICU, the nuts and bolts of withdrawing life support, and the role of respiratory therapists in palliative care. The two Journal issues contain the formal papers presented by the faculty, the often spirited discussions following each presentation, and an insightful conference summary.

According to Dr. David Pierson, Journal editor, “although almost nothing has previously been published on this
diopulmonary bypass run is not a benign event. Inflammatory responses from humoral mediators wreak havoc on both the kidneys and the lungs. Fortunately, the hemodynamics were stellar, so she did not receive a large quantity of intervascular volume replacement.

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NRN Update Revises Guidelines with a New Textbook
by David L. Ellwanger, RRT, neonatal and project coordinator for respiratory care services at Piedmont Hospital, Atlanta, GA

Since the first Neonatal Resuscitation Program (NRP) was given in 1987, the NRP has grown to over 1.3 million providers and is taught all around the world. Last September the American Academy of Pediatrics (AAP) introduced the fourth edition of the NRP. These revisions are the result of a three-year effort on the part of the AAP, the American Heart Association, and the Pediatric Working Group of the International Liaison Committee on Resuscitation (ILCOR). This group reviewed the scientific literature to evaluate the evidence to support or change practices of neonatal resuscitation. Their findings move the NRP from a practice of “best opinion” to one with a greater scientific basis.

Recommendations to the guidelines include:

**Temperature**
- Hyperthermia should be avoided. This is not specifically addressed in the prior version of the NRP guidelines.
- Some animal and human studies indicate that selective cerebral hypothermia may protect against brain injury in the asphyxiated infant. However, this procedure is not recommended for routine practice until more research has been done.

**Oxygenation and ventilation**
- There is evidence that lower concentrations of oxygen during resuscitation of asphyxiated infants may be useful. However, this information is not complete enough to recommend a change from 100% oxygen if assisted ventilation is required.
- Guidelines indicate that room air may be used for positive pressure ventilation if oxygen is not available.
- Guidelines now indicate that laryngeal mask is an alternate method of establishing an airway, but is not to be used as an alternative to intubation unless meconium is indicated.
- Exhaled CO2 detectors may be useful for these types of patients.

VCO2 is equivalent to pulmonary blood flow (PBF), and we know what normals are for VCO2 (5-6cc/Kg/man). When faced with poor compliance, the VCO2 will read low due to high Vd/Vt. It will return to normal levels when PEEP is optimized and fall if you have created an “over-PEEP” phenomenon. We have found both VCO2 monitoring and Vd/Vt trending to be valuable in the care we deliver.

Respiratory manipulations were not the only factor in her rapid improvement.

For the majority of “pump cases,” we frequently employ modified ultrafiltration (MUF) prior to discontinuance of cardiopulmonary bypass. This technique is essentially an extracorporeal kidney that filters out extracellular water and filtrates the inflammatory mediators. We also give a super dose of steroids on pump (30mg/kg) prior to its discontinuance. In the ICU setting we are very aggressive with diuretics and frequently utilize a lasix infusion, along with diuril bolus on a scheduled frequency. Finally, a tincture of time is always a good thing.

**Clearing the airway of meconium**
- There is greater emphasis on the activity of the infant than the thickness of meconium. The guidelines describe evidence that indicates tracheal suction of vigorous infants does not improve outcome and may cause complications. The guidelines have been modified to show that in the presence of meconium in the amniotic fluid, the trachea should be suctioned if the infant has poor tone, a weak or absent cry, and is less than vigorous.

**Chest compressions**
- The two-thumb method is preferred over the two-finger method, although both are still taught.
- A relative depth of compressions of one-third of the AP diameter of the chest is recommended, rather than a fixed depth of compressions.
- Chest compressions are now recommended if the heart rate is absent or remains < 60 bpm despite adequate ventilation for 30 seconds. This is a much simpler guideline than the previous, “if heart rate is 60-80 and not rising” statement, which many found confusing.

**Medications, volume expansion, and vascular access**
- Administer epinephrine if the heart rate remains < 60 bpm after a minimum of 30 seconds of adequate ventilation and chest compressions. It is particularly indicated in the presence of asystole.
- Saline or Ringer’s lactate is indicated for volume expansion. Albumin is no longer recommended because of the limited availability, risk of infectious disease, and an association of increased mortality. O-negative blood may be used if blood replacement is anticipated before birth.
- Intravenous access can be used as an alternative route for medications/volume expansion if umbilical or other direct venous access is not readily available.

**Ethics**
- Ethical considerations regarding non-initiation or discontinuation of resuscitation in the delivery room are discussed.
- In addition to the changes in some of the techniques of resuscitation, substantial improvements have been made to the NRP textbook. The new version includes many more illustrations (some in color), a greater emphasis on real patient photographs, and even some X-rays. A revised resuscitation flow diagram with an associated timeline gives the provider a guide to determine if the resuscitation steps are being performed in the appropriate timeframe. A number of case studies, which demonstrate the lessons being taught, are included as well, and a comprehensive index is a welcome addition.

Throughout the book are “Premature Pointers,” special considerations given to premature infants. A number of what I refer to as “FAQ’s” ask questions about aspects of neonatal resuscitation, and “Exclamation Points” serve as directives that emphasize some special aspect of the lesson being taught.

The color photographs, which provide examples of infants in various stages of cyanosis, the upper airway during intubation, suctioning the infant with meconium, and a severely premature infant, are excellent.

Following the Medication section, which used to be the last chapter in the book, an additional chapter called Special Considerations has been added. This lesson deals with special situations, subsequent management of the resuscitated infant, ethical considerations, and applying the NRP principles to infants beyond the immediate newborn period or outside the hospital delivery room.

The most impressive new feature of the revised textbook is the inclusion of a CD-ROM. The CD-ROM is a multimedia
FDY . . .

2001 Research Grant Announcement

The American Academy of Pediatrics is pleased to announce the availability of the 2001 Neonatal Resuscitation Program Research Grant.

This program provides an opportunity to support research that furthers knowledge in the area of neonatal resuscitation. These funds may also be used to generate pilot data to allow the investigator to develop the basis for an application for independent research support through conventional granting mechanisms. Proposals for up to $25,000 will be accepted. Researchers from Canadian and US institutions are invited to apply.

Potential applicants should submit an Intent for Application to the NRP Steering Committee by Monday, April 30, 2001. The NRP Steering Committee will evaluate the letters of intent and applications will be invited from those whom the committee recommends. Invitees will receive the formal application by Monday, July 2, 2001 and completed applications will be due on Friday, September 7, 2001.

To obtain the 2001 Neonatal Resuscitation Program Research Grant Program Guidelines and Intent for Application, please visit the NRP website at www.aap.org/nrp or contact: American Academy of Pediatrics Division of Life Support Programs: 800/433-9016. Ext 4798.

New technology helps families care for high-risk infants

Incorporating Internet-based telemedicine technologies into the care of a very low birth weight infant results in greater family satisfaction with the care and may reduce the infant’s length of hospitalization, according to a study conducted by researchers from Beth Israel Deaconess Medical Center. The study was published in the December issue of Pediatrics.

Investigators studied 56 very low birth weight infants who were hospitalized in the Beth Israel Deaconess neonatal intensive care unit (NICU). Through random selection, the families of 26 infants were given access to Baby CareLink, a telemedicine program that utilizes Internet and videoconferencing technologies. Families enrolled in the intervention group were loaned a multimedia computer and videoconferencing equipment for use in their homes. Through the Baby CareLink web site, families could view photos of their infant, send confidential messages to care providers, review an infant’s daily clinical report, watch educational videos, read baby care information, and complete a training course to help them prepare for the infant’s discharge home. On average, families accessed the web site daily.

The remaining 30 infants were assigned to the control group. All infants in the study received the same level of medical care and support. Both the intervention and the control groups had similar patient and family characteristics, inpatient morbidity rates, birth weight, gestational age, maternal race, insurance status, and educational level.

Utilizing the Picker Institute’s Neonatal Intensive Care Unit Family Satisfaction survey, the researchers found that families who used Baby CareLink rated the overall quality of care received by their infants higher than did the families in the control group. Three percent of the families in the intervention group reported problems with the care compared to 13% of the control group families. The Baby CareLink families also reported fewer problems with the continuity of care, infant transition from the NICU to home, family and infant support, and family information and education.

In addition, infants in the intervention group were typically discharged home sooner than were the infants in the control group. While this observation was not statistically significant due to the small size of the study, the investigators believe this finding would hold true in a larger study.
Specialty Practitioner of the Year

Don’t forget to make your nominations for the 2001 Perinatal-Pediatric Specialty Practitioner of the Year. This honor is given to an outstanding practitioner from this section each year at the AARC’s Annual Convention.

The recipient of this award will be determined by the section chair or a selection committee appointed by the chair. Each nominee must be a member of the AARC and a member of the section.

Use the following form to send in your nominations for this important award:

I would like to nominate ____________________________ for Perinatal-Pediatric Specialty Practitioner of the Year because ______________________________________________________________________________________
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Nominee

Your Name

Hospital

Hospital

Address

Address

City, State, Zip

City, State, Zip

Phone

Phone

Mail or FAX your nomination to the section chair at the address/number listed on page 2 of this issue.