Perinatal-Pediatrics Bulletin

Jan./Feb. '02

American Association for Respiratory Care

Notes from the Chair

by Timothy R. Myers BS, RRT

As the winter snow begins to pile upon those of us in northern regions, I would like to wish each and every one of you a Happy New Year. This begins my second year (of a four-year term) as your section chair. Last year was a busy one for the section, with much being accomplished. We awarded a new Specialty Practitioner of the Year at the Awards Ceremony at the 2001 International Respiratory Care Conference. Kathleen Deakins, of Rainbow Babies & Children's Hospital in Cleveland, OH, was selected by our SPOY Committee to receive the award. We also witnessed the first ARCF/VIASYS Healthcare Fellowship for Neonatal & Pediatric Therapists, created to recognize outstanding original research in the field of neonatal and pediatric intensive care, awarded to Jeanette Asselin, from Oakland Children's Hospital. And finally, due to the hard work of Wade Rich, the AARC will now send a liaison representative to the American Academy of Pediatrics' Neonatal Resuscitation Program Steering Committee.

As this *Bulletin* arrives in your mailbox, the section welcomes two new co-editors — Melissa Brown, from Sharp Mary Birch Hospital for Women in San Diego, CA, and Kathy Deakins, from Rainbow Babies & Children's Hospital in Cleveland, OH. Melissa and Kathy have both been very involved in the section and abstract presentations over the last several years, and I look forward to working with them as co-editors. Please join me in welcoming them and consider how you can make their jobs easier by sending in articles and case studies for future *Bulletin*s.

On another note, three exciting issues were covered at the Section Business Meeting in San Antonio, where about 40-50 section members were in attendance. First, a proposal was made to solicit a name change for our section. The proposed change would have our section go from being the "Perinatal-Pediatric Section" to the "Neonatal-Pediatric Section." This proposal was greeted with an overwhelmingly positive response from those in attendance. Members felt that the term "Neonatal" is more correlative to what most of our jobs involve. I will be recommending this proposal to the AARC's Board of Directors in March.

The second item was presented by former section chair, Peter Betit. The National Board for Respiratory Care (NBRC) is researching and "highly" considering issuing an acronym and credential for the Perinatal-Pediatric Specialty Exam. Let's keep our fingers crossed for this long-awaited acronym/credential.

The final issue dealt with the section's Consultant Panel. The section members in attendance felt that this Panel should be moved to the listserv and conducted by email. I will be forming a Consultant Panel Committee to look at this proposal, along with the development of a "Swap Shop" area on the section home page where members can "electronically share" forms via the AARC's web site.

As you can see, the Perinatal/Pediatric Section has been busy working to advance the initiatives of its members and the Association over the last several months. So, share this information with your peers and colleagues and extol the virtues and benefits of joining the AARC and our specialty section. I also encourage any of you out there who haven't already joined us on the perinatal-pediatric email listserv to do so soon, as this is the best way for us to share information and ideas with our fellow section members around the country in the most timely format possible.

Finally, I encourage all of you to consider contributing to the *Bulletin* this year, either by writing an article or suggesting an idea for an article. You can send your contributions/ideas to Melissa, Kathy, or me at the addresses or numbers listed on page 2. Last year, the *Bulletin* received contributions from more than ten different authors, some for the first time. We'd like to see that number increase even more in 2002!

So. without further ado, let's get on with some of the exciting articles in this edition of the *Perinatal/Pediatric Section Bulletin.* ■

Notes from the Co-Editor

by Melissa K. Brown, RCP, RRT

As many of you are already aware, Doug Petsinger has resigned as co-editor of the Perinatal Pediatric *Bulletin*. Doug did a fantastic job for our section! He set the bar extremely high for those of us who choose to follow in his footsteps. I greatly enjoyed his case studies (Atlanta sounds like a great place to be an RT), as well as his personal stories. His enthusiasm and his love of our profession are evident, as is his obvious high level of knowledge. I will miss his articulate and insightful comments! Best of luck, Doug, in your current endeavors, and if you miss working on the *Bulletin*, you can always forward us another one of your great stories!

Kathy Deakins and I have agreed to be the new stewards of the *Bulletin*. We are looking forward to bringing you many interesting articles on neonatal and pediatric topics this year. I'd also like to offer my congratulations to Kathy for being chosen our Specialty Practitioner of the Year!

My background is almost exclusively neonatal and pediatric respiratory care. I have 12 years of experience, ten of them in a children's hospital. I've enjoyed working on neonatal and pediatric transport teams, in the NICU and PICU, attending traumas, and taking care of post-operative cardiac patients. For several years I was also the clinical educator. Currently, I'm employed as an NICU clinical specialist at the largest free-standing women's center west of the Mississippi, Sharp Mary Birch Hospital for Women in San Diego, CA. We have approximately 8,000 births per year and a 60-bed NICU. Our proximity to the border leads to some very small preemies and a whole new working experience. My favorite pastime is getting RTs involved in clinical research, and my favorite topic of conversation is new applications for heliox therapy.

We have some great articles in this issue of the *Bulletin*. David Walker, from Valley Children's, points out the benefits of pressure control ventilation in the NICU. David's knowledge of pressure control ventilation is extensive. Many NICU clinicians have been using Infant Stars (and IMV) for most of their careers. With the discontinuation of the Infant Star, many will be replacing their entire fleet of neonatal ventilators with new generation ventilators. Respiratory therapists are faced with explaining the benefits of pressure control versus IMV to physicians, nurses, and other staff therapists who may never have worked with this mode of ventilation before. Thanks for the insight, Dave!

Thanks also to Jay Brohas for his comprehensive article on surfactants, bubble CPAP, and volume targeted ventilation. These treatments and modalities are the future of respiratory care in the NICU, in my opinion.

Congratulations go out to Jim Keenan, from Primary Children's Hospital in Salt Lake City, for receiving his fellowship in the AARC this year. Jim has been a regular contributor at the annual AARC Open Forums, and much of his research and many of his publications have focused on the superiority of MDIs to deliver medications to neonatal and pediatric patients. Thanks for all the great work, Jim!

On a final note, I enjoyed meeting many of you at the AARC International Congress in San Antonio, and particularly at the section meeting. The AARC again put together a quality show! There were so many things to see and too little time to see them all. San Antonio is a beautiful city and was a great venue for our convention. I was amazed at how hospitable and friendly everyone was, and we had a great time on the River Walk. I hope to meet even more of you this October in Tampa! ■

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2001 Specialty Practitioner of the Year: *Kathleen Deakins, RRT*

The Perinatal-Pediatric Section was proud to honor Kathleen Deakins, RRT, as its 2001 Specialty Practitioner of the Year at the Awards Ceremony held during the AARC International Respiratory Congress in San Antonio, TX, this past December. Kathy, who serves as lead therapist at Rainbow Babies & Children's Hospital in Cleveland, OH, is well known to her colleagues on the job as "an outstanding clinician whose professional opinion is sought after by peers and physicians alike," says co-worker Michael Tracy, who nominated her for the award. "Kathy's daily work brings her into contact with the sickest of the sick in the NICU and the PICU, where she focuses her extraordinary skills on making her patients better. While doing this, she teaches residents, students, and younger staff members about the nuances of mechanical ventilation and disease management."

In addition to excelling in these areas of responsibility, Kathy also has taken the initiative to become an expert in waveform analysis and IPV, conducting research and publishing several related abstracts, which Tracy says have been instrumental in "changing our clinical practice for the betterment of our patients." She has done similar work on selection of initial ventilator parameters, which has also been published in abstract form.

Kathy stands out from the crowd for other reasons as well. She sits on a committee responsible for organizing the Rainbow regional conference on neonatal and pediatric issues, is a member of the department's research committee, and serves as a PALS and NRP instructor. She also sits on the state committee for critical care and most recently took on the task of acting as co-editor for this *Bulletin* for the Perinatal-Pediatric Section.

Michael Tracy concludes, "An outstanding individual with extraordinary professional skills and dedication, Kathy is an asset to her patients, our staff, and the profession. Kathy represents the epitome of what a therapist should and can be." ■

Pressure Controlled Ventilation for Infants and Small Pediatric Patients

by David H. Walker, MA, RRT, RCP, supervisor critical care, information technology/education, Valley Children's Hospital, Madera, CA

During the past decade, newer generations of mechanical ventilators have enabled clinicians to treat their respiratory distress patients with several new modes of ventilation. However, the majority of published information on these new ventilator therapies relates to adult patients of various populations. Clinicians specializing in neonatology and pediatrics may not have extensive experience in successfully using the new methods of mechanical ventilation on a routine basis. Therefore, introducing these ventilator modes in the treatment of young children is more of a mystery than it is with adult patients. Fortunately, newly published works are now available describing the successful application of these new ventilator strategies with neonates and small pediatric patients. One ventilator mode that has received a great deal of interest for treating children is the clinical application of Pressure Controlled Ventilation (PCV).

Ease of use

PCV is a ventilation mode that utilizes a decelerating inspiratory flow pattern in combination with a square airway pressure pattern. These characteristics are known to decrease airway dead space and improve oxygenation, as well as enhance overall outcomes for patients suffering from respiratory distress.[1] In addition, setting and resetting PCV is similar to the traditional IMV strategy frequently utilized in treating neonates and small infants in the intensive care units. Newer generations of ventilators allow the clinician to set an inspiratory time, frequency, peak pressure, and PEEP, similar to the older versions of the IMV-type machines. This makes PCV a relatively easy mode of ventilation to introduce, since many of the parameters set on the ventilator are familiar to clinicians caring for these patients.

Coinciding with the ease of use of PCV are improvements in the latest versions of mechanical ventilators that provide monitoring screens attached to the ventilators for monitoring lung mechanics and assessing expired CO_2 (volumetric capnography). This type of monitoring is particularly beneficial for selecting detailed ventilator settings for neonates and small infants following cardiac surgery. During the immediate post-operative period, pulmonary vascular resistance undergoes dramatic changes that can alter lung mechanics and require adjustments to the ventilator settings (other than peak inspiratory pressure) to maintain appropriate gas exchange.[2,3] Monitoring and assessing lung mechanics and capnography are two mechanisms that assist the clinician in fine tuning the ventilator to meet the frequently changing cardiorespiratory system of the child following cardiac surgery.

In addition to post-cardiac surgical ventilation, PCV also promotes improved distribution of surfactant for the newborn requiring this form of therapeutic intervention. Incorporating surfactant replacement and PCV using the "open lung concept" improves the distribution of the drug, thereby increasing the efficiency of this very expensive treatment.[4] Since one of the main goals of surfactant therapy is to improve lung compliance, the lung mechanics monitoring systems on the newer ventilators alert the clinician to dramatic changes in compliance so that immediate changes to the ventilator settings can protect the patient from barotrauma.

Ventilator weaning using a decelerating flow pattern

Not only do the new generation of ventilators offer PCV for neonates and small infants, they also provide alternative methods of weaning from the mechanical ventilator that use a decelerating inspiratory flow characteristic. The two most popular modes of weaning using a decelerating flow pattern are pressure support and pressure-regulated volume control. Both modes are easy to use with small children and improve the imposed work of breathing by the ventilator on the patient. This, of course, is beneficial when treating children with small-uncuffed endotracheal tubes, where the resistance is known to be quite elevated.

Summary

PCV is a mode of ventilation that may improve the overall outcomes for neonates and small infants who require endotracheal intubation and mechanical ventilation in the NICU or the PICU. However, as with any therapeutic intervention specific to young children, a well-structured, multidisciplinary, and detailed ventilator surveillance program is necessary to achieve successful outcomes among these patients suffering from respiratory distress.

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Utilizing Time Constants to Minimize Inadvertent PEEP

by Melissa K. Brown, RCP, RRT

Inadvertent PEEP (PEEPi) occurs during mechanical ventilation whenever the expiratory time set on the ventilator is not adequate to allow complete lung emptying to functional residual capacity (FRC). PEEPi can negatively effect affect gas exchange as well as lung mechanics.[1] PEEPi can increase the total lung volume to a point where it negatively affects the lung compliance. PEEPi can diminish the absolute tidal volume delivered to the lungs and increase $PaCO_2$ levels, impair respiratory muscle activity, and lead to barotrauma. PEEPi can also cause hemodynamic compromise by impeding venous return and cardiac output.

The expiratory phase during mechanical ventilation is usually passive. When the exhalation valve opens, gas flows from the alveoli

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into the ventilator circuit, propelled by the transpulmonary pressure generated by the elastic recoil of the lungs and the chest wall. Resistance caused by the conducting airways, endotracheal tube, and the ventilator circuit limit expiratory flow. The amount of time required to achieve complete exhalation to FRC is determined by computing the time constant (TC) of the lung. The TC is computed by multiplying the resistance and the compliance of the respiratory system, and is expressed in seconds: TC = R x C. Five time constants are required for complete lung emptying, but often allowing enough time for three time constants (95% emptying) is adequate to prevent inadvertent PEEP.[2]

Time constants and the percentage of lung emptying

Time Constant	Percentage of lung emptying
1	63%
2	87%
3	95%
4	98%
5	99.3%

In a normal term infant, resistance is approximately 30 cmH2O/L/sec, and C is approximately 0.005 L/cm H_2O.

TC = R x C
TC = 30 x 0.005 = 0.15 sec

TC x 3
0.15 x 3 = 0.45 seconds

The above equation illustrates that in a normal full term infant it takes about 0.45 seconds for 95% of the lung volume to be exhaled. However, if we evaluate a small neonate with respiratory distress syndrome with the same resistance and a very low compliance of 0.001 L/cm H_2O, we see the following:

TC = R x C
TC = 30 x 0.001 = 0.03 sec

TC x 3
0.03 x 3 = 0.09 seconds

The preterm infant with respiratory distress syndrome pre-surfactant has a very low compliance and can exhale completely in a very short time (Less than .1 second!) This scenario is similar to the pediatric patient with ARDS. This explains why high ventilatory rates are so well tolerated in these patient groups without risk of PEEPi. But if you take the same neonate and give him a dose of surfactant, his compliance will increase.

TC = R x C
TC = 30 x 0.003 = 0.09 sec

TC x 3
0.09 x 3 = 0.27 seconds

Due to the increase in lung compliance, more gas enters the lung and a longer emptying time is required. This is best accomplished by quickly decreasing the rate to provide for adequate time for lung emptying (to avoid PEEPi). Reducing the peak inspiratory pressure (PIP) is also effective. If reductions in support are not made in a timely manner, pneumothorax may develop.

Now let's look at an infant with meconium aspiration syndrome (MAS), with an increased resistance but an almost normal compliance.

RC = R x C
RC = 120 x 0.003 = 0.36 seconds

RC x 3
0.36 x 3 = 1.08 seconds

Greater than 1 second is required for this infant to fully exhale or PEEPi will develop. Elevated resistance is also seen in the pediatric asthmatic patient. Both infants with MAS and pediatric patients with asthma must be allowed adequate time for expiration or PEEPi and subsequent life-threatening barotauma will develop. Decreasing the ventilator rate is the most efficient way of assuring adequate expiratory time. Time constant values can be very helpful in determining if enough expiratory time has been allowed. Time constant measurements are usually obtained by a pneumotachometer placed between the ventilator wye and the endotracheal tube and are displayed on modern ventilators like the Hamilton Galileo and Drager Babylog 8000 plus, as well as stand-alone monitors such as the Bicore CP-100 Pulmonary Monitor.

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The Infasurf Experience

by Jay Brohas, RRT, AAS, NICU respiratory care manager, Miami Valley Hospital, Dayton, OH

Since 1985, Infasurf ® has been an integral piece of neonatal respiratory care at Miami Valley Hospital (MVH). We have investigated safety, efficacy, and dosing comparison methodology as designated in FDA clinical trials, and Infasurf has been the primary surfactant of choice since its FDA approval in 1999.

MVH is the high-risk maternity center for a 17-county region surrounding Dayton, OH. On average, there are 700 admissions each year to the 49-bed Level III NICU. Approximately 175 of these annual admissions are infants weighing less than 1500 grams at birth. Because of the high volume of very low birth weight infants treated at MVH, the surfactant product utilized is an important piece of the respiratory care of the newborn.

We know that the principal components of commercial surfactants are 1,2-dipalmitoyl-sn-glycerol-3-phoshphocoline (DPPC) and 1,2-diacyl-sn-glycero-3-phosphoglycerol (PG), along with the two hydrophobic proteins SP-B and SP-C.[1, 2] Other components found in natural pulmonary surfactant include several lipid species and four extremely hydrophobic and structurally different proteins (SP-A, SP-B, SP-C, SP-D).[2] These surfactant components are synthesized in the type II alveolar cells.[1] In the cytoplasm, these surfactant components are packaged in multilamellar vesicles and secreted by exocytosis. They then unwind to form a bipolar monolayer of phoshopholipid molecules that need apoproteins SP-B and SP-C to configure properly in the alveolus.[1] Tubular myelin may serve as a storage site for surfactant in alveoli.[1] Currently, SP-B is deemed essential to surfactant function because it is critical to the formation of tubular myelin.[1, 3] A deficiency in SP-B also results in a disruption of lamellar body formation and the processing of SP-C.[3] It is in this combination of lipids and proteins that surfactant preparations distinguish themselves.

My personal opinion is that this "recipe" for surfactant components is vital. By replicating the "recipe" for natural surfactant, you should have a product that performs more like Mother Nature intended. I am a strong believer that SP-B is the crucial component of any surfactant preparation.

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Clinical studies demonstrate that no two surfactants are alike. Surfactant products vary in their methods of preparation and protein composition, which can potentially produce different clinical effects.[1] Survanta® and Curosurf® are made by a lung mincing process (bovine and porcine respectively) in which the lipids and the lipid-associated apoproteins are extracted.[1] Infasurf has fewer contaminating membrane components, as it is derived directly from newborn calf lungs by a lavage process.[1] This process results in a higher SP-B content.

I believe Infasurf has a great "recipe" for success. Infasurf administration is relatively easy with few complications. Its 3 mL/kg dosage provides a volume and viscosity that leads to optimal distribution to the lungs of the newborn.

The following is a chronology of events surrounding the research of Infasurf at MVH, which contributed to the body of knowledge currently reflected in the literature of exogenous surfactant comparison:

- 1987-1991: Prophylaxis/Rescue (prophylaxis all infants < 32 weeks) [Infasurf][4]
- 1991-1993: Surfactant Comparison Trial (SCT)[Infasurf vs. Exosurf®][5]
- 1993-1994: SCT-Open Label Extension [Infasurf]
- 1994-1998: Infasurf Treatment Protocol Trial (aliquot vs. infusion) [Infasurf]
- 1998-1999: Alternative Surfactant Therapy ("responder" vs. "non-responder") [Infasurf] [Survanta]

The Infasurf vs. Exosurf Treatment Arm conclusion states, "compared with Exosurf, Infasurf reduced air leak complications and substantially improved the acute respiratory status of infants with RDS. In addition, Infasurf treatment was associated with improvement in some secondary outcome measures, including the number of days using more than 30% oxygen and the number of days using assisted ventilation."

Once it was approved by the FDA, Survanta was given to those patients not participating in the surfactant comparison trial. This experience with Survanta parallels the conclusions found in the Infasurf vs. Survanta clinical trial performed by Bloom et al.[6] Those conclusions were:

- Infasurf provided a benefit to infants in the acute phase of RDS and produced a sustained duration of effect.
- In the treatment arm, infants receiving Infasurf had a greater reduction in oxygen and MAP requirements than those receiving Survanta.
- In both the treatment and prevention arms, Infasurf produced a longer duration of effect than Survanta.

I believe these advantages in the acute phase of the disease have opened a window of opportunity for more aggressive weaning of respiratory support.

In the recent article by Van Marter, et al, researchers discussed the association between barotrauma, oxygen toxicity, and chronic lung disease(CLD) in the very low birth weight infant (VLBWI) weighing <1500 grams.[7] They observed a significantly lower incidence of CLD in the VLBWI at Children's Hospital of New York-Columbia University compared to two other centers affiliated with Harvard University in Boston, 4% versus 22%. The lower incidence of CLD was true for all gestational age and birth weight subcategories. This success was attributed to the use of early nasal prong (NP) continuous positive airway pressure (CPAP), using the underwater seal bubble method.

For infants who require intubation and ventilation, there appear to be advantages to utilizing the volume targeted ventilation. The pressure support volume guarantee mode found in the Drager Babylog Infant Ventilator essentially allows the ventilator to adjust PIP as needed to achieve a targeted tidal volume. The ventilator decreases or increases support within clinician-set parameters to approach the desired tidal volume. No longer is it necessary to wait for a blood gas to tell you what you already know. This mode works well in the spontaneously breathing patient who requires intubation during his disease course.

For those not requiring intubation, "bubble CPAP" has been utilized in conjunction with target Infasurf dosing. Establishing functional residual capacity (FRC) quickly by a combination of these strategies appears to be an important component in reducing CLD.

The MVH Vermont Oxford Network (VON) data relating to the incidence of CLD have been encouraging. In 2000 the CLD rate in infants with birth weights less than 1500 grams was 26%, compared to the Vermont Oxford Network of 32%. Through the third quarter of 2001, the VON CLD rate was 20%. VON defines CLD as O_2 need at 36 weeks post conceptual age.

Given our past success with Infasurf, I am confident that Infasurf will play a crucial role in the future of neonatal respiratory care.

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FYI . . .

Flu shots safe for kids with asthma

For the first time, a study reveals that influenza vaccines are safe for children and adults with asthma. The American Lung Association research puts to rest previous concerns about possible dangerous side effects of the flu shot in this population.

"This study shows . . . that the influenza vaccine is safe to use for children and adults with asthma, regardless of the severity of their asthma," says the study's lead author, Mario

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Castro, MD, MPH. "The flu vaccine is effective in preventing illness in 70-90% of cases." Results of the clinical trial showed that people with asthma did not have any higher rates of side effects for the 14 days after receiving the influenza vaccine than those who received a placebo shot.

The study included 2,032 children and adults who were diagnosed with asthma. Patients were randomly assigned to receive the actual flu shot or a placebo injection. The two groups switched mid-study so that all participants received the real flu vaccine by the end of the study.

"Unfortunately, only about 10% of people with asthma currently get a flu shot, in part because they have been afraid it would adversely affect their asthma. If vaccine rates increase to 50%, then 41% of flu-triggered asthma attacks would be prevented," says Norman H. Edelman, MD, scientific consultant for the American Lung Association.

The report was published in the Nov. 22 issue of *The New England Journal of Medicine.*

Polluted air may lead to lung disease in children

Children who grow up breathing polluted air may be at increased risk for lung disease, say investigators from Mexico and the University of North Carolina at Chapel Hill who evaluated standard chest x-rays of 241 southwest metropolitan Mexico City children and another 19 from a small coastal town. All of the children in the study were healthy, middle-class children, none of whom had asthma. However, the city children were exposed daily to high levels of a variety of pollutants, compared to the absence of such pollution in the coastal town comparison group.

The chest x-rays from Mexico were interpreted by radiologists at UNC who had no knowledge of where the children lived. Hyperinflation of both lungs was found in 63% of the city group, and about 52% showed an abnormal amount of interstitial markings in their lungs, changes that may be predictive of future lung abnormalities. The study also found abnormalities in CT scans obtained in 25 of the children whose chest x-rays were the most abnormal. Mild wall thickening of bronchial air passages was seen in ten CTs, four showed unusually prominent central airways, eight children had air trapped in their lungs, and one child had a lung nodule.

Further statistical analysis pointed to a significant link between hyperinflation, interstitial markings, and exposure to the polluted atmosphere of southwest metropolitan Mexico City. All children in the Mexico City study group lived within a ten mile radius of a pollution monitoring station, and ozone levels were recorded for the year the children were recruited into the study. On average, during the 20-month study period, ozone levels exceeded air quality standards more than four hours per day. Some small particles of solids, or particulate matter (PM), were above U.S. standards. The study was presented at the recent Radiological Society of North America meeting.

Cardiac gene linked to SIDS

A Mayo Clinic study published in the Nov. 14 edition of the *Journal of the American Medical Association* has linked a cardiac gene to sudden infant death syndrome (SIDS). This finding represents the first molecular evidence to unlock the mystery behind SIDS.

The study examined 93 cases of SIDS or possible SIDS. Tissue collected from these cases was examined for a specific defect within a gene in the heart, the SCN5A gene, which encodes a cardiac sodium channel that acts as an electrical tunnel and controls the heart's rhythm. Two of the 93 cases possessed SCN5A mutations.

Cost of RSV drug may impact compliance

Palivizumab received FDA approval in early 1998 for use in children younger than two years who are at high risk for developing lower respiratory illnesses. But the cost of the drug — monthly treatment during RSV season can run $10,000 — has been cause for concern. Researchers from Ohio State University mailed surveys to 385 families of children eligible to receive palivizumab during the 1998-1999 RSV season to gauge compliance rates and reasons for noncompliance.

Results showed the overall compliance rate with all recommended doses of palivizumab was 78%. Parents who believed the drug would protect their child against RSV were more likely to adhere to the monthly dosing schedule. Children whose families had difficulty with transportation to the doctor's office were less likely to receive all the doses.

Among palivizumab recipients, 17% were hospitalized with a lower respiratory tract infection during the RSV season. About 13% of those had not complied with all their doses of palivizumab. This compares to a hospitalization rate of 8.3% among children who had complied with all the doses.

While most of the parents said cost wasn't a factor in deciding whether or not their child received the drug, 25% of the families surveyed did express concern about the cost or time spent negotiating with their health insurance company. The study was published in the November issue of the *American Journal of Perinatology.*

New web resource

How many babies in the U.S. die before their first birthday each year? Does California have a higher rate of women who smoke than other states? How does one county's rate of early access to prenatal care compare to that of others within a state?

The answers to these questions and others can be found by using PeriStats, a free, interactive web-based data resource at www.modimes.org launched recently by the March of Dimes. The database provides access to national, state, and county-level statistics related to pregnancy and maternal and infant health for researchers, policymakers, health care providers, and the public. Data are available for all 50 states, the District of Columbia, and Puerto Rico, and the site also allows users to compare state and county rates to other states, U.S. totals, and national objectives for the year 2010. ■

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