



Perinatal Gazette

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Westchester Medical Center



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Hepatitis C Virus (HCV): A Perinatal Perspective

Pregnancy offers an excellent opportunity to identify HCV-infected individuals, and every pregnant woman should be asked whether she has ever used inhaled or injected drugs, even once in the past, or received a blood transfusion prior to 1990. An affirmative answer is an indication for laboratory testing to identify anti-HCV antibody, a marker for the presence of this very common viral liver disease, and, if positive, a referral to a hepatologist for evaluation for treatment after delivery.

From a general medical standpoint, HCV infection and related chronic liver disease are exceedingly common. It is estimated that almost three million US residents have hepatitis C, accounting for 40% of chronic liver disease in this country. Between 8,000 and 10,000 people die every year as a result of end-stage hepatitis C, which is the most common indication for liver transplantation in the US. Approximately 85% of persons exposed to HCV develop chronic infection. After exposure and infection, individuals with hepatitis C are usually asymptomatic for decades before a minority develops clinical complications of cirrhosis; acute clinical hepatitis C is very uncommon. Thus, most infected people are unaware that they carry the virus, and patients usually are identified only when a serum aminotransferase level measured for an unrelated reason is noted to be abnormal.

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The vast majority of individuals with hepatitis C are infected with HCV because they either received a contaminated blood transfusion prior to 1990, or used inhaled or percutaneously injected drugs at some time in their lives (even if only for a brief period).

Other modes of transmission are unusual. HCV infection in long-standing sex partners of persons with hepatitis C occurs in approximately 12% of couples; this implies a very low risk of sexual transmission of HCV, or the presence of a necessary but uncommon cofactor, for example venereal disease, in instances when transmission has occurred. Similarly, vertical transmission of HCV is rare: pregnant women may expect to deliver uninfected babies unless they have unusually active HCV infection. HCV viral titers in excess of 10^{19} copies per ml have been reported to be associated with vertical transmission in as many as 36% of cases. However, viral titers this high are rarely seen unless patients have coexisting HIV infection. Utilization of internal scalp monitoring and scalp blood sampling is avoided in these cases.

Both the CDC and the American Academy of Pediatrics have stated that maternal infection with HCV should not influence the decision to breast-feed. Although HCV viral particles have been identified in breast milk, infection of the infant as a result of breast-feeding is considered to be extremely improbable.

There is no protective immunity to HCV infection, and thus, no HCV vaccine or passive immunoglobulin prophylaxis available. Medical therapy for affected patients is considered "curative" in approximately 50 to 60% of treated patients. One of the initial studies evaluating vertical transmission of HCV in pregnancy was conducted at Westchester Medical Center ¹. A 4% incidence of HCV infection was found to exist in the OB clinic. This led to subsequent coordination of services for affected mothers. As well, the first infant with documented vertically transmitted HCV was identified and initiated questions regarding the treatment of infants and children with HCV infection. Another publication arising from our institution identified risk factors for HCV infection and included recommendations for screening ².

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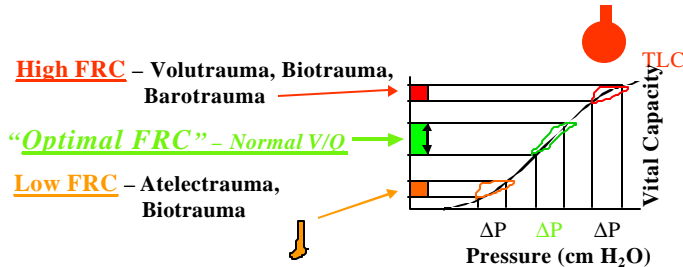
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Ventilator Management & Long Term Follow-up in 2002: "Kinder, Gentler and ... Physiologically Based!"

After the arrival of Dr. LaGamma and colleagues in 1999, a major shift in the Division's ventilation management strategy was introduced. The approach attempted to minimize the undesirable effects of volutrauma by using an "Optimal FRC" strategy (see figure below) with "permissive hypercapnia" (the tolerance of compensated respiratory acidosis.)

Tidal Volume is a function of position on the static lung compliance curve



This new management strategy was achieved with a \$750,000 upgrade in "state-of-the-art" ventilator equipment including high frequency oscillators, jet ventilators, nitric oxide (bedside and transport), patient-triggered devices and "fluidic-flip" CPAP modalities. The breath of the cardiopulmonary management program has since been further expanded to include ECMO services, which were initiated in May 2001. The new strategy emphasizes a lower peak inspiratory pressure & PEEP, as well as the use of assist-control ventilation with termination sensitivity turned on. As proof-of-impact for this change in strategy, we noted that the average daily peak inspiratory pressure (during the first 7 postnatal days) was lowered by 4 cm H₂O on each day and this was associated with a higher pCO₂ by 10 mmHg (Soc Peds Res Abstract 2002; to be presented in Baltimore).

In addition to the difference in ventilator settings, two cohorts of extremely low birth weight neonates (ELBW 400-1000g; before and after the new strategy July 1999 start-date) from our Regional NICU were compared for a variety of outcomes to a national database:

Baseline	Pre July 99'	After July 99'	Oxford Database
	n= 60	n= 60	n= 8,672
Birth Weights (g, x ± sem)	797 ±20	765 ±15	<1000
Sepsis (c/s + or neg)	46%	35%	48%
+ 've only	33%	20%	-
PDA Rx Indocin	33%	35%	50%
NEC	5 %	10%	10%
IVH ≥ 3	10%	7%	14%
PVL	2% (1/45)	4% (2/47)	7%
Survival	68%	65%	n/a

Importantly, the incidence of Chronic Lung Disease (BPD; oxygen requirement at 36 weeks post conceptual age) was reduced from an already low 20% (12/60) to 10% (6/60) in babies weighing <1000g at birth (<28 weeks gestational age). This was exciting given the national average for 8,672 similar patients in the Vermont-Oxford database was 46% (over the same time period); a similar rate for CLD is reported at ~40% of ELBW neonates in the NICHD database. In addition to these important short-term outcome monitors, our *High Risk Comprehensive Follow-up Program* was expanded in July 1999. A full time director was appointed, Dr. Mostafa Hassan, who has developed a working association with Dr.'s Picci and Accardo and their colleagues at St Agnes Hospital & Rehabilitation Center and the Westchester Institute of Human Development, respectively. What Dr. Hassan observed was that *permissive hypercapnia* did not adversely affect long-term neurodevelopmental outcome at the one-year follow-up milestone in these ELBW neonates (Soc Peds Res Abstract 2002). Doctor Hassan intends to continue tracking outcomes of these former patients, in close association with their local pediatricians, over the next 2 years. We will report back to you on their progress as time goes on.

From these observations, it became clear a physiologically based, ventilatory management strategy could be taught and carried-out by all neonatologists. Moreover, we concluded that a change in clinician's behavior could lower the incidence of Chronic Lung Disease in ELBW neonates without increasing the risk of long-term neurodevelopmental delay. We are pleased with the scope of the groups performance and even more so with our patients excellent long-term outcomes. Go Team!

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Westchester Institute for Human Development (WIHD) at Westchester Medical Center Pediatric Feeding Evaluation Services

In response to the growing need to assist pediatric patients and their families with questions related to the developmental acquisition of feeding skills and swallowing difficulties, the Speech and Hearing Center has put together several new evaluation and treatment services focused on the assessment and treatment of feeding and swallowing problems. In addition the center continues to conduct Modified Barium Swallow Studies on both an inpatient and outpatient basis. The new services are available to both pediatric inpatients and outpatients who are demonstrating atypical feeding patterns, difficulty progressing developmentally appropriate feeding skills, and/or swallow dysfunction.

Outpatient Feeding Team:

Team Members: Speech language pathologist, clinical nutritionist, and occupational therapist.

The team provides consultative evaluations for children with neurodevelopmental and medically based feeding problems. The evaluation consists of an interview with parents/caregivers, observation of the feeding interaction and feeding methods used by the caregivers, introduction of intervention strategies, feedback and recommendations for further evaluations. The team provides consultation not therapy. It works with the community service providers (i.e., early intervention programs, schools, home care nurses, private therapists) to help families implement the team's recommendations. Follow-up consultation is scheduled on a case-by-case basis depending on goals and level of community service available for the child.

Outpatient Clinical Evaluation of Dysphagia:

Consultation by a speech language pathologist with specialization in oral motor and swallowing function. This service is provided for children whose growth may be adequate, but who is having difficulty progressing with developmentally appropriate feeding skills, (i.e., difficulty progressing to solid foods, difficulty progressing to cup drinking etc.). Evaluation includes a clinical assessment to rule out swallowing dysfunction, assessment of oral motor function for speech and feeding skills and recommendations for skill acquisition.

For additional information on the feeding services provided or to schedule an evaluation please contact us:

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Reaching Out

The Neonatal Outreach Program is one of many services offered by the Regional Perinatal Center. As a Neonatal Outreach Coordinator since 1988, I have had the opportunity to offer education and consultative services to numerous neonatal programs/hospitals in the seven County Hudson Valley regions.

Westchester Medical Center offers a comprehensive, on-site nursing educational program, covering topics which include: assessment & stabilization, respiratory care, cardiac problems of the newborn, and caring for preterm infants and their families. In addition, the Neonatal Resuscitation Program is also a component of the outreach program. These programs are tailored to meet the needs of individual facilities and can be presented at the requesting facility. Over 900 participants from 39 hospitals have attended these outreach programs to date.

As a Regional Instructor for the Neonatal Resuscitation Program, I have had the pleasure of directly preparing over 800 people as providers of current resuscitation techniques and indirectly, through preparation of over 200 regional and hospital-based instructors. These instructors continue the program at their respective facilities, and thus are the reason thousands of personnel caring for newborns are current in their techniques.

Through education and consultation, many hospitals in the seven county regions have been assisted in upgrading their service to Level II-III care. Consultation is provided to over 30 hospitals in the Mid Hudson Valley region for administrative and clinical issues. Consultative services are offered to assist managers in identifying quality care issues and collaborate with them to develop a plan of care.

Coordination of neonatal transport services throughout the Hudson Valley region is another component of the outreach program. Sergio Golombek MD, (Attending Neonatologist /Transport Physician), along with myself, directs the Neonatal Transport program. Consults occur with the STAT transport team and referring hospital staff to provide education and recommendations for clinical practice.

The Neonatal Outreach Program certainly has evolved and grown since its inception and continues to add new offerings to our colleagues in the region. If you have any questions about any of the components of our program, I would be happy to directly speak with you.

**Kathleen Rogan, MS, RN, C, Coordinator,
Neonatal Outreach Program; Phone (914) 493 -7362**

Upcoming Outreach Programs:

Neonatal Resuscitation Program for Hospital-Based Instructors
April 11 & 18th 2002 at WMC - Nursing Staff Development, Elmwood Hall 2nd floor.

Assessment & Stabilization of the Newborn
May 2 & 3rd, 2002 at WMC - Nursing Staff Development, Elmwood Hall 2nd floor.

For registration information, please call the Nursing Staff Development Office at (914) 493-8892.

Upcoming Conferences:

From Conception to Cradle The Division of Women's and Children's Services at the Westchester Medical Center invite you to attend **From Conception to Cradle**, our fourth annual obstetric and neonatal nursing symposium on April 26, 2002 at the Westchester Marriott Hotel in Tarrytown, NY. The program will include Dr. Gary Satou who will discuss (Prenatal Detection and Neonatal Management of Heart Defects); and Dr. Nick Incandela will discuss (Pain Control for the Parturient); Ronnie Waltzer, NP will discuss (Diabetes in Pregnancy). And much much more...

Please direct inquiries to Nursing Staff Development at WMC (914) 493-8892.

2002 Perinatal Day Symposium Mark your calendars for the 2002 Perinatal Day Symposium: May 22, 2002 at the Holiday Inn, Fishkill, NY. Featuring Drs. Schanler (Human Milk for Premies); and Bhutani (Update on Neonatal Hyperbilirubinemia); Joyce Abrames (Developmental Care from Delivery Room to Post-Discharge); and highlighted by a point-counterpoint presentation of Bubble CPAP (Dr. Rubinstein, Columbia) versus Optimal FRC Strategy (Dr. LaGamma, Westchester Medical Center).

Please direct inquiries to Dr. Rick Stafford, Chairman, Committee on Fetus and Newborn, Chapter 3, AAP: at Northern Westchester Hospital Center (914) 666-1272.

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We are interested in providing you with a newsletter that is relevant and of interest to you. Please contact us with perinatal topics you would like to see addressed.

For a copy of our newsletter or to be placed on our mailing list contact us by phone or e-mail.

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