



# NEWSLETTER Spring 2008

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## ANNUAL MEETING 2007

The Vermont Oxford Network Annual Meeting, attended by over 650 individuals from member hospitals around the world, was held on December 1, 2007 in Washington, DC. Jeffrey D. Horbar, MD opened the meeting with an update of Network activities and plans and a discussion of the ways in which the Vermont Oxford Network has become a “small world” (see below).

Tom Jaksic, MD, reviewed current controversies in neonatal surgery and addressed the question, “Can Vermont Oxford help improve the care of surgical neonates?” He suggested that we could through closer collaboration with neonatal surgeons to develop, analyze, and disseminate the data that are now included in the Network database. Dr. Jaksic helped the Network develop the surgical coding that was added to the database in 2006 and is currently reviewing the initial data collected on infants with NEC. We look forward to our continuing collaboration with Dr. Jaksic and all of our colleagues in pediatric surgery and anesthesia to further refine and apply the Network’s surgical data.

Roger F. Soll, MD in his presentation, “What’s New in Trials and Follow Up?”, reviewed the current status and future plans for Network trials as well as the progress and plans for the Network’s follow up projects (see below).

Eileen Lake, PhD, RN, in her presentation titled, “NICU Nurse Staffing: Is there a Magic Number?”, discussed the existing evidence regarding the relationships between nurse staffing, nurse work environment, and patient outcomes in the NICU. She also described a prospective study she is conducting at 117 Vermont Oxford Network centers to measure acuity adjusted staffing levels and nursing work environments and assess their impacts on the quality of NICU care (see below).

Leslie F. Roberts, PhD, an epidemiologist and Associate Professor in the Program for Forced Migration and Health, Columbia University Mailman School of Public Health, presented a provocative talk titled Tenuous Times for Child Well Being in an Information Age. Dr. Roberts summarized his conclusions in the meeting abstract as follows:

“Recent actions such as fabricating health data in Liberia and Iraq to achieve political goals, or intermingling humanitarian initiatives with military actors, threaten the global capacity to assist the most vulnerable. This talk will focus on how we, health professionals, are potential interlocutors between the media and the communities in which we live and can help constructively direct our national compassion.” Although some members were offended by Dr. Robert’s political stance, we hope that, regardless of our political views, all of us can agree that as health professionals we do have an important role to play in directing our national compassion. We would like to thank Dr. Roberts for focusing our attention in this direction.

The meeting continued with a series of smaller group sessions on New Network Internet Tools (Joseph Carpenter), Cochrane Neonatal Reviews (Roger Soll), Vermont Oxford Neonatal Encephalopathy Registry (Jeffrey Horbar), Nurse Staffing in the NICU (Eileen Lake), and Global Neonatology (Steven Ringer, Jonathan Spector, Bogale Worku). These sessions were lively, interactive, and well received.

The meeting closed with an open discussion among the membership and the representatives of the Database Advisory Committee. A wide range of issues related to the Network database were discussed.

We thank all of the members who participated in this years meeting and hope to see you all next year at the Annual meeting on December 6, 2008!

## **THE VERMONT OXFORD NETWORK, IT’S A SMALL WORLD!**

The Vermont Oxford Network Annual Meeting, attended by over 650 team members from member hospitals around the world, was held on December 1, 2007 in Washington, DC. The theme of the meeting, It’s a Small World, was introduced by Jeffrey D. Horbar, MD in his opening plenary address. Dr. Horbar applied the ideas of the new science of network theory to the growth and evolution of the Vermont Oxford Network. Not only

has the Network grown in numbers, from 36 NICUs in 1989 to over 700 today, but the interconnections and collaborations among teams at member units have become richer and more complex.

These connections are being created through the Vermont Oxford Network NICQ and iNICQ collaboratives, and by the state, regional, and national collaboratives that are now forming in so many areas around the world. Network theory suggests that the pattern of interconnections among the nodes in a network determines the function of the network. This is true for biological networks, technological networks such as the Internet, and for a variety of social networks such as those involved in terrorism or scientific collaboration. It is also true for the worldwide network of health professionals and families that comprise our Network.

Small World Networks are a special kind of network in which most nodes are connected to each other by very short paths. This idea has been popularized in the notion of 6 degrees of separation based on the “small world experiments” of Stanley Milgram. He instructed a subject in Omaha, Nebraska to forward a package to a friend or acquaintance who they thought would bring the package closer to a final target individual in Boston, Massachusetts whom they did not know. Milgram found that the majority of packages made it to the target in 5 or 6 steps.

The Vermont Oxford Network is becoming this type of small world. Teams of health professionals and parents at NICUs around the world are now working together in totally new ways and on a scale that has not been seen before.

Our field of neonatology may be unique in this regard, but other fields are likely to follow this same evolutionary path. What will this mean for the discovery and dissemination of new knowledge and for the improvement of quality and safety of neonatal care? It is too soon to say. However, there is good reason to expect that innovation and improvement will be enhanced by our new connectivity with one another.



Barabasi, AL. linked: How Everything is Connected to Everything Else and What it Means for Business, Science, and Everyday Life. Penguin. New York, New York. 2003.

## VERMONT OXFORD NETWORK FELLOWSHIP IN INTERNATIONAL HEALTH

The Vermont Oxford Network is pleased to announce the 1<sup>st</sup> Vermont Oxford Network Fellow in International Health, Dr. Bogale Worku from the Department of Pediatrics and Child Health at Addis Ababa University, Addis Ababa, Ethiopia.



Despite working in extreme conditions that are almost unimaginable to those of us working in modern health systems, Dr. Worku has displayed an outstanding dedication and commitment to improving neonatal care through clinical service, teaching, and research. It was an honor and privilege to have Dr. Worku join us at the Vermont Oxford Network Annual Meeting and Quality Congress.

During the Annual Meeting breakout session on Global Health chaired by Steven Ringer, MD and Jonathan Spector, MD, Dr. Worku presented a talk on the status of neonatal care in his country where 120,000 newborn infants die each year for a neonatal mortality rate of 39 per thousand live births. He reported that most infants die at home “unnamed and uncounted” as a result of traditional taboos that prevent access to care. Infections, including Tetanus, account for 43% of the neonatal deaths with another 25% due to asphyxia. Seventeen percent of deaths are a result of preterm birth. In Dr. Worku’s newborn unit in Addis Ababa 50% of the 5000 annual admissions are low birth weight. Major problems include the deficiency of trained nurses, overcrowded conditions, and lack of basic equipment.

The Vermont Oxford Network looks forward to working with Dr. Worku and his colleagues in Ethiopia. A delegation from Vermont Oxford plans to visit Addis Ababa in the Fall of 2008. After this visit we hope to develop a proposal for a continuing partnership among Vermont Oxford, its members and our medical colleagues in Ethiopia. If you have ideas, suggestions, or are interested in getting involved, please let us know.

We would like to offer our special thanks to Dr. Misrak Tadesse, Dr. Bharti Razdan, and the entire neonatal team at Howard County General Hospital in Columbia, MD, for hosting Dr. Worku at their hospital for a day during his visit. Thanks!

## 8<sup>TH</sup> ANNUAL QUALITY CONGRESS

The Vermont Oxford Network 8<sup>th</sup> Annual Quality Congress was held on December 2, 2007 in Washington, DC. Attended by over 650 individuals from NICU teams around the world, the Congress covered a wide variety of topics in quality science applied to the NICU.

Sean Berenholtz, MD discussed, "Eliminating Nosocomial Infections: The Michigan ICU Experience". He reviewed the remarkable successes of a statewide effort to improve ICU care in Michigan (NEJM 2006;355:2725) and stressed the importance of culture and teamwork in achieving improvement.

William H. Edwards, MD followed up with "Eliminating Nosocomial Infections: The NICU (NICQ) Experience". Using data from the Network Database and from the experience of previous Vermont Oxford NICQ improvement collaboratives, Dr. Edwards concluded that applying evidence based practices and quality improvement strategies appears to reduce the reported rates of coagulase negative staphylococcal infections in VLBW infants and that the key processes involved relate to the placement, maintenance, and duration of central lines as well as TPN administration. However, he raised the important question of whether new strategies would be needed to prevent infections due to other pathogens such as staph aureus, gram negative bacteria, and fungi.

Duncan Neuhauser, PhD discussed RCTs and Quality Improvement Science. In a stimulating and carefully constructed lecture (presented without any slides!), Dr. Neuhauser discussed the appropriate uses of randomized trials and quality improvement methods and ultimately concluded that quality improvement versus RCTs is an unnecessary argument. It was a great privilege to have Dr. Neuhauser address our group. His arguments are summarized in a series of his papers which are well worth reading:

D Neuhauser, M Diaz, Heroes and Martyrs of Quality and Safety, Daniel: using the Bible to teach quality improvement methods, Qual Saf Health Care 2004;000:1-3.

M Diaz, D Neuhauser, Heroes and Martyrs of Quality and Safety, Pasteur and parachutes: when statistical process control is better than a randomized controlled trial, Qual Saf Health Care 2005;14:140-143.

C Herbert, D Neuhauser, Improving Hypertension Care With Patient-generated Run Charts: Physician, Patient, and Management Perspectives, Q Manage Health Care 2007; 13; 3: 174-177

D Neuhauser, M Diaz, Heroes and Martyrs of Quality and Safety, Quality improvement research: are randomized trials necessary? Qual Saf Health Care 2007; 16:77-80.

Anita Tucker, DBA discussed "Front-line Staff collaboration: Different effects for different goals". Dr. Tucker reviewed her research conducted with teams in the Network's NICQ 2002 improvement collaborative. She distinguished "learn what" activities from "learn how" activities. "Learn what" refers to specific evidence based practices whereas "learn how" refers to the ways in which teams customize the practices for application in their unique local context. Although the study was limited by small sample size and potential selection bias in the participating NICUs, units reporting greater involvement in "learn how" activities had lower risk adjusted mortality rates, raising interesting questions for future research.

Paul V. Miles, MD, Director of Quality Improvement and Practice Assessment, American Board of Pediatrics addressed "QI in Professional Development: Measuring and Improving Quality of Care". His talk focused on the crucial role of measurement and data in improving neonatal care. He summarized by suggesting that 1. Measurement is necessary but not sufficient to improve care, 2. We should measure all of the IOM dimensions of quality (see related article about NICQ themes below), 3. We should measure over time, 4. Data quality should be explicit, and 5. We should measure the same things, the same way, and work together to improve. Dr. Miles has provided important leadership and vision in his efforts to incorporate quality improvement activity based on these ideas in Part 4 of maintenance of certification for pediatric subspecialists.

Jeffrey D. Horbar, MD introduced the Quality Congress Learning Fair by reviewing the "Bataldan and Davidoff Improvement Formula" (Batalden PB, Davidoff I What is Quality Improvement and how can it transform health care? Qual Saf Health Care 2005; 14:319-25.) and stressed the importance of adapting the scientific evidence for implementation in the unique local context of each NICU. The Learning Fair included poster presentations from teams in the NICQ 2007 Improvement Collaborative, the iNICQ Internet Improvement Collaborative, state, regional, and national improvement collaboratives, as well as a few individual submissions. These posters provided extremely instructive examples and case studies of how NICU teams had adapted and applied the scientific evidence for their unique organizational settings. The Learning Fair included over 100 high quality posters. We thank all of the teams for sharing their impressive work!

## NIC-U TUBE VIDEO FESTIVAL

The Vermont Oxford Network was pleased to present the 1<sup>st</sup> Annual NIC-U Tube Video Festival in conjunction with the Quality Congress on December 2, 2007. In response to a call for submissions, 11 NICU teams listed below entered their 3 minute videos in the Festival. The Festival Committee Chairs, Pam Ford and David Wirtschafter, MD (he's from Los Angeles and his neighbor has



an Academy Award) presented well deserved *Premie Donna's* to the producers of the following videos.



<b><i>Bevard Story</i></b>	Anne Arundel Medical Center, Annapolis, MD
<b><i>Cartwheels</i></b>	Rockford Health System Rockford, IL
<b><i>Continuous Improvement</i></b>	Akron Children's Hosp. Akron, OH
<b><i>Decreasing Line Infections</i></b>	Golisano Children's Hospital University of Rochester Medical Center, Rochester, NY
<b><i>Developmental Care</i></b>	Nationwide Children's Hosp Columbus, OH
<b><i>NICU: A Roller Coaster Ride</i></b>	Women's Hospital Newburg, IN
<b><i>NICU Mock-Up and Simulation</i></b>	Kaiser Permanente Oakland, CA
<b><i>Our NICU</i></b>	The Children's Hospital at Providence Anchorage, AK
<b><i>The "Wrong Way"</i></b>	Mississippi Baptist Hospital Jackson, MS
<b><i>VON NICU Project</i></b>	Baptist Healthcare System San Antonio, TX
<b><i>Washing with the Stars</i></b>	St. Vincent Hospital Indianapolis, IN

The videos were shown continuously to appreciative crowds (popcorn included) during the Quality Congress Learning Fair. We thank all of the teams for presenting their videos and look forward to an even larger selection at next year's Quality Congress including a few foreign films (with subtitles of course).



## INICQ POTENTIALLY BETTER PRACTICES COLLABORATIVE

The Vermont Oxford Network is pleased to report that multidisciplinary teams from 67 neonatal intensive care units are participating in the current iNICQ Internet series, Potentially Better Practices Collaborative. This collaborative is the seventh in a series of Internet collaboratives that have addressed a variety of topics aimed at improving the quality and safety of medical care for newborn infants and their families.

Under the direction of Jeffrey D. Horbar, MD and James Handyside, the Potentially Better Practices Collaborative allows multidisciplinary teams at participating centers to test and implement the Potentially Better Practices in way that makes sense for their local setting. This collaborative provides an introduction to the Potentially Better Practices identified and tested by teams that participated in the Network's NICQ 2005 Collaborative. In that Collaborative 47 multidisciplinary teams from NICUs in North America worked with experts to identify and test Potentially Better Practices, PBPs, in a variety of NICU domains.

This series includes six interactive, 90-minute Internet sessions. Each web conference provides formal teaching, interactive discussion and time for teams to work together. Prior to each conference, participating teams are provided with materials and prework assignments designed to prepare the team for action.

Collaborative members have access to a dedicated e-mail listserv as well as access to VON's private collaborative website [nicq.org](http://nicq.org), where participants have rapid access to tools, skills, information and resources designed to improve quality and safety of care. Free CME and Contact Hours are available for iNICQ Collaborative participants.

The topic areas of the iNICQ Potentially Better Practices are as follows:

### Session 1: March 6, 2007

#### Introduction to Potentially Better Practices

This session introduced the potentially better practices and how they were developed, and reviewed how the strength and quality of the evidence is assessed.

### Session 2: June 6, 2007

#### PBPs for Nutrition

This session introduced the potentially better practices for nutrition of VLBW infants, and

presented case studies of how individual PBPs have been tested and implemented by NICU teams.

**Session 3: September 26, 2007**  
**PBPs for Medication Safety**

This session introduced the potentially better practices for medication safety, and presented case studies of how individual PBPs have been tested and implemented by NICU teams. Attention was paid to the JCAHO safety goals.

**Session 4: November 14, 2007**  
**PBPs for Improving the NICU Environment**

This session addressed how the NICU physical environment (sound, light, odor, space) affects the health and development of infants and their families. Case studies of how individual NICUs applied the PBPs for the NICU environment were presented.

**Session 5: January 16, 2008**  
**PBPs for Respiratory Care**

This session reviewed the PBPs for respiratory care and support of VLBW infants and presented case studies of how individual NICUs have applied these PBPs.

**Session 6: March 19, 2008**  
**Case Studies from iNICQ**

Participating teams shared case studies of how they have applied the PBPs in their own NICUs.

**iNICQ INTERNET POTENTIALLY BETTER  
PRACTICES 2007 FACULTY**

**Betsi Anderson, RN, BSN, CPHQ**  
Neonatal Intensive Care nurse, Children's Mercy Hospital,  
Quality Improvement Coordinator for NICU,  
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**Wally Carlo, MD**  
Edwin M. Dixon Professor of Pediatrics,  
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Director of the Division of Neonatology,  
UAB and Children's Hospital of Alabama  
Director of the Regional NICU,  
UAB and the NICU at the Children's Hospital of  
Alabama, Birmingham, AL

**Stanley Graven, MD**  
Professor and Dean of the College of Public Health  
University of South Florida, Tampa FL

**James Handyside, B.Sc**  
Co-Director NICQ 2007  
Quality Director NICQ 2005 and iNICQ 2005  
President, Improvisation, Ontario, Canada

**Jeffrey Horbar, MD**  
Professor of Pediatrics University of Vermont  
Chief Executive and Scientific Officer, VON  
Vermont Oxford Network, Burlington, VT

**Andrew Kairalla, MD**  
Medical Director of Neonatology,  
Baptist Children's Hospital, Miami, FL

**Stuart Levine, Pharm.D**  
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Adjunct Professor, Temple University School of  
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Informatics Specialist, Institute for Safe Medication  
Practices, Huntingdon Valley, PA  
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**William Liu, MD**  
Co-Medical Director of Newborn Services,  
Children's Hospital of Southwest Florida  
Chairman, Clinical Department of Children's Hospital  
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**Alfonso Pantoja, MD**  
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University of Colorado, School of Medicine  
Medical Director of NICU, Exempla Saint Joseph  
Hospital, Denver, CO

**Roger Soll, MD**  
Associate Professor of Pediatrics  
Director of Clinical Trials, Vermont Oxford Network  
Fletcher Allen Healthcare, Burlington, VT

**Ekhard Ziegler, MD**  
Professor of Pediatrics,  
Director of the Fomon Infant Nutrition Unit,  
Department of Pediatrics, Univ of Iowa, Iowa City, IA

**iNICQ CREATING STANDARD PROCESSES  
A VERMONT OXFORD NETWORK  
INTERNET COLLABORATIVE 2008 AND 2009  
BEGINNING JUNE 2008**

This is the eighth in a series of Internet-based improvement collaboratives sponsored by the Vermont Oxford Network under the direction of Jeffrey D. Horbar that will help multidisciplinary NICU teams improve and standardize key NICU process, create and use new tools to support standard work, learn to make your NICU processes Family Centered, Safe, Equitable, Effective, Efficient, Timely and Socially and Environmentally Responsible.

**Why Standardize Processes?**

Standardization is a critical concept for improving quality and safety, yet the elimination of unwanted and unnecessary variation in the way processes

are carried out is often an elusive target. Many organizations spend considerable time and effort writing policies and procedures. Unfortunately, this often becomes merely a bureaucratic exercise with the resulting documents filed neatly on a shelf. The goal of standardized care is to guarantee that what is supposed to happen actually does happen, every time it should, without fail. The ideal is built into the system. Standardized care does not mean "cookbook medicine". Rather it means that the critical, evidence based elements of care that have been carefully reviewed and accepted happen as planned on time, every time. Where individual judgment and customized responses are needed these are built in and supported. Teams in the iNICQ Collaborative, *Creating Standard Processes*, will choose key NICU processes, improve and standardize them.

### **What tools will we use?**

As your team standardizes each new process, it will be added to your evolving "NICU Playbook". Similar to the playbook used by a sports team to standardize their plays, the "NICU Playbook" will become your source for "how we do that here". Your unique Playbook will be a valuable tool for training, evaluation, and improvement. In iNICQ we will also introduce additional tools for ensuring that work is performed to standard based on the ideas of quality leaders in medical care and others in general industry. These tools will include periodic or random audits, structured observation, and the use of checklists among others.

### **What are the 7 improvement themes addressed in iNICQ?**

The Institute of Medicine, in its landmark publication *Crossing the Quality Chasm*, challenges us to make health care family centered, safe, equitable, effective, efficient, and timely. Vermont Oxford has added a seventh characteristic, social and environmental responsibility. The iNICQ Collaborative will help your team address these 7 themes in all of your NICU processes.

This two part series includes ten interactive, 90-minute Internet sessions. Each web conference provides formal teaching, interactive discussion and time for teams to work together. Prior to each conference, participating teams are provided with materials and prework assignments designed to prepare the team for action.

Collaborative members have access to a dedicated e-mail listserv as well as access to VON's collaborative website, where participants have rapid

access to tools, skills, information and resources designed to improve quality and safety of care. Free CME and Contact Hours are available for iNICQ Collaborative participants.

The schedule for the iNICQ sessions is presented below. Each session will last 90 minutes. We ask each team to schedule an additional 30 minutes following the session to work together on a structured improvement exercise that we will provide related to the topic of the session.

## ***INICQ CREATING STANDARD PROCESSES AN INTERNET IMPROVEMENT COLLABORATIVE PROVISIONAL SCHEDULE***

### ***Part 1 June 2008 to February 2009***

#### **Session 1 Jun 2008**

##### **Tools for Process Improvement**

Flowcharts, process measures, and playbooks  
Case Studies and examples  
Discussion

#### **Session 2 Sept 2008**

##### **Making your processes Family Centered**

Family Centered NICU Care  
Case studies  
Discussion

#### **Session 3 Oct 2008**

##### **Making your processes Safe**

Identifying and reducing hazards  
Case studies  
Discussion

#### **Session 4 Nov 2008**

##### **Making your processes Effective**

Evidence based NICU care  
Case studies  
Discussion

#### **Session 5 Jan 2009**

##### **Making your processes Equitable**

Equitable care in the NICU- What are the issues?  
Case studies  
Discussion Feb 09

### ***Part 2 March 2009 to September 2009***

#### **Session 6 Mar 2009**

##### **Tools for Process improvement Part 2**

Additional tools for process improvement  
Case studies  
Discussion

## **Session 7 Apr 2009**

### **Making your processes Timely**

Timeliness in communication of critical information

Case studies

Discussion

## **Session 8 Jun 2009**

### **Making your processes Efficient**

Application of lean principles to the NICU

Case studies

Discussion

## **Session 9 Jul 2009**

### **Making your processes Environmentally Responsible**

What is environmentally responsible NICU care?

Case studies

Discussion

## **Session 10 Sept 2009**

### **Case Studies on Creating Standard Processes**

Case studies from participating teams

Discussion

For more information or to register for this exciting Quality Improvement Collaborative, please contact Pam Ford ([pam@vtxford.org](mailto:pam@vtxford.org)) or 802-865-4814 x202.

## **NICQ 2007 QI COLLABORATIVE UPDATE**

We have just completed the first year of the two year NICQ 2007 Collaborative. During that time, multidisciplinary teams from 47 NICUs worked in multicenter Learning and Improvement Communities to improve & standardize key processes. The centers are developing a Process Record for each standardized process and compiling these into their NICU Playbook which documents how processes are conducted locally. These Playbooks serve as valuable tools for training, evaluation, and improvement.

The NICQ 2007 teams have been examining their work through the framework of themes adapted from the Institute of Medicine principles first published in the influential Crossing the Quality Chasm: A New Health System for the 21st Century ( National Academies of Science 2001). The themes are safe, effective, parent and family centered, timely, efficient, and equitable. Vermont Oxford has added a 7<sup>th</sup> theme, socially & environmentally responsible.

These themes are addressed by expert plenary speakers at the NICQ 2007 meetings and further

augmented in the Learning and Improvement Communities.

NICQ 2007 also includes a special Leadership Track under the direction of Deb Miller, RN. NICU leaders from participating units meet together for a half day prior to the main meetings of the collaborative to learn and apply new leadership skills. Guest faculty has included James Kouzes, co-author of The Leadership Challenge, and Tim Porter-O'Grady, a well-known expert in clinical leadership. The Leadership Track for 2008 will emphasize aligning and measuring organizational improvement goals. Our final meeting in San Francisco in September 2008 will include the attendance of the CEO or other senior leader from participating centers.

An important element of NICQ 2007 has been engaging families as team members for improvement. Many participating teams have included a parent member in attendance at the Collaborative meetings. Under the leadership of faculty member, Kathleen Iannacchino, the parents have conducted concurrent sessions & addressed the full audience at the Collaborative meetings. In addition, there are scheduled conference calls and a dedicated listserv for the family members of the Collaborative.

The coming year should prove to be another productive year for the NICQ 2007 QI Collaborative centers. Our next meeting will be held in Chicago April 24-27, 2008.

## **ANNOUNCING THE NICQ 2009 QUALITY IMPROVEMENT COLLABORATIVE**

The Vermont Oxford Network is now organizing NICQ 2009, the sixth in our series of intensive quality improvement collaboratives for neonatology. Over the course of two years, multidisciplinary teams including parents, will work under the guidance of expert faculty to guarantee that NICU care is *family centered, safe, effective, efficient, timely, equitable, and socially and environmentally responsible*.

Teams from participating hospitals will test and implement potentially better practices and examine and standardize a wide variety of NICU processes. Leaders from participating organizations will have the opportunity to join a special leadership track preceding the NICQ 2009 meetings. We aim to create a NICU culture in which everyone has two jobs: caring for patients and families, and improving that care.

## NICQ 2009 Manifesto

\*We will always provide care that is family centered, safe, effective, equitable, timely, efficient, and socially and environmentally responsible.

\*We will achieve this by practicing four key habits: the habit for evidence based practice, the habit for change, the habit for systems thinking, and the habit for collaborative learning.

\*We will engage families as team members and expect that all staff have two responsibilities, caring for infants and their families and continuously striving to improve that care.

\*We will be accountable with respect to these goals to ourselves, to patients, to families, and to the community by incorporating measurement into daily practice within our unit and within our organization.

For further information, please contact Kathy Leahy, RN, NNP, NICQ Coordinator, ([Kathy@vtoxford.org](mailto:Kathy@vtoxford.org)) or 802-865-4814 x205.

## REGISTRY FOR NEONATAL ENCEPHALOPATHY

The Vermont Oxford Network established a Registry for Neonatal Encephalopathy in 2006. This Registry enrolls newborn infants with documented encephalopathy.

The Aims of the Registry are:

1. To improve quality and safety of care for infants with encephalopathy
2. To monitor diffusion of hypothermic therapy
3. To assess developmental outcomes of infants treated with hypothermia
4. To conduct research and define questions for prospective study

Participation in the Registry is open to all member hospitals in the Vermont Oxford Network. Data are managed and submitted using the Network's **eNICQ** user software. The Registry is supported by an optional module in this software. No protected health information will be submitted to the Vermont Oxford Network for the Registry. There is no additional fee for participation or for the use of the software.

Hospitals participating in the Registry receive confidential reports characterizing infants at their center with encephalopathy and comparing them to all participating hospitals. These reports are intended for use in local quality improvement efforts.

The Registry for 2006 and 2007 includes data from 45 centers. These centers to date have enrolled nearly 800 infants with encephalopathy of whom 160 have been treated with hypothermia. Not all of the centers have yet completed their data for 2006 and 2007 so the final numbers will be larger.

Since the discussion of the Registry at the Network Annual Meeting in December, we have had considerable interest from new centers. Whereas in 2006 and 2007 only centers in the Expanded Database were eligible to participate in the Registry, in 2008 all Network centers are eligible to participate including those who currently only enroll infants in the VLBW Database. We expect many new centers in 2008.

We are now offering participating centers the option of submitting standardized data on 2-year neurodevelopmental follow-up for infants treated with hypothermia. The plan is to begin follow-up in July 2008 for infants born in July 2006. You will be receiving the details about this option in the near future.

Finally, we would like to thank teams at the participating centers for their hard work and dedication to creating a unique resource that will allow us all to improve the quality and safety of care for newborn infants with encephalopathy.

For information contact: Nancy Cloutier, Registry Coordinator, at (802)-865-4184, ext 208, or [nancy@vtoxford.org](mailto:nancy@vtoxford.org)

## NIGHTINGALE

The Nightingale Internet reporting system for Network members continues to expand with more than 550 hospitals and 1500 NICU staff currently using the system. Centers are able to compare results at their NICU to the Vermont Oxford Network as a whole, to Network centers of the same NICU type and to other groups of which they are members. Along with these comparison populations, there are now 19 separate state, regional and other hospital groups for which comparison data are available and summarized on Nightingale. The most recent groups added include Michigan, Washington State and a group of hospitals participating in the NIC/Q 2007 Quality Improvement Collaborative.

Nightingale includes summaries with risk adjusted outcomes from the annual VLBW and Expanded Quality Management Reports (QMRs) for your center, as well the Network annual Database

Summaries for the past three years. Summary reports for the ELBW Follow-Up Study are also available if your center participates in the follow-up project. Simply click on the Summaries link from the Nightingale home page to view these summaries which are in PDF documents.

Many new features are planned for Nightingale. One recent enhancement is an additional group-by category that allows data summaries for outborn infants based on day of admission. Since the rates for some outcomes vary significantly at reporting centers depending on whether the outborn infant was admitted between one and three days, as compared to infants admitted after three days, this new way to group data will permit a more focused analysis and comparison of outcomes. This new feature may be particularly useful at centers with a majority of outborn infants.

**ATTENTION**  
**WEB SERVICES ADMINISTRATORS**

Be sure to occasionally review your center's list of Nightingale Users who have access to view your center's data in the VON Nightingale Internet Reporting system and make any necessary modifications as personnel changes occur at your center.

This list is available to Web Services Administrators by clicking on Admin Tools after logging on to Nightingale.

### MEMBER'S AREA ON VTOXFORD.ORG

For many months, we've been working on the "Member's Area", a single place on the Vermont Oxford Network website for Network Members to find information on many of the Vermont Oxford activities that are specific to your center's involvement. Authorized users will be able to login to this area and get an overview of your center's participation in the Network, manage center contact information, review data submissions, and find tools for improvement. Access to the Members Area will be gained by using the same user login and password as that used for Nightingale. Authorized Users will be able to move between Nightingale and the Member's Area without logging in twice. Those who are using our nicq.org will be able to access those

improvement materials through this site as well. We are moving closer to having a single login and password provide you access to everything you need. (We're cheering too!!!)

Data contacts will find a whole new way of getting timely information about recent data submissions. Error and Warning, Data Form Status, Data Management and Missing ID summaries will be available through the Member's Area. Users will also be able to review the data submission history for their center and determine the status of meeting our annual data finalization deadlines.

Centers participating in NICQ and iNICQ Collaborative programs will find many of the documents they previously viewed on nicq.org. The same search capabilities and access to case studies, recorded presentations, tools for improvement, etc are all present on this site.

Security is certainly of utmost concern to us. Much of our time has been spent ensuring that your center's Web Services Administrator(s) have control over who gains access to the information on the site and that all transmissions are encrypted between you and us. Administrators will be able to grant different levels of access to Nightingale, the Member's Area and collaborative resources if your center is participating in iNICQ or NICQ. We will be notifying Web Services Administrators before these new areas are made available so they have time to make informed decisions and manage access to the site.

Soon we will be entering a beta testing phase with a few centers and then launch the site to members who have Web Services access later this year. We think it will be a great improvement to the services we offer Network members and look forward to hearing your feedback on it.

If your center is interested in gaining access to either Nightingale or the Members Area when it becomes available, please contact Nancy Cloutier at [nancy@vtoxford.org](mailto:nancy@vtoxford.org) or go to: <http://www.vtoxford.org/tools/signup.aspx>

## NATIONAL, STATE, AND REGIONAL COLLABORATIVE GROUPS

There is an increasing trend for Network members to join together in geographically and administratively based groups for the purpose of collaborative learning and improvement. A number of countries around the world and many States in the US have already organized such groups. Others are exploring the possibilities or are in the process of planning. The list below includes those regional groups that we are aware of and includes well established groups as well as those in early stages of planning. Please let us know if your group should be on this list.

### International

- England
- INN Italy
- Medi-Clinic, So Africa
- Netcare, So Africa
- NICORE, Ireland, UK
- Northern Ireland
- Republic of Ireland
- Sen 1500, Spain
- SW Peninsula, UK
- Western Neonatal, UK
- Vietnam

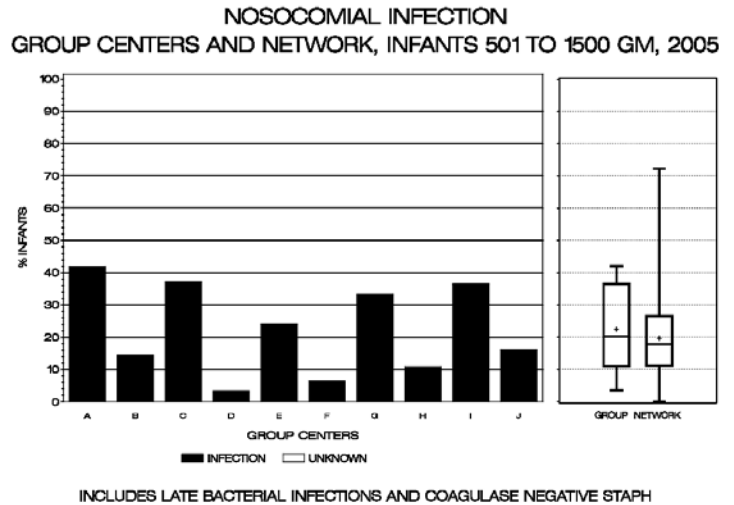
### USA

- CA, CPQCC
- CHCA
- Colorado
- IL, IAPC
- MA, NeoQIC
- Michigan
- Mississippi
- National Collaborative
- NC, PQCNC
- New Jersey
- New York City
- OH, OPQC
- San Antonio
- South Carolina
- TN, TIPQC
- Wisconsin
- Washington

The Vermont Oxford Network is pleased to provide customized reporting services to support members of such multi-hospital groups. Once a VON group has been established, member centers will receive Detailed Group Reports and will be able to compare their center's VLBW data to VLBW data at all group centers using the Nightingale Internet reporting system.

Below is an example of the data display for a 10 hospital group (labeled A to J). On the right of the

figure, the Group and Network data are shown in box plots for comparison.



Nightingale provides members with secure access to their hospital's data via the Internet. Hospitals choose the comparison group for Nightingale tables using a pull-down menu that lists all of the groups to which they belong. This customized menu allows hospitals to compare their data with the entire Network, with hospitals of the same NICU Type, with all US hospitals (US members only), and with hospitals in any group to which they belong.

Below is a screen shot from Nightingale showing how your group would appear in the Comparison Group menu. When selected from the menu, your group data would appear in the three right hand columns replacing the Network data.

Measure	Center (2007)		Network (2005)		
	N	%	N	%	(O1, O3)
Early Bacterial Sepsis ?	0		41,710	2.2%	(0.0%, 3.3%)
Late Bacterial Infection ?	0		39,773	11.9%	(5.5%, 15.4%)
Coagulase Negative Staph ?	0		39,744	12.8%	(4.8%, 16.6%)
Nosocomial Bacterial Infection ?	0		39,754	21.2%	(11.6%, 26.3%)
Fungal Infection ?	0		39,722	2.3%	(0.0%, 3.3%)
Any Late Infection ?	0		39,738	22.0%	(12.5%, 27.9%)

If you are interested in discussing the services available to groups within the Network, please contact Nancy Cloutier ([nancy@vtoxford.org](mailto:nancy@vtoxford.org)) for more information.

## LOCATION OF OCCURRENCE: A DATABASE CONUNDRUM

Data collection and reporting in neonatology is complicated by the fact that many infants are transferred, sometimes multiple times, during their hospitalizations. This makes it difficult to determine where specific events occurred and even more difficult to determine in which locations, if any, of a complex system of care the opportunities for improvement reside.

In the Vermont Oxford Network Database we ask each center to record those events that have occurred to an infant at their hospital and at those hospitals which previously cared for the infant. Thus, if an infant born at Hospital A develops NEC and is transferred to Hospital B, both hospitals would code "yes" for NEC. When the Vermont Oxford Network prepares its reports, both hospitals would have this infant included as a case of NEC. However, to prevent double counting in the overall Network numbers, data for infants transferred from one Network hospital to another are only counted once in the Network totals (the data from the last hospital to treat the infant are used).

Some members, particularly those from large children's hospitals where many or all of the infants are outborn, have asked us to look at alternative ways to collect and report the data that would account for the location of occurrence of morbid events such as NEC. The reasoning is that infants transferred to a hospital for NEC surgery should not lead to that hospital having a higher rate of NEC in Network reports. So, what are the options?

One option would be to include items in the database that indicate where each event occurs. The items for NEC, pneumothorax, and other morbidities might be expanded to ask whether the event occurred at "your hospital", "at another hospital", "at both hospitals", "at neither hospital", or "location could not be determined". In addition to the added complexity of introducing multiple new items, it will be difficult to draft clear definitions for the location of occurrence. For example, if an infant developed increasing apnea and mild abdominal distension at Hospital A without radiographic evidence of NEC (or without any X Ray being taken), and then transferred to Hospital B where 6 hours later an X ray showed evidence of pneumotosis, where did the NEC occur? If an infant is transferred on the evening of day 3 from Hospital A to Hospital B and the next morning on day 4 has a positive blood culture for a bacterial pathogen, where did the infection occur? Similar

cases with ambiguity in place of occurrence can easily be envisioned. Who will decide in these cases, Hospital A or Hospital B? When there is disagreement who will adjudicate? If it cannot be decided, how will the case be counted, at each of the hospitals or at neither?

Given the potential difficulties of assigning location of occurrence, the Vermont Oxford Network is planning to test an alternative approach suggested by Judy Aschner at Vanderbilt University in Nashville, Tennessee. We will add the option in Network reports to look separately at outborn infants transferred early (within 3 days), and those transferred later. Thus, if a hospital has an overall NEC rate that looks high, they can drill down by asking whether the high rate is in inborn infants or in outborn infants, and drill down further within the outborn infants to determine if the contributing cases were transferred in early or late. Presumably hospitals will feel more comfortable assuming responsibility for the cases transferred to them early.

Hospitals will continue to have the ability to compare these rates with those of the entire Network, with hospitals of the same NICU Type as theirs, and with hospitals in any state or regional groups to which they belong. We will also continue to report adjusted rates that account for whether infants are inborn or outborn. We hope that this approach will assist hospitals in understanding which cases are contributing to their observed rates.

In addition to this new reporting feature, Vermont Oxford will add location of occurrence for surgery since in cases of surgery the location should not be in dispute. This feature will be introduced in 2009.

We look forward to working with the membership to continuously improve and refine the Vermont Oxford Network data items and reporting tools. If you have comments or suggestions please let us know.

### **SURGERY CODE REMOVED**

Please note Surgery Code **S415** for **Circumcision** is not collected for 2008 births.

Please refer to the 2008 Manual of Operations Revisions on pages i and ii for a complete listing of changes to 2008 data items.

## DATABASE ADVISORY COMMITTEE NEWS

The Database Advisory Committee makes recommendations regarding the procedures, data items, definitions, and reporting formats used in the Vermont Oxford Network Database. After reviewing member suggestions the Committee identifies items for addition, deletion, or revision. The Committee is very sensitive to the need to avoid frequent changes to the Database and to minimize the burden of data collection for the members. This presents difficult tradeoffs. Although it may at times seem like a thankless task, since it is difficult to please everyone, the Committee has been instrumental in the development of the Network Database and in making it a standard in neonatal units around the world. We would like to extend our sincere gratitude to all members of the Committee.

We would like to express a special thank you to two members of the Committee whose terms have ended after long years of dedicated service. Please join us in thanking:

**Nathaniel R. Payne, MD**  
Children's Hospital and Clinics  
Minneapolis, MN

**Patricia Shiono, PhD**  
San Francisco, CA

Rob and Pat have both served with distinction, always holding the Network to the highest scientific standards while maintaining a focus on the needs of the membership. Thank you, Rob and Pat!

### **SHELDON B. KORONES, MD, DATABASE COMMITTEE MEMBER IN THE NEWS**

It has always been an honor and privilege to have Shelly Korones as a member of the Database Advisory Committee. It was an added pleasure to see that Shelly was the subject of a story on the NBC Nightly News on January 4, 2008 titled, *Doctor fights to give preemies a chance.*



You can view the report on MSNBC.com in a story from January 4, 2008: In Tennessee, a devoted doctor's lifelong mission has been to give the littlest 'underdogs' a fighting chance. NBC's Ron Mott reports on a pediatrician making a difference.

<http://www.msnbc.msn.com/id/21134540/#22507352>

Congratulations, Shelly!

## eNICQ

The **eNICQ** software is available to Network members at no charge and can be used to enter and submit Network data electronically. Installation and usage support is provided by the Vermont Oxford Network staff, and help is available on-line. Centers using **eNICQ** are able to test data for errors and warnings before submitting to the Network, and this can save considerable time correcting the data.

Of the 749 active members, 441 hospitals in the Network are submitting data using **eNICQ** (59%). The software can be used by centers participating in the VLBW Database (currently 226 centers) and the Expanded Database (215 centers). Forty-three centers use **eNICQ** and participate in the Neonatal Encephalopathy Registry (NER). Beginning in 2008, centers participating in either the VLBW or Expanded Databases are also able to participate in the NER using **eNICQ**.

While the current version of **eNICQ** is developed in Microsoft Access, a Visual Basic version is in development with scheduled release in 2008 (version 5.0). This summer we will be asking centers to volunteer to use the beta version of the new release and provide feedback on the new software. Among the new features included in **eNICQ** version 5.0 are the ability to enter data from multiple workstations simultaneously, more user control over interfacing with other applications to obtain data, and the ability to enter data for more than one center with a single **eNICQ** installation.



### **GO GREEN with eNICQ!**



Is your center one of the 20% still submitting PAPER data to Vermont Oxford?

We encourage you to go GREEN by using our **eNICQ** software which is FREE to all members! Approximately 80% of our centers now submit data electronically.

**eNICQ** is user-friendly and can save you both time and paper. Read all about it: Visit our website: [www.vtoxford.org/home.aspx?p=/enicq/index.htm](http://www.vtoxford.org/home.aspx?p=/enicq/index.htm) or contact your center's Account Manager for more information.

## 2007 DATA FINALIZATION NOTES FROM THE DATA PROCESSING TEAM

The Data Processing Team at the Vermont Oxford Network is very busy preparing to close out the Network's data for 2007.

Please review the following information and be sure to contact your Account Manager with any questions.

### 2007 DATA FINALIZATION

The Data Processing Team (DPT), which is made up of seven Account Managers, is gearing up for the finalization process of 2007 data. With 172 foreign centers and over 550 American centers we are counting on our member hospitals to be prompt in sending in their 2007 data. We also expect the completion of outstanding 2006 records.

Our Data Finalization Guidelines For Infants Born In 2007 and a Checklist were sent to the Data Contact at each hospital and can also be downloaded on our website [www.vtoxford.org](http://www.vtoxford.org). Any questions on this information should be addressed to your Account Manager.

All of these efforts will enable Vermont Oxford Network to produce and deliver the 2007 Vermont Oxford Network Annual Quality Management Report to centers by the fall of 2008. We can't accomplish this goal without your help. Please review the Finalization Guidelines and comply with the deadlines to facilitate a smooth closing of your 2007 data.

### 2007 DATA FINALIZATION DEADLINES REMINDER

**APRIL 1<sup>ST</sup> – COMPLETE**

**MAY 15<sup>TH</sup> – CONFIRM**

**JUNE 1<sup>ST</sup> – CORRECT**

**JUNE 15<sup>TH</sup> – CLOSE**

IF ALL ITEMS ARE COMPLETE, CONFIRMED,  
CORRECT AND CLOSED BY **JUNE 15<sup>TH</sup>, 2008**,  
YOUR CENTER WILL RECEIVE THE **2007 NICU  
QUALITY MANAGEMENT REPORT (QMR)** IN  
SEPTEMBER, 2008

PLEASE REFER TO THE **VON DATA  
FINALIZATION CHECKLIST** RECENTLY SENT TO  
DATA AND REPORT CONTACTS AT ALL  
PARTICIPATING CENTERS.

### NEONATAL ENCEPHALOPATHY REGISTRY

We will be doing a dual closeout for NER and VON data. All NER centers will be receiving a supplement to the Data Finalization Guidelines in the near future. Please contact your Account Manager with any questions.

### SURVEY AND DATA VERIFICATION PLAN

The *2007 Membership Survey and the Contact Information Report* for your center were e-mailed to all centers in January 2007. The Eligibility Plans were mailed along with the the manuals and forms.

It is essential that we obtain the *2007 Membership Survey* information from each participant in the 2007 database before we complete the Annual Quality Management Report (QMR) later this year. We need this survey information to be as complete as possible so we can provide a detailed and accurate description of the membership.

The *Eligibility Verification Plan* is a form that each participating center is required to fill out and update each year. The Eligibility Verification Plan indicates the data sources your center uses to identify eligible infants for the VON Database and the frequency with which these sources are reviewed to make sure that all eligible infants have been included in data submissions to the Network. Every participating center must have submitted a completed Plan, signed and dated by the center, before they can be included in the Annual Quality Management Report.

The *Contact Information Report* is a list of the contact information we have in our files for your center. This information should be updated each year so we can keep all center files as current as possible. Each center should choose one of the noted contacts as a "Team Leader". The "Team Leader" is the person who will be responsible for leading and coordinating all VON activities at your center. Centers wishing to change the "Report Contact" or the web administrators must send the Contact Information Report back along with a contact change form requested from VON, signed by an authorized agent of the hospital.

Completed 2007 Membership Surveys and Eligibility Verification Plans should be faxed to the Vermont Oxford Network at 802-865-9613 by April 15, 2007. Please call Lynn Stillman at 802-865-4814, extension 211 or email Lynn at [lynn@vtoxford.org](mailto:lynn@vtoxford.org) for more information.

# CLINICAL TRIALS AND FOLLOW-UP PROJECTS

## DELIVERY ROOM MANAGEMENT (DRM) TRIAL

The Delivery Room Management Trial is our most ambitious clinical trial. The trial evaluates three distinct approaches to the stabilization and support of premature infants at high risk of respiratory distress syndrome: one arm randomizes infants to intubation and surfactant treatment; a second arm randomizes infants to intubation, surfactant treatment, and rapid extubation to nasal continuous positive airway pressure (NCPAP); and a third arm randomizes infants to nasal CPAP alone. Twenty-one centers are participating in the trial. Over 590 infants have currently been enrolled. A trial such as the DR Management Trial takes time. Centers are committed to learning the nuances of care involved in each arm of the trial. Enrollment is difficult; from the initial identification of patients to intervention in the delivery room. Despite the difficulties, we have a firm commitment from our participating centers and are continuing enrollment through 2008.

The question that the trial poses still remains relevant. All three approaches have evidence to support their use. The most recent COIN trial, published by Colin Morley and colleagues in the *New England Journal of Medicine*, compared early stabilization on nasal CPAP to intubation for infants who did not require immediate resuscitation but had some evidence of respiratory difficulty. In the seven years that it took to complete this study, slightly over 600 babies were enrolled. Based on the report in the *New England Journal of Medicine*, it is clear that both groups have similar results regarding their primary outcome of death or oxygen requirement at 36 weeks postmenstrual age. On the face of it, that might support the less invasive approach, namely CPAP. However, infants initially stabilized on CPAP had a three fold increase in the risk of pneumothorax and there was a somewhat concerning increase in mortality in the smallest babies (25-26 weeks gestation). Recent meta-analyses in larger babies have demonstrated that early intubation and surfactant treatment, followed by rapid extubation to NCPAP may reduce chronic lung disease. However, these trials have not been done in the more immature babies that comprise the DRM Trial. Obviously, the question remains unanswered. We hope that our continued participation in the Delivery Room Management Trial will help shed further light on this important issue.

## THE HeLP TRIAL

Immediate post natal hypothermia remains a problem for infants born at less than 28 weeks gestation. The HeLP trial is an international randomized controlled trial that evaluates whether polyethylene occlusive

wrap applied immediately after delivery has an impact on mortality and morbidity in infants born between 24 and 28 weeks gestation. Interested participating centers are also enrolling infants born at less than 24 weeks gestation as part of a separate pilot study.

The Heat Loss Prevention Trial (HeLP Trial) is a collaborative project lead by Sunnybrook Health Sciences Center in Toronto, the University of Alberta and coordinated by the Vermont Oxford Network.

Study enrollment began in November 2004 and there are currently over 600 infants enrolled in the trial. The first interim analysis has been completed and no safety concerns were identified by the Data and Safety Monitoring Board.

Because the HeLP trial procedures must be implemented immediately after delivery, it is often not possible to get parental consent for trial participation. Because of this, HeLP Trial centers have the option of applying to their IRB for approval to enroll under institutional consent. Institutional consent is where the institution rather than the parents grant consent to participate in the trial. Institutional consent is used in emergency situations where there is no time to approach the family for consent. There are currently four HeLP Trial centers (3 in the US and 1 in Canada) enrolling infants under a waiver of consent. No complications have arisen in the centers who have chosen to pursue the use of institutional consent to enroll infants.

This year, two new centers have joined the trial and we welcome any inquiries from other centers who are interested in becoming a member of the HeLP Trial team. HeLP Trial centers are supplied with all the equipment necessary for the trial and we provide training for the members of your team on the trial procedures.

On behalf of the HeLP Trial steering committee, we would like to take this opportunity to thank all our incredibly dedicated centers for their efforts and hard work. If you are interested in more information about the trial please contact the trial coordinator Valeria Rac at [helptrials@sunnybrook.ca](mailto:helptrials@sunnybrook.ca).

## PROBIOTICS SUPPLEMENTED FEEDINGS IN EXTREMELY LOW BIRTH WEIGHT INFANTS

Supplementing premature infant's feeds with probiotics may improve feeding tolerance, growth, and decrease the rate of necrotizing enterocolitis (NEC).

In the meta-analysis of Al Faleh and colleagues (AlFaleh K, Bassler D. Probiotics for prevention of necrotizing enterocolitis in preterm infants. Cochrane Database of Systematic Reviews 2008, Issue 1. Art. No.:

CD005496. DOI: 10.1002/14651858.CD005496 pub2), probiotic supplementation was shown to decrease the risk of severe necrotizing enterocolitis (typical relative risk 0.32, 95% CI 0.17–0.60) and a decrease in the risk of mortality (typical relative risk 0.43; 95% CI 0.25, 0.75). This potentially represents one of the biggest improvements regarding the prevention of the most serious gastrointestinal disease we see in the premature babies, a disease we have had little to offer until this time.

Investigators at the Cardinal Glennon Children's Medical Center have begun a small pilot trial involving feeding probiotics to extremely low birth weight infants. The goal of the study is to demonstrate that probiotic supplemented feeding in extremely low birth weight infants can improve growth, feeding tolerance, and reduce days of antimicrobial treatment. Infants with birthweight 501-1000 grams are eligible for the study. When investigators are considering introducing enteral feeds (at some point in time when the baby is  $\leq$  14 days of age) infants can be enrolled and randomized to either probiotic supplementation or no supplementation. Infants will receive both lactobacillus and bifidobacteria. Infants will continue on supplementation until discharge at 34 weeks adjusted age. The primary outcome measures will be growth and feeding tolerance. This pilot study will help us in modeling and creating a larger trial of probiotics in neonates to look at outcomes, including feeding tolerance and necrotizing enterocolitis.

### **EXTREMELY LOW BIRTH WEIGHT (ELBW) INFANT FOLLOW-UP PROJECT**

The Extremely Low Birth Weight (ELBW) Follow-up project has been collecting data on ELBW infants over the past eight years! Data collection is complete on infants born during 2004 with birth weight between 400 and 1001 grams. There are 37 centers currently participating in this project. The database now contains the survival status at two years adjusted age on infants born between 1998 and 2004.

Want to know more? A summary of the data from the ELBW Infant Follow-up Project is now available to all centers on our Nightingale site. It is located in the summaries section under "Special Reports", specifically: "ELBW Follow-up All Center Report".

A brief snapshot of the survival status at two years adjusted age on 4,751 infants born during 2000 through 2004 is noted below. Here's what our ELBW infants look like:

Of the 4,751 surviving infants, 3,563 had neurodevelopmental evaluations conducted.

75 % came from two-parent households  
63% of parents had some college education  
42% were rehospitalized after discharge  
31% required support after discharge

29% required surgery  
32% had poor weight gain  
13% had microcephaly  
1% had bilateral blindness  
1.7% had hearing impairment requiring amplification  
7.6% had cerebral palsy.

Thirty-four percent had severe disability: defined as having one of the following: cerebral palsy, inability to walk, cognitive delay, hearing loss requiring amplification, or visual impairment of bilateral blindness. Centers with high reporting rates of follow-up ( $\geq$ 60%) had slightly less infants with severe disabilities, 32.8% vs. 37%, compared to centers with low reporting follow-up rates ( $<$ 60%).

We are in the process of submitting a publication on the "Neurodevelopmental Outcomes of Extremely Low Birth Weight Infants from the Vermont Oxford Network: 1998-2003" for publication.

Beginning in July of this year, follow-up will begin on babies that were enrolled in the Neonatal Encephalopathy Registry in the latter half of 2006 and received hypothermic therapy. If you are participating in the Registry and need more information about the Follow-up study please contact [karla@vtxford.org](mailto:karla@vtxford.org)

### **PARENTAL INTERVIEW AND REPORTING QUESTIONNAIRE (PIRQ)**

Current neurodevelopmental follow up of all high risk infants is difficult, incomplete and expensive. The Parental Interview and Reporting Questionnaire (PIRQ) represents an effort to create a simple questionnaire that could identify infants with serious disability. In order to test the validity of this tool, we are comparing parental perception of their child's health and developmental status (as reflected in the PIRQ) with information gained from formal medical evaluation. The questionnaire has been revised and the current interview tool has 20 structured questions and one open ended question. The PIRQ does not require a health care provider to administer. To date, we have over 1000 completed PIRQs to compare to formal neurodevelopmental evaluation. Hopefully, this tool will allow for large scale, inexpensive follow up of high risk infants that will identify the major medical and developmental issues these children encounter. Results from this revised questionnaire were presented at the VON Annual Meeting in 2007, and were presented at the 2006 PAS Meeting in Toronto. The PIRQ is currently being used as a follow-up tool for the DRM and the HeLP Trials.

#### **CONTACT US**

**For more information on Clinical Trials or the ELBW and NER Follow-Up Projects, please contact Karla Ferrelli at 802 865 4814 ext 212 or email: [karla@vtxford.org](mailto:karla@vtxford.org)**

## Welcome to Our Newest Members!

Vermont Oxford Network welcomes 95 new members who have joined the Network since March, 2007:

Al Wasl Hospital- Dubai, United Arab Emirates  
Atlanta Medical Center- Atlanta, GA  
Aurora Women's Pavilion- West Allis, WI  
Banner Estrella Medical Center- Phoenix, AZ  
Baylor All Saints Medical Center- Fort Worth, TX  
Bloemfontein Medi-Clinic- Bloemfontein, South Africa  
Boston Medical Center- Boston, MA  
Brookwood Medical Center- Birmingham, AL  
Careggi University Hospital – Florence, Italy  
Carilion Clinic Children's Hospital- Roanoke, VA  
Catawba Valley Medical Center- Hickory, NC  
Centerpoint Medical Center- Independence, MO  
Centra Health -Virginia Baptist Hospital- Lynchburg, VA  
Christus Schumpert Sutton Children's- Shreveport, LA  
Community Hospital- San Bernardino, CA  
Covenant Medical Center -Waterloo, IA  
Downey Regional Medical Center-Downey, CA  
Doylestown Hospital- Doylestown, PA  
Fort Walton Beach Medical Ctr- Fort Walton Beach, FL  
Frye Regional Medical Center- Hickory, NC  
Gaston Memorial Hospital- Gastonia, NC  
Highveld Medi-Clinic- Trichardt, South Africa  
Hoogland Medi-Clinic- Bethlehem, South Africa  
IRCCS Burlo Garfalo- Trieste, Italy  
IRCCS Casa Sollievo D Sofferenza-San Giovanni, Italy  
Jersey City Medical Center- Jersey City, NJ  
Limpopo Medi-Clinic- Limpopo, South Africa  
Louisiana State Univ Health Sci. Center-Shreveport, LA  
Marin General Hospital, Greenbrae, CA  
Marquette General Health System NICU- Marquette, MI  
Medforum Medi-Clinic-Pretoria, Gauteng, South Africa  
Medical Center of Arlington- Arlington, TX  
Memorial Hermann Memorial City Med Ctr- Houston, TX  
Memorial Hermann The Woodlands, TX  
Mercy Medical Center – Baltimore, MD  
Mercy Southwest Hospital- Bakersfield, CA  
Methodist Hospital of Southern California-Arcadia, CA  
MetroHealth Medical Center-Cleveland, OH  
Metropolitan Methodist Hospital-San Antonio, TX  
Moses Taylor Hospital- Scranton, PA  
N1 City Netcare Hospital- N1 City, South Africa  
N17 Private Hospital- Springs Gauteng, South Africa  
Nelspruit Medi-Clinic- Nelspruit, South Africa  
Neonatologia S. Orsola- Bologna, Italy  
Neonatologia, Spedali Civili- Brescia, Italy  
Neonatology & NICU, University Hospital- Parma, Italy  
Neored – Santiago, Chile  
Netcare Cuyler Hospital Ultenhage- E. Cape, So Africa  
NICU - Ente Ecclesiastico F. Miulli- Acquaviva delle  
Fonti (BA), Italy  
NICU Ospedale Annunziata- Cosenza, Italy  
Ospedale Buccheri La Ferla- Palermo, Italy  
Ospedale Buon Consiglio Fatebenefratelli- Napoli, Italy  
Ospedale di Bolzano- Bolzano, Italy

Ospedale Maggiore – Bologna, Italy  
Ospedale S. Giovanni Calibita Fatebenefratelli- Rome, Italy  
Ospedale San Pietro F.B.F.- Rome, Italy  
Our Lady of Lourdes Medical Center- Camden, NJ  
Patologia Neonatale A.O. Maggiore Della Carita-  
Novara, Italy  
Policlinico G. B. Rossi- Verona, Italy  
Presbyterian Hospital – Charlotte, NC  
Research Medical Center- Kansas City, MO  
Royal Gwent Hospital- Newport, United Kingdom  
Royal United Hospital Bath NHS Trust- Bath, UK  
Rush Foundation Hospital- Meridian, MS  
San Gabriel Valley Medical Center- San Gabriel, CA  
Santa Clara Valley Medical Center- San Jose, CA  
Schneider Children's Hospital- New Hyde Park, NY  
Scripps Mercy Chula Vista- Chula Vista, CA  
Shawnee Mission Medical Center- Shawnee Mission, KS  
St. Alexius Medical Center- Hoffman Estates, IL  
St. Dominic - Jackson Memorial Hospital- Jackson, MS  
St. Francis Hospital Memphis- Memphis, TN  
St. Joseph's Medical Center- Stockton, CA  
St. Luke's Campus, CA Pacific Medical Center-  
San Francisco, CA  
St. Mary's Health System Inc.- Knoxville, TN  
St. Rose Dominican Hospital Siena Campus-  
Henderson, NV  
Stony Brook University Medical Center- Stony Brook, NY  
Terapia Inten Neonatale AOU Federico II- Naples, Italy  
The Medical Center NICU - Bowling Green, KY  
The Woman's Hospital of Texas- Houston, TX  
Touro Infirmary-New Orleans, LA  
U.O. Neonatologia AOU- Pisa, Italy  
U.O. Patologia Neonatale e TIN- Pavia, Italy  
University Hospital - San Antonio, TX  
University Medical Centre - Div. of Perinatology-  
Ljubljana, Slovenia  
University of Arkansas for Medical Sci- Little Rock, AR  
University of Florida- Gainesville, FL  
Univ of Maryland Div of Neonatology- Baltimore, MD  
Valley Regional Medical Center TX- Brownsville, TX  
Vincent Pallotti Hospital- Pinelands, South Africa  
Weill Cornell Medical Center- New York City, NY  
Wesley Medical Center – Hattiesburg, MS  
Windhoek Medi-Clinic- Winhoek, Namibia  
Wishaw General Hospital- Wishaw, Scotland  
Women's Hospital At Renaissance-Edinburg, TX

### MARK YOUR CALENDAR

**NETWORK ANNUAL MEETING**  
**Saturday, 12/06/08**

**9th ANNUAL QUALITY CONGRESS**  
**Sunday, 12/07/08**

**Omni Shoreham Hotel**  
**Washington, DC**

## MULTI DISCIPLINARY ADVISORY COUNCIL 2008

The MDAC was organized to advise the VON faculty as well as to help meet the needs of the multidisciplinary teams who work in VON NICUs.

The MDAC is a group of health professionals representing RNs, RRTs, NNPs, Dieticians, and Pharmacists who advise the network regarding the inclusion of a broad range of disciplines in VON activities and programs. A member of the MDAC also sits on the VON data base advisory committee.

This year has been a year of transition for the group. We said good by to a few long standing members and are about to invite some new members to our team to replenish the ranks. As always, our mandate is to have representatives of as many disciplines of professionals who practice in the NICU as possible.

The group continues with its goal of increasing awareness of VON and the MDAC to the general membership and we continue to expand our contact list of interested people at each participating VON site that would be interested in receiving general VON and MDAC information. This would only be general VON or MDAC information, never site specific. If you or someone you know is interested in being a part of this listserv, please send your name and e-mail to the address listed below.

If you have any ideas on how the MDAC can help your multidisciplinary team become more active in VON please let us know.

Maureen Reilly: [Maureen.reilly@sunnybrook.ca](mailto:Maureen.reilly@sunnybrook.ca)

Cathy Sawtell: [Cathy.sawtell@atlantichealth.org](mailto:Cathy.sawtell@atlantichealth.org)

Committee Members:

Bobby Bellflower, DNSc, NNP, Memphis, TN  
Rosanne Buck, RN, MS, CNNP, Boston, MA  
Dianne Charsha, RNC, MSN, CRNP, St. Louis, MO  
Paula Delmore, RNC, MSN, Wichita, KS  
Diane Eastman, ARNP, MA, CPNP, Iowa City, IO  
Shirley Hargreaves, RN, MBA, Abu Dhabi, UAE  
Thelma Patrick, PhD, RN, Pittsburgh, PA  
Diana Reiser, RN, MSN, Kansas City, MO

## WELCOME TO OUR NEWEST STAFF MEMBERS!

**Brenton Keegan** joined the IT Team in September of 2007 as a part-time employee. He is finishing his last year at Champlain College for a B.S. in Computer Networking. He is one of the people who are responsible for maintaining the internal network. In his spare time, he plays the bass guitar

**Brian Wheel** joined the Vermont Oxford Network in the fall of 2007 as the Senior Lan Administrator in the Information Systems team. Brian has a degree from Vermont Technical College in Computer Systems Engineering. Prior to working at Vermont Oxford Brian worked as a consultant throughout New Hampshire and Vermont. In his spare time, Brian enjoys billiards, snowmobiling and mountain biking.

## ANNOUNCING THE NEWBORN BRAIN SYMPOSIUM WASHINGTON UNIVERSITY in ST. LOUIS September 10 -13, 2008

Committee:

Professor Sessions Cole  
Associate Professor Terrie Inder  
Associate Professor Robert McKinstry  
Associate Professor Amit Mathur  
Professor Jeffrey Neil  
Kally Higgins  
Jennifer Walker

Objectives

This course is designed for physicians (particularly neonatologists), scientists, neonatal nurses, and allied health professionals with an interest in neonatal neurology. The 4 day program is designed to enhance knowledge that will allow the attendee to understand the basis of neurological development and mechanisms of brain injury in the term and preterm infant. The mechanisms of injury to be covered will include metabolic abnormality, global ischemia, focal ischemia (stroke), growth restriction, seizures, intraventricular hemorrhage, and periventricular leukomalacia. These mechanisms will be related to the technologies used in evaluation of the newborn brain (EEG, aEEG, US, MRI and NIRS) and potential neuroprotective interventions to enhance understanding of Who? When? Why? and What Outcome? Workshops focusing on the interpretation of MRI and aEEG/EEG will be undertaken to interactively educate the attendee.

**Hot Topics**  
IN NEONATOLOGY

December 8 & 9, 2008

For information go to:

[www.hottopics.org](http://www.hottopics.org)

or contact

Gail Murphy at

802-865-2283

The intended result of this activity is a change in competence such that at the conclusion of the program the attendee will be able to:

- Discuss the basis of applied regional neuroanatomy.
- State the developmental sequence of neurotransmitters and their relevance in seizures in the newborn brain.
- Undertake neurological examination of the newborn.
- State the common mechanisms and patterns of injury in the newborn brain and the key differences in vulnerabilities in relation to maturation and mechanism. Injuries will include metabolic abnormality, global ischemia, focal ischemia (stroke), growth restriction, seizures, intraventricular hemorrhage, and periventricular leukomalacia.
- Discuss the fundamentals of neuroprotective approaches including hypothermia, stem cell therapy, and pharmacologic agents.
- Compare strengths and weaknesses of technologies for evaluating the newborn brain including MRI, EEG and NIRS.
- Optimize application of the technologies in their NICU setting with regard to term and preterm infants with improved interpretation of the key features of these technologies.

**For Further Seminar Information:**

Continuing Medical Education, Washington University  
School of Medicine  
Phone: (314) 362-6891  
(800) 325-9862  
Fax: (314) 362-1087

**COCHRANE NEONATAL REVIEW GROUP**



We recommend the Cochrane Neonatal Review Group (CNRG) as a great resource for our members. The CNRG is one of over 50 collaborative review groups of the Cochrane

Collaboration. The CNRG produces and disseminates evidence-based, regularly updated reviews of the effects of therapies in neonatal perinatal medicine. The CNRG is funded by The National Institute of Child Health and Human Development which maintain an Internet archive of the neonatal reviews. For more information, go to: <http://www.neonatal.cochrane.org/en/index.html>

**Sign up for the Nightingale Internet Reporting System and have access to view your center's data and the ability to create tables and figures similar to those in the annual Quality Management Report!**  
Go to: [www.vtoxford.org](http://www.vtoxford.org) for more information and to sign up or email Nancy Cloutier at: [nancy@vtoxford.org](mailto:nancy@vtoxford.org)

**VERMONT OXFORD NETWORK  
MEASURES FOR NOSOCOMIAL INFECTION  
ENDORSED BY  
THE NATIONAL QUALITY FORUM (NQF)**

The National Quality Forum is a not-for-profit membership organization created to improve the quality of American healthcare by setting national priorities and goals for performance improvement, endorsing national consensus standards for measuring and publicly reporting on performance, and promoting the attainment of national goals through education and outreach programs.

The NQF Board of Directors endorsed two Vermont Oxford Network risk adjusted measures for nosocomial infection as National Voluntary Consensus Standards. These measures are routinely available to members of the Vermont Oxford Network in their customized, confidential, member reports allowing them to monitor their performance and identify opportunities for improvement. The definitions and statistical methods used to calculate the measures will be available on the Network's Internet site, [www.vtoxford.org](http://www.vtoxford.org).

There is a growing consensus that nosocomial infections can and must be markedly reduced or even eliminated. The Vermont Oxford Network is pleased that its measures are being used by hospital NICU teams around the world to help achieve these goals.

For more information on the Forum, please go to: (<http://www.qualityforum.org/> )