



Image courtesy of stockxchange

NEW RESEARCH

Early Transfusion of Packed Red Blood Cells is Predictor of ARDS in Trauma Patients

A new study published last month in *Anesthesiology* offers compelling evidence that adult trauma patients transfused with packed red blood cells (PRBCs) early in their treatment have a greater chance of developing the acute respiratory distress syndrome, ARDS. The study may help to improve strategies that anesthesiologists and critical care personnel use to treat this vulnerable patient population.

“Our study showed that transfusion of PRBCs is an independent predictor of ARDS in adult trauma patients,” said Monica Vavilala, MD, associate director of the Harborview Injury Prevention and Research Center and associate professor of anesthesiology at the University of Washington. “Our findings suggest that a conservative transfusion strategy that decreases PRBC exposure – even by one unit – may be warranted to reduce the risk of ARDS in these injured patients.”

The study, one of the largest of its kind, involved 14,070 patients from the National Study on Costs and Outcomes after Trauma and

investigators from the Injury Center. The findings could be critically important to medical workers who are often forced to balance the benefits and risks of blood product transfusions for injured patients. Blood transfusions are vital for the treatment of critically-ill patients by replacing lost blood volume, correcting the body’s blood-clotting ability and improving oxygen delivery. Adverse events associated with blood product administration include allergic reaction, infection transmission, administration of mismatched blood and development of ARDS. ARDS is a serious lung disease that disrupts the normal breathing process and usually occurs in conjunction with traumatic medical conditions.

In a companion editorial in *Anesthesiology*, Marc Moss, M.D., from the University of Colorado at Denver and Health Sciences Center, praised Dr. Vavilala’s study for establishing a relationship between the amount of blood transfused and the risk of developing ARDS. “Previous studies have suggested that a safe threshold for the number of transfused units of blood may exist,” said Dr. Moss. “In this study, a dose-dependent association between the number of transfused units and the development of ARDS was exhibited. It is likely

(continued on page 4)

IN THIS ISSUE:

- ✓ Blood Transfusions Linked to Risk of ARDS in Trauma Patients 1
- ✓ Falls During Pregnancy Increase Mother and Infant Health Risks 2
- ✓ CDC Lauds Booster Seat Effort 3
- ✓ Study Aims to Prevent Shaken Baby Syndrome with Education 3
- ✓ Upcoming Events 4

Pregnant women who fall increase risk of adverse pregnancy and perinatal outcomes

A recent study published by Melissa Schiff, M.D., M.P.H., director of education at the Harborview Injury Prevention and Research Center, and associate professor of epidemiology at the University of Washington found that women who suffer a fall and are hospitalized during pregnancy are at greater risk for adverse pregnancy and perinatal outcomes.

Dr. Schiff's study looked at 693 pregnant women who were hospitalized following a fall in Washington between 1987 and 2004. Among those who fell, 67.1% were hospitalized and discharged without delivering, and 32.9% delivered during their fall hospitalization. The majority of falls occurred in the third trimester (79.3%), and injuries among the pregnant women varied, with fractures to the lower extremity being the most common, followed by contusions and sprains.

Most significantly, Dr. Schiff found that pregnant women hospitalized for a fall were at a 4.4-fold increased risk of preterm labor, were eight times more likely to suffer a placental abruption, a 90% increased risk of labor inductions, and a 30% increased risk of caesarean section compared to pregnant women who didn't fall.

Dr. Schiff also found an increased risk of injury to the infant. Infants of women who fell were at a 2.1-fold increased risk of fetal distress and a 2.9-fold increased risk of hypoxia. "In light of the increased risk to mother and infant, careful maternal and fetal monitoring is warranted following a major fall that results in admission to the hospital," says Dr. Schiff. And while falls are relatively common in pregnancy, further research is needed to better inform clinical practice on management of pregnant women who fall, and to generate valuable information on the effects of falls during pregnancy. The study was featured in the October issue of the *British Journal of Gynaecology*.

Dr. Schiff's research interests include reproductive and perinatal epidemiology and injury epidemiology, with a focus on maternal health and injury.



Falls during pregnancy increase health risks to mother and infant.

Shaken Baby Syndrome—cont. from page 3

Joining Dr. Rivara on the study were lead author Ronald Barr, M.D., director of community child health at the Child & Family Research Institute in British Columbia, Marilyn Barr, executive director of the National Center on Shaken Baby Syndrome, and University of Washington colleagues James Taylor, M.D., M.P.H., professor of pediatrics; Liliana Lengua, Ph.D, associate professor of psychology; and Peter Cummings, M.D., M.P.H., professor of epidemiology. Funding was provided by the Doris Duke Charitable Foundation and the George S. and Dolores Dore Eccles Foundation.

PURPLE Prevention

The PURPLE materials used in the study are designed to teach parents that crying is normal and frustrating for caregivers. They list the following features as typical:

- Peak pattern-when crying increases, peaks in second month then declines
- Unexpected timing of prolonged crying
- Resistance to soothing
- Pain-like look on the face
- Long crying bouts
- Evening and late-afternoon clustering



Photo courtesy of stockxchange

Study finds program effective in educating parents about prevention of shaken baby syndrome

A new U.S. study conducted by injury center investigators shows that educational materials aimed at preventing shaken baby syndrome increased knowledge of new mothers about infant crying. Crying is the most common trigger for people abusing babies by shaking them. The study of Seattle mothers was featured this month in *Pediatrics*.

Each year in the United States, an estimated 1,300 infants are hospitalized or die from shaken baby syndrome. One in four die as a result of their injuries, and among those who survive, 80 percent suffer brain and other injuries with long-term impairment. "Typically, crying begins within two weeks of birth so it's imperative that new parents receive information and learn coping strategies early," says Fred Rivara, M.D., M.P.H., study co-investigator and vice chair of pediatrics at the University of Washington.

The study involved 2,738 mothers of new infants. Half received the educational "PURPLE" materials which included a brochure and DVD, while half received general information on infant safety. Mothers, who received the PURPLE materials scored six percent higher in knowledge about crying, were six percent more likely to share information with caregivers about strategies for coping with the frustration of infant crying, and seven percent more likely to warn caregivers of the dangers of shaking.

(continued on page 2)

CDC Recognizes Success of Booster Seat Research

Last month, the Centers for Disease Control and Prevention published a web news story showcasing the successful efforts of Injury Center Director Beth Ebel, M.D., and colleagues to increase community awareness of the importance of seating young children in booster seats. According to the story, "Dr. Ebel and center faculty are helping people recognize that booster seats prevent severe injuries and even death."

A Public Health Problem

The Injury Center's effort was inspired largely by the magnitude of the problem—motor vehicle crashes are the leading cause of death for children ages 5 to 14 in the U.S. In 2005 alone, 178,000 children were injured as occupants during motor vehicle crashes. Injuries of the head, neck and spine, in addition to abdominal and internal organ damage, are all tragedies that can occur when young children are not in booster seats or are wearing adult seatbelts as the only safety device.

To address the problem in Washington state, Dr. Ebel and peers formed a coalition to implement a campaign targeted at increasing awareness among parents of the need for booster seats, and to reduce motivational and financial barriers to purchasing a seat. Researchers also conducted focus groups to measure parent's beliefs and behaviors toward usage.

Making a Difference

The campaign hit the mark. From January 2000 to March 2001, researchers found booster seat usage in target communities doubled from 13% to 26%. The coalition decided to expand the message to Latino communities and worked with partner organizations to promote passage of the first state booster seat law in the country. *To learn more about the campaign, visit www.boosterseat.org.*

Early Transfusions Linked to ARDS-cont.

that with each biologically-active unit of blood product, there is a unique interaction with the host that determines the probability of causing lung injury.

Given these risks, should a more restrictive transfusion strategy be adopted in those critically ill patients with pre-existing risk factors such as trauma? Dr. Vavilala thinks so. "Injury is the fifth leading cause of death in patients over 18 years of age, and PRBCs are the most commonly transfused blood products in the hospital," she said. "Our main findings are that early PRBC transfusion of more than five units during the first 24 hours of hospital admission predicted ARDS and that each unit of PRBCs transfused early after admission increased the risk of ARDS by six percent, indicating that each unit of blood administered carries a particular risk to the patient. Exercising prudence in transfusing trauma patients should be urged."

Dr. Vavilala and Dr. Moss agree that further clinical trials will be necessary before the findings can be confirmed and applied to widespread practice. *For more information, visit the ASA website at www.asahq.org.*

UPCOMING EVENTS

Injury Center seminars are held Fridays at 9:30 a.m. For details contact Catherine Brueckner at cbruec@u.washington.edu.

March

20 Bahman Roudsari, M.D., M.P.H., Ph.D, assistant professor of epidemiology, University of Texas, "Methodological Challenges in Using Large Databases for Radiology Health Services Research"

27 Brian Voelzke, M.D., assistant professor of urology, University of Washington, "Urinary Dysfunction after Major Trauma"

April

10 Monica Vavilala, M.D., assistant professor of anesthesiology, University of Washington, "Intensive Care Unit Bounce-Backs"

Interested in Research Methods?

The Center now hosts a monthly meeting for individuals interested in discussing research methods and study design. Participants can troubleshoot problems and explore emerging trends in methodology. Facilitators are Tom Koepsell, M.D., and Peter Cummings, M.D. For more information, contact Dr. Koepsell at koepsell@u.washington.edu or Chris Mack at cdmack@u.washington.edu.

HARBORVIEW

Injury Prevention & Research Center

325 Ninth Avenue, Box 359960, Seattle, WA 98104-2499

Phone: 206-744-9430 Fax: 206-744-9962

Email hiprc@u.washington.edu or visit www.hiprc.org

In Focus features news from the Harborview Injury Prevention & Research Center, a worldwide leader in the prevention of injury and violence. The Center is affiliated with Harborview Medical Center and the University of Washington, with support from the Centers for Disease Control & Prevention. To subscribe or request a change of address, please contact Kellie Tormey at ktormey@u.washington.edu.

Executive Committee: Beth Ebel, M.D. MSc, M.P.H., Director, Monica Vavilala, M.D., Associate Director and Karen Hansen, Program Operations Manager.