Transport Dispatch

NOVEMBER 2015 NEWSLETTER

Section on Transport Medicine
www.aap.org/sections/transmed

American Academy of Pediatrics
DEDICATED TO THE HEALTH OF ALL CHILDREN™

Celebrating the Section on Transport Medicine's 25th Anniversary 1990-2015

Chair's Corner

Keith Meyer MD FAAP
Keith.Meyer@mch.com

Welcome! There has never been a better time to be a part of the AAP Section on Transport Medicine. As a collaborative multi-specialty group we have accomplished many things over the last few years.

We are especially proud of the hard work and dedication our Section members and leadership pour into educational opportunities that help advance the safety and quality of transport. The recent collaborative efforts with quality metrics and translation to the GAMUT database will continue to evolve and promote safe practice.

I wish to welcome our two new Executive Committee Members, Jay Pershad MD and Michele Walsh MD, and thank Hamilton Schwartz MD and Nicholas Tsarouhas MD, who have completed their terms.

I encourage all members to get involved. We would love to hear from you about new ideas, projects and research opportunities. I hope you all enjoy this issue of *Transport Dispatch.*

Keith Meyer
SOTM Chairperson

News at a Glance

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Save the Date!

2016
Course on Neonatal and Pediatric Critical Care Transport Medicine

October 24-25, 2016
San Francisco, CA

Feature your team in our next

Transport Dispatch

Transport Team Profile

Send your write-up or your questions to one of our Editors:

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The goal of this newsletter is to provide a forum for communication, evidence-based changes in transport practices, educational and research opportunities and much more.

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Be informed!! Get involved!!

Join the **Section on Transport Medicine listserv®** today!

The **listserv®** allows the Transport Section members to communicate through periodic email messages. To join the **listserv®** visit the Section website at www.aap.org/sections/transmed.

*Only your **name, email address** and **membership in the Section on Transport Medicine** are required.*

Neonatal/Pediatric Transport Team Database

The Section on Transport Medicine **Transport Team Database** was just updated! To review this latest version, visit
http://www.aap.org/sections/transmed/resourcesTM.htm

If you would like to add your organization's information to the database or if you would like to update what is currently posted, please visit the Section website at
http://www.aap.org/sections/transmed/transportteamQA.htm
to submit a questionnaire.

NOTE: There is no submission deadline. The database is updated quarterly and not confirmed by staff or leaders within the Section.

Writers Wanted!

Share your perspectives and experiences in transport medicine: changes in AAP practice guidelines; CAMTS certification; NCC Neo/Pediatric transport credentialing; transport team composition; simulation transport team training; emergency preparation; transport educational opportunities; transport safety; transport equipment; and product evaluation, research/evidenced based studies on transport.

Submission or Questions?

Please send all ideas, suggestions, and/or announcements for consideration by the editorial team to

Webra Price Douglas PhD CRNP, wpdougla@jhmi.edu
or Tammy Rush MSN RN C-NPT EMT, tarush@wakehealth.edu

SOTM Scientific Program Abstract Award Winners

C Robert Chambliss MD Best Paper Award
Stephanie F Polites MD, Helicopter Transport of Injured Children—Excessive or Effective

Best-In-Training Paper Award
Walid Hussain, MD, Timing of Surfactant Administration in the late Pre Term and Term Neonate with Respiratory Distress Syndrome Requiring Interfacility Transport

Allied Health Professional Best Paper Award
Wendy Kristine Knight, RRT, NPS, Implementation of Traditional Hospital Based High Flow Nasal Cannula in the Transport Environment

Complete Abstracts begin on page 5

Child Life Council

Our Thanks to:

The Child Life Council's Professional Resources Committee, who provided a template to help in the creation of this presentation for our audience.

Infant

Developmental Responses to Hospitalization

Developing a relationship where basic needs are met

Common fears:

- Separation from primary caregivers
- Stranger anxiety
- Pain
- Parental anxiety, which is passed on to the infant
- Anxiety due to either a lack of stimulation or over stimulation

Ways to help:

- Soft music
- Use of pacifier
- Encourage parental involvement/holding
- Provide medical explanations to parent
- Calming touch

Toddler

Developmental Responses to Hospitalization

Balance between becoming independent and having boundaries

Common fears:

- Separation from their parents or primary caregivers
- Loss of physical and emotional control
- Pain
- Needles

Ways to help:

- Provide choices
- Comfort item
- Distraction
- Encourage play

Pre-School

Developmental Responses to Hospitalization

Working on learning new skills and becoming self-reliant without being made to feel as if they are doing something wrong. Very egocentric.

Common fears:

- The unknown
- Loss of body function
- Pain
- Needles

Ways to help:

- Provide choice
- Participation in procedure
- Comfort object
- Distraction
- Assure procedure is NOT punishment

School-Age

Developmental Responses to Hospitalization

Feel the need to accomplish a task and be successful without feeling not good enough or considered insignificant

Common fears:

- Loss of body function
- Loss of control
- Pain
- Death

Ways to help:

- Full explanation/preparation
- Allow child to ask questions
- Participation in procedure
- Encourage play and normalcy
- Create opportunities for self expression

Test yourself! Take the Quick Quiz on p. 6.

Teenage

Developmental Responses to Hospitalization

Struggle to find who they are and what they are to become

- Better able to understand the complexity of the health care experience than younger children, but they still have fears and needs that should be addressed.

Common fears:

- Body mutilation
- Loss of body function
- Change in physical appearance
- Loss of control
- Loss of independence
- Invasion of privacy

Ways to help:

- In-depth medical explanation (if desired)
- Respect for privacy
- Offer choices
- Encourage/facilitate communication with friends and other peers
- Encourage engagement in 'normal' activities
- Provide opportunities for self-expression

Total body surface area overestimation at referring institutions in children transferred to a burn center.

Swords DS1 , Hadley ED, Swett KR, Pranikoff T.
Am Surg. 2015 Jan;81(1):56-63.
http://www.sesc.org/aws/SESC/pt/sp/journal

Abstract

Total body surface area (TBSA) burned is a powerful descriptor of burn severity and influences the volume of resuscitation required in burn patients. The incidence and severity of TBSA over estimation by referring institutions (Ris) in children transferred to a burn center (BC) are unclear. The association between TBSA overestimation and over resuscitation is unknown as is that between TBSA overestimation and outcome. The trauma registry at a BC was queried over 7.25 years for children presenting with burns. TBSA estimate at AIs and BC, total fluid volume given before arrival at a BC, demographic variables, and clinical variables were reviewed. Nearly 20 per cent of children arrived from RIs without TBSA estimation. Nearly 50 per cent were over-estimated by 5 per cent or greater TBSA, and burn sizes were overestimated by up to 44 per cent TBSA. Average TBSA measured at BC was 9.5 ± 8.3 per cent compared with 15.5 ± 11.8 per cent as measured at AIs ($P < 0.0001$). Burns between 10 and 19.9 per cent TBSA were overestimated most often and by the greatest amounts. There was a statistically significant relationship between overestimation of TBSA by 5 per cent or greater and over resuscitation by 10 mL/kg or greater ($P = 0.02$). No patient demographic or clinical factors were associated with TBSA overestimation. Education efforts aimed at emergency department physicians regarding the importance of always calculating TBSA as well as the mechanics of TBSA estimation and calculating resuscitation volume are needed. Further studies should evaluate the association of TBSA overestimation by RIs with adverse outcomes and complications in the burned child.

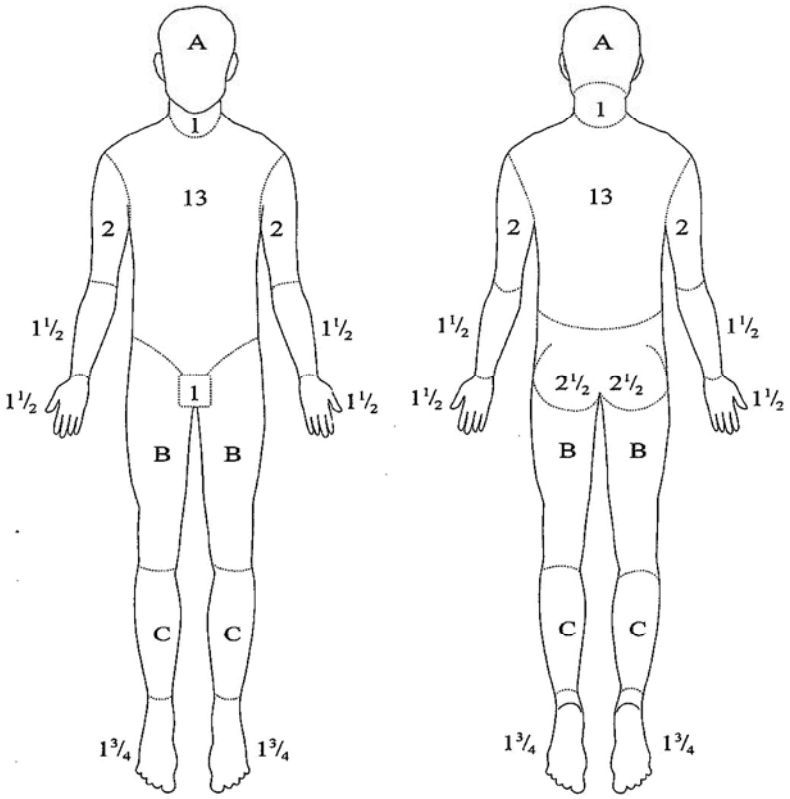
http://www.ncbi.nlm.nih.gov/pubmed/25569067

8/26/2015

Test yourself! Take the Quick Quiz on p. 6.

Therapeutic Guidelines

Lund and Browder chart for calculating the percentage of total body surface area burnt (Fig 14.19)



Region	Partial thickness (%) [NB1]	Full thickness (%)
head		
neck		
anterior trunk		
posterior trunk		
right arm		
left arm		
buttocks		
genitalia		
right leg		
left leg		
Total burn		
NB1: Do not include erythema		

Area	Age 0	1	5	10	15	Adult
A = half of head	9½	8½	6½	5½	4½	3½
B = half of one thigh	2¾	3¼	4	4½	4½	4¾
C = half of one lower leg	2½	2½	2¾	3	3¼	3½

Therapeutic Guidelines Limited is an independent not-for-profit organisation dedicated to deriving guidelines for therapy from the latest world literature, interpreted and distilled by Australia's most eminent and respected experts.

National Conference & Exhibition
2015
Washington, DC

American Academy of Pediatrics

Section on Transport Medicine Scientific Program

Abstract Award Winners

Jeanine M. Graf MD FAAP, Program and Abstract Chair
Keith Meyer MD FAAP, Section Chairperson

C. ROBERT CHAMBLISS MD BEST PAPER AWARD

HELICOPTER TRANSPORT OF INJURED CHILDREN — EXCESSIVE OR EFFECTIVE?

Stephanie F Polites MD, presenter, received a certificate and an award of $500.

Stephanie F. Polites, MD, Aodhnait S. Fahy, BMBCh, PhD, Martin D. Zielinski, MD, Christopher R. Moir, MD, Donald H. Jenkins, MD, Scott P. Zietlow, MD and Elizabeth B. Habermann, PhD, MPH, Mayo Clinic, Rochester, MN

Purpose: To determine the utilization of helicopter emergency medical services (HEMS) transport of pediatric trauma patients and its impact on mortality, hypothesizing that a mortality benefit to HEMS over ground emergency medical services (GEMS) would be observed for severely injured patients only.

Methods: Children ≤18 transported by HEMS or GEMS from the scene of injury to a level I or II trauma center with both trans-port modalities available were identified from the 2010-2011 National Trauma Data Bank. Analysis was stratified based on Injury Severity Score (ISS) into low ISS (<15) and high ISS (≥15) groups. Following propensity score matching of HEMS to GEMS patients based on age, mechanism, trauma center verification level, initial vitals and GCS motor score, multivariable logistic regression was performed to determine if transport mode independently impacted mortality in each stratum.

Results: Transport by HEMS occurred in 8218 children (5574 low ISS, 2644 high ISS) and by GEMS in 35305 (30506 low ISS, 4799 high ISS). Overall mortality was greater in HEMS patients (4.0 vs 1.4%, p<.001). After propensity score matching, mortality was equivalent between HEMS and GEMS for low ISS patients (0.2 vs 0.2%, p=.08) but remained greater in HEMS patients with high ISS (11.1 vs 9.0%, p=.017). On multivariable analysis of propensity score matched patients, however, HEMS was associated with decreased mortality in high ISS patients (OR=0.75, 95% CI: 0.59-0.95 p=.017) but not in low ISS patients (OR=1.15, 95% CI: 0.40-3.37, p=.80). Additionally, discharge within 24 hours of HEMS transport occurred in 36.5% of low ISS patients versus 7.4% high ISS patients (p<.001).

Conclusion: Severely injured children transported from the scene of injury by helicopter have lower mortality after adjustment for confounders. Over-triage occurs at an alarming rate, as many children with minor injuries are transported by helicopter despite frequent dismissal within 24 hours and no mortality benefit in this subset.

BEST-IN-TRAINING PAPER AWARD

TIMING OF SURFACTANT ADMINISTRATION IN THE LATE PRETERM AND TERM NEONATE WITH RESPIRATORY DISTRESS SYNDROME REQUIRING INTER FACILITY TRANSPORT

Walid Hussain MD, presenter, received a certificate and an award of $250.

Walid Hussain, MD, Andrew Huss, MD, and Emily M. McNellis, MD, Pediatrics/Section of Neonatology, Children's Mercy Hospitals and Clinics and the University of Missouri-Kansas City School of Medicine, Kansas City, MO

Purpose: Exogenous surfactant improves the morbidity and mortality of neonates with Respiratory Distress Syndrome (RDS). Optimal timing of surfactant administration in neonates requiring interfacility transport however is not clear. Confirming the diagnosis of RDS and managing the risks can be challenging in the transport setting due to fewer resources and barriers to monitoring. The objective of this study was to evaluate the safety and effectiveness of surfactant administration in the late preterm and term neonate pre- versus post-interfacility transport.

Methods: A retrospective cohort of neonates ≥34 weeks, ≤ 24 hours old, diagnosed with RDS, treated with surfactant and transported by the Children's Mercy Critical Care Transport team between January 2008 to December 2012 was reviewed. Outcomes for neonates receiving surfactant ether pre- or post- transport were compared. Safety was measured by incidence of complications such as pneumothorax and/or pulmonary hemorrhage following surfactant administration. Effectiveness was measured by length of intubation, duration of positive pressure and supplemental oxygen and length of hospital stay.

Results: Of 145 neonates, 36 received surfactant pre- and 109 post-transport. Pre-transport recipients were lower gestational age (35.4±1.5 vs 36.4 ±2.1, p=0.0004) and required higher supplemental oxygen prior to interfacility transport (0.95±0.13 vs 0.82±0.23, p=0.002). Pre-transport neonates received surfactant significantly earlier (7.4±4.6 vs 19.2±16.9 hours of life, p=<0.0001) and had a lower admission FiO2 requirement (0.52±0.26 vs 0.7±0.25, p=0.0003) yet transport team ground time was longer (1.9±0.8 vs 1.3±0.8 hours, p=0.0006). There were no significant differences in the incidence of complications with surfactant administration (16.7% vs 20.2%, p=0.64). There were no significant differences in length of intubation (2.7±2.3 vs 4±4.5, p=0.1) or duration of positive pressure support (3.3±2.2 vs 4.3±.4.5, p=0.21). Pre-transport surfactant recipients required shorter supplemental oxygen support (5.9±4.5 vs 9.2±10.5 days, p=0.009) but there was no difference in the length of hospital stay (14.1±8.5 vs 16.7±11.9, p=0.23).

(Continued on page 6)

SOTM Abstract Awards

(Continued from page 5)

Conclusion: Pre-transport surfactant administration is safe but may not offer any advantage in the clinical course of RDS in late preterm and term neonates and may extend ground time unnecessarily. Benefits of interventions performed prior to interfacility transport must be weighed against the risks of an extended ground time, burden on team availability and pilot time limitations for rotor/fixed wing transports.

ALLIED HEALTH PROFESSIONAL BEST PAPER AWARD

IMPLEMENTATION OF TRADITIONAL HOSPITAL BASED HIGH FLOW NASAL CANNULA IN THE TRANSPORT ENVIRONMENT

Wendy Kristine Knight RRT NPS, presenter, received a certificate and an award of $250.

Wendy Kristine Knight, RRT, NPS, Texas Children's Hospital, Houston, TX

Purpose: Respiratory insufficiency is one of the most frequent indications for specialty pediatric transport. High flow nasal cannula (HFNC) has been widely utilized in the hospital setting, however, HFNC devices modified for transport have not been able to deliver humidified heated air at high flows. Our program developed and piloted a comprehensive educational program and safe consistent practice to utilize traditional hospital based HFNC in the transport environment.

Methods: A description will be given of the educational and operational implementation of HFNC to Kangaroo Crew transport armamentarium. Inclusion and exclusion criteria, guidelines, and risks and benefits in utilizing HFNC in the transport environment will be detailed.

Results: 15 transport nurses, 14 transport respiratory therapists and 15 medics underwent both didactic training and practical demonstration in the set up and trouble shooting of HFNC. 19 children have been transported using HFNC in the last 3 months. Three cases will be highlighted.

Conclusion: HFNC has become the preferred modality in children requiring non-invasive respiratory support during pediatric intrafacility transport. The application of consistent expert practice has resulted in the safe implementation of hospital based HFNC in the transport environment.

Test yourself! Take the Quick Quiz

in support of Child Life Council presentation on p. 3 and Total Body Surface Area abstract on p. 4

1. In a study by Swords, Hadley, Swett & Pranikoff overestimation of Total body surface area (TBSA) burned was overestimated by referral centers by:
   a. 5%
   b. 50%
   c. 20%
   d. 70%

2. When transporting a toddler, the following are ways the transport team can provide developmentally appropriate care EXCEPT
   a. Provide choices
   b. Remove all toys during transport
   c. Distraction
   d. Encourage parental involvement/presence

3. Overestimation of total body surface area (TBSA) most often and by the greatest amounts was observed in patients with _____ TBSA burned.(Swords, Hadley, Swett & Pranikoff)
   a. 10-20%
   b. 30%-40%
   c. >50%
   d. >80%

4. In a study by Swords, Hadley, Swett & Pranikoff overestimation of Total body surface area (TBSA) burned resulted in variations in fluid resuscitation.
   a. Over-resuscitation by >10mg/kg or greater
   b. Over-resuscitation by >20mg/kg or greater
   c. Under-resuscitation by >10mg/kg or greater
   d. Under-resuscitation by >20mg/kg or greater

5. When transporting an infant, the following are ways the transport team can provide developmentally appropriate care
   a. Provide explanations to parents
   b. Pacifier
   c. Soft music
   d. All of the above

Answers on page 8.

The Section on Transport Medicine Celebrates

25 Years

of Member Contributions

Thank you!

American Academy of Pediatrics
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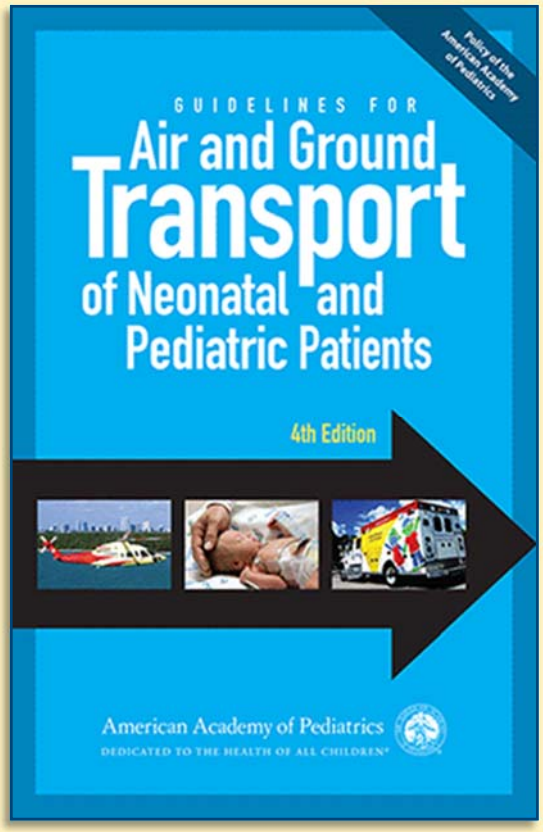
Guidelines for Air and Ground Transport of Neonatal and Pediatric Patients

New 4th Edition!



Completely revised and updated, the new 4th edition includes must-have information and guidelines for health care professionals and hospital systems interested in developing transport systems and improving the transport care they deliver.

Authored by leading experts in transport medicine, the editorial team is devoted to ensuring that appropriate evidence-based conclusions and recommendations are included, when available, for the clinical and administrative subjects presented.

The 4th edition covers all aspects of air and ground transport—from team organization and training to equipment selection, quality improvement, safety, ethics and much more.

Content Highlights:

- All chapters thoroughly reviewed and updated by the leading authorities in transport medicine
- New chapter on telemedicine covering equipment and teleconferencing, telemedicine in other clinical settings, regulations and reimbursement, and more
- Expanded sections on driving performance improvement, risk management, and bioethics
- Updated Web resources
- Handy tools include sample position descriptions, sample transport medicine transfer agreement, policies and procedures, and more

AAP Section on Transport Medicine

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UPDATE: The GAMUT Database and the GAMUT Quality Improvement Collaborative

The transport of patients to medical centers for specialized care demands monitoring the quality of care provided during transport and its impact on patient outcomes. Accurate assessment of quality indicators and patient outcomes requires the use of a standard language permitting comparisons among transport programs.

In response Drs Michael Bigham and Hamilton Schwartz developed the **G**round **A**ir **M**edical q**U**ality **T**ransport (GAMUT) database. GAMUT Database is a free resource for transport teams to track, report, and analyze their performance on trans-port-specific quality metrics by comparing it to other programs. The GAMUT Quality Improvement Collaborative is the mechanism for partnership in driving improvement.

The GAMUT Database and GAMUT Quality Improvement Collaborative grew from two similar efforts, both focused on transport quality metrics. The first Pediatric/Neonatal Transport Quality Metrics Summit was held during the American Academy of Pediatrics - Section on Transport Medicine (AAP-SOTM) program in October 2012. Using Delphi technique, 12 "must have" metrics were identified by transport leaders and frontline providers from all over the U.S. In July 2013, the Air Medical Physician Association (AMPA) used the same method -ology to gain consensus on a national metric set applicable to adult transport best practices. The AMPA Quality Metrics Summit in Denver, Colorado convened 68 leaders in adult and pediatric transport medicine from across the U.S. and parts of Canada.

In January 2014, the GAMUT database was created as the platform for tracking these important quality metrics. This secure web-based database uses the highly successful REDCap infrastructure. It borrows its name from the expression, "run the gamut," which describes the vision for this database: one that welcomes all types of transport programs big and small, academic and corporate, adult, pediatric, and neonatal -- all those that wish to collaborate with others using benchmarking to drive the quality of care they provide. *We have successfully tested the tracking and reporting of the GAMUT national metric set and are now prepared to invite large-scale participation from all interested transport teams.* In this next phase of the project, teams' data contributions will determine the performance benchmarking goals necessary to begin the quality improvement phase of this work.

Currently, there are over 100 participating transport programs – accounting for well over 150,000 patient contacts. The scale of the GAMUT database creates quite a useful large-volume comparative dataset allowing benchmarking. Collaboration among programs in collecting and reporting data, however, is only the 1st step. Real improvement work is being done at many programs – based on opportunities identified in comparisons across one or more metric category. Programs are identifying areas where they underperform against their peers, and they're successfully improving or exceeding the benchmarks. That improvement is making care better for each patient. Even more exciting is the collaborative work that is upcoming where all participating programs will work together to "move the needle" on one or more metrics. Dr. Michael Trautman and Dr. Robert Kelly are working on just such a project around waveform capnography in neonatal and pediatric patients. Stay tuned …

This is an exciting time for the field of critical care transport, and we invite you to subscribe to the GAMUT database and become part of the GAMUT Quality Improvement Collaborative by contacting Dr. Michael Bigham at mbigham@chmca.org for more details.

Acknowledgments: *The GAMUT team is grateful for the passion, expertise, and countless hours of work provided by Mr. Rollie Parrish.*

Congratulations!

Members of the AAP Section on Transport Medicine (SOTM), led by Drs Hamilton Schwartz and Michael Bigham, just published "Quality Metrics in Neonatal and Pediatric Critical Care Transport: A National Delphi Project" in the journal *Pediatric Critical Care Medicine*."

Please join us in congratulating the authors on this tremendous achievement.

Abstract

Objectives: The transport of neonatal and pediatric patients to tertiary care facilities for specialized care demands monitoring the quality of care delivered during transport and its impact on patient outcomes. In 2011 pediatric transport teams in Ohio met to identify quality indicators permitting comparisons among programs. However, no set of national consensus quality metrics exists for benchmarking transport teams. The aim of this project was to achieve national consensus on appropriate neonatal and pediatric transport quality metrics.

Answers to Quick Quiz questions on page 6

1. b
2. b
3. a
4. a
5. d