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PROCEDURAL SEDATION FOR FRACTURE REDUCTION IN CHILDREN WITH AND WITHOUT ATTENTION DEFICIT HYPERACTIVITY DISORDER.

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BACKGROUND: Children with Attention Deficit Hyperactivity Disorder (ADHD) have a higher rate of more severe injuries than the general population. However, it is unclear if their ADHD causes them to respond differently to procedural sedation required to treat these injuries.

PURPOSE OF STUDY: To compare procedural sedation for children with and without ADHD for forearm fracture reduction as measured by drug dosages, vital signs, and sedation scores.

METHODS: Retrospectively, 44 patients with ADHD and 41 controls sedated for forearm fracture reduction in the emergency department (ED) at a children's hospital were identified. All patients received fentanyl and midazolam.

SUMMARY OF RESULTS: Demographics, drug dosages, maximal and minimum vital signs, and sedation scores did not significantly differ. Drug dosages did not differ between ADHD (mean 2.02 mcg/kg fentanyl, 0.09 mg/kg midazolam) and controls (1.93 mcg/kg fentanyl, 0.08 mg/kg midazolam), $p = 0.87$ and 0.91, respectively. The average sedation score (on a scale of 1–5) was 2.0 for both groups, $p = .87$. Mean ED visit duration differed between ADHD (275 minutes) and controls (174 minutes), $p < 0.001$. Sedation duration for ADHD patients was 54.8 minutes and for controls 40.6 minutes, $p < 0.02$. Equivalent numbers of patients received pre-medication and supplemental oxygen for mild oxygen desaturations. Only one patient (control) required bag-valve mask ventilation and naloxone for post-procedural apnea. All procedures were completed successfully.

CONCLUSIONS: Children with and without ADHD were equally and successfully sedated with the same total drug dosages. The differences in sedation duration and total length of stay warrant further investigation.

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SCHOOL BUS-RELATED INJURIES IN ST. LOUIS CHILDREN.

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Yearly there are 26,000 collisions involving school-buses with approximately 17,000 resulting injuries. According to the National Highway Transportation and Safety Administration, 96% of these injuries are minor or moderate. This injury data is an estimate derived from a national probability sample. Although most injuries are not critical, issues of morbidity, injury perception, and utilization of healthcare resources must not be overlooked.

This descriptive study addresses the types of injuries related to riding on a school bus involved in a collision. The objectives are to create a local database of school bus collisions, to identify variables associated with injuries, and to compare local trends with national estimates.

Data were collected prospectively over 24 months. Patients 3 to 18 years seen in the Emergency Unit (EU) of St. Louis Children's Hospital for an injury occurring while riding on a school bus were included. Qualifying patients were questioned about the injury and the collision. Patient charts were reviewed to obtain information missing from the original contact: length of stay, diagnosis codes, and external cause of injury codes. IRB approval was obtained. Data were analyzed by frequency and Pearson chi-square testing.

Of the 153 patients enrolled, 49.7% were male, 87.6% were African American, and 65.4% were 6–12 years old. Approximately half of patients had an intervention in the EU, including pain medication, radiographic or laboratory studies, wound repair, or casting. The most common diagnosis was contusion, occurring in 33% of subjects. A surrogate marker of perceived injury, any intervention in the EU, was chosen as the dependent variable because of the low number of severe injuries (2.6%) and because perception of injury is likely an important factor in determining EU use. Factors significantly associated with having any intervention in the EU were age over 12 years, seatbelts not used or not available, any pre-hospital intervention, and icy conditions. Race, gender, prompt arrival after the collision, mode of arrival, time of day, and seat location on the bus were not associated with having any intervention.

Although severe injuries are uncommon in school bus collisions, many patients are evaluated in the EU. Perception of injury, as measured by intervention in the EU, was significantly associated with older age and lack of seat belt use. Future studies are needed to evaluate the significance of these findings.

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HUMAN MILK BANKING: NEONATOLGISTS' OPINIONS AND PRACTICES.

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Objective: The purpose was to describe professional opinions and practices related to human milk banking among neonatologists in order to increase the use of donor breast milk in the neonatal intensive care.

Methodology: Approximately 2500 members of the Neonatal Pediatric Section of the American Academy of Pediatrics (AAP) were contacted by email and invited to complete a brief anonymous online survey. The survey contained closed-end questions on demographic characteristics and practices, as well as open-ended questions related to attitudes.

Results: A total of 437 physicians (17%) completed the survey. The majority were males (56%) who had completed medical training at least 16 years earlier (59%). Most physicians worked in neonatal intensive care units (NICU's) with 30–60 beds (57%); approximately 20% were employed by a facility where donor milk from human milk banks was prescribed. Respondents cited a wide range of benefits from using donor milk from a human milk bank; the most common were immunological benefits (43%) and general advantages associated with breast milk (25%). The overwhelming concern with the use of donor milk was transmission of known infectious agents (62%); this was also reflected in suggestions for future research, with the majority of respondents (61%) requesting additional studies on this topic. More than one-half of physicians (55%) indicated they would consider recommending donor milk from a human milk bank for babies under their care.

Conclusions: Addressing neonatologists' practices that limit prescription of donor milk from human milk bank is key in promoting its use. Increased knowledge about the methods used to limit the risk of infection transmission through donor milk should increase its usage.

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A NOVEL SCREENING TECHNIQUE FOR DETECTING SMALL MOLECULE INHIBITORS OF SHIGA TOXIN TRAFFICKING.

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Shiga toxin, produced by a diverse group of *Escherichia coli*, uses a complex retrograde transport pathway in order to inactivate the ribosome of susceptible cells. Infection with the toxin is associated with dysentery, hemorrhagic colitis, and hemolytic uremic syndrome due to its ability to inhibit protein synthesis, ultimately killing the host cells. No effective treatment has been developed to inactivate and prevent complications of this toxin.

We undertook a novel screening approach to identify small molecule compounds that inhibit shiga toxin activity. Using a luciferase-based assay developed in our laboratory, a screen of approximately 16,000 compounds was performed. Of these, approximately two hundred potential inhibitors of shiga toxin were identified. We are currently characterizing each of these inhibitors with respect to their potency in inhibiting toxin and their toxicity toward human cells. Using immunofluorescence microscopy and other approaches, we will determine the point at which individual inhibitors block shiga toxin trafficking or function. Data will be presented on the most active of these novel compounds.

Using this new approach, we hope to identify small molecular compounds that block shiga toxin trafficking at several steps during its retrograde transport. These experiments will provide insight into the mechanism of toxin trafficking and potential strategies for developing therapeutic agents for toxin-associated disease.

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COMPARISON OF NEONATAL OUTCOME OF DIFFERENT VENTILATORS IN VERY LOW BIRTH WEIGHT INFANTS.

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Background: A recent advance in ventilator system introduced the Puritan Bennett 840™ Ventilators (PB840) were introduced in the BUHMC during 2003. We observed its outcome in very low birth weight (VLBW) infants.

Objective: To compare the neonatal outcome of VLBW infants between two time periods when different ventilators were used.

Design/Methods: During 01/01/2002~4/31/2003 the BP200 and Bear Cub ventilators were used in the NICU. After that the PB840 with a separate nasal CPAP machine were used during 05/31/2003~12/31/2003. Neonatal data for 109 infants with a birth weight less than 1500gm (excluding L&D deaths) were collected from medical records and respiratory department.

Results: Between two periods, the use of prenatal and postnatal steroids, birth weight, respiratory distress syndrome(RDS), patent ductus arteriosus (PDA), ventilator days (including ventilator and CPAP days), oxygen requirement at 28 days & discharge, length of stay, pneumothorax, intraventricular hemorrhage (IVH), necrotizing enterocolitis (NEC), sepsis, and death were not significantly different. However, there was a significantly higher incidence of oxygen requirement at 36 weeks of postmenstural age in period of PB840 use than the previous period with other ventilators (18% vs. 37%, p=.03).

Comparison of the neonatal outcome between two periods: n=109 (%)

Variable	Pre	Post	P	Variable	Pre	Post	P
Number of infants	63	46		Postnatal steroids	4(6.3)	1(2.2)	.30
Antenatal Steroid	56(89)	42(91)	.67	Ventilator (days)	11(0-91)	5(0-143)	.60
Gestation age (wk)	27.4±2.7	27.8±3.1	.48	O_2 at 28 days	35(56)	17(49)	.51
Birth Wight (gm).	1012±292	992±282	.71	O_2 at 36 weeks	11(18)	13(37)	.03

Conclusions: During the period of PB840 use, VLBW infants had a significantly higher incidence of chronic lung disease. It may be due to less aggressive management for chronic lung disease or inefficient assist ventilation of PB 840. For a better respiratory care in neonate further studies in ventilator and nasal CPAP machine are needed.