

This Month In **The JOURNAL** of **PEDIATRICS**

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Rates of hospitalizations of children with asthma

— Robert W. Wilmott, MD

In this issue of *The Journal*, Hasegawa et al, from Harvard Medical School and the Clinical Epidemiology Center of St Luke's Life Science Institute, have completed a temporal analysis of trends in hospital mortality, mechanical ventilator use, hospital charges, and childhood asthma hospitalizations in the US between 2000 and 2009. These data were generated from the "Kids Inpatient Database," and the subjects were <18 years of age with asthma. Four years were analyzed: 2000, 2003, 2006 and 2009. The results showed that asthma hospitalizations decreased significantly, and mortality also declined significantly after adjusting for confounders. There was an increase in mechanical ventilation use over this time period which might reflect a more aggressive approach to management of status asthmaticus in children. Nationwide, hospital charges increased by 26%, which was driven by a rise in the hospital charges per discharge.

The results of this study suggest that there has been progress in reducing the impact of severe acute asthma in children in the US. However, mechanical ventilation and hospital charges for asthma hospitalizations have increased markedly. This increase might reflect improved management of sicker patients, yet the large asthma burden presents an ongoing public health and health education challenge.

[Article page 1127 ►](#)

Quality of the quality metric of hospital readmission rate

— Sarah S. Long, MD

Increasingly, hospital readmission within 30 days of discharge is used as a metric of quality of medical care. Without completely understanding the underpinnings and preventability of such events, there is a push to impose financial penalties on hospitals with higher than expected 30-day readmission rates. In this issue of *The Journal*, investigators at Mattel Children's Hospital and the University of California, Los Angeles, probed a 24-month administrative database retrospectively to assess risk factors for readmission, including documented primary care provider follow-up plans at the time of discharge. Investigators found the expected associations with readmission, such as older age (15-18 years), having public insurance, and having higher scores for severity of medical conditions while hospitalized. However, they unexpectedly found an association between a documented discharge follow-up plan and excess rate of 30-day readmission.

The authors offer several hypotheses that could account for the finding, call into question whether readmission is a valid proxy for suboptimal care, and convince the reader that readmission rate is a complex quality measure.

[Article page 1027 ►](#)

Aerosolized intranasal midazolam for sedation for CT imaging

— Robert W. Wilmott, MD

Aerosolized midazolam as an option for infant and pediatric sedation for computed tomography (CT) imaging has been evaluated by Mekitarian Filho et al in this issue of *The Journal*. It was shown to be an effective technique that produced reliable, predictable sedation leading to acquisition of high quality CT images with minimal artifact and no associated significant adverse events. Therefore, this appears to be a useful technique of safe sedation for imaging that could be valuable in pediatric emergency departments.

[Article page 1217 ►](#)

Dangers of cheerleading

— Thomas R. Welch, MD

Most readers of *The Journal* may not be aware that the sport with the highest rate of catastrophic injury is cheerleading; indeed, two-thirds of catastrophic injuries in female athletes are from this sport alone.

In this issue of *The Journal*, Lovell and Solomon from Pittsburgh and Vanderbilt, respectively, address the specific issue of concussion in cheerleaders. Using a group of athletes in whom they had access to preconcussion neurocognitive testing, these investigators found a very high frequency of abnormalities one week after concussion. Interestingly, some athletes had evidence of abnormalities on neurocognitive testing even in the absence of symptoms.

The importance of concussion is increasingly recognized by pediatricians. This study reminds us that serious head injuries are not limited to football players!

[Article page 1192](#) ►

Plasma adropin levels in children with obstructive sleep apnea

— Robert W. Wilmott, MD

Adropin is a peptide hormone encoded by the *Energy Homeostasis-Associated* gene. Circulating adropin concentrations are regulated by energy intake and affect cardiovascular function, particularly in endothelial function. In this issue of *The Journal*, Gozal et al from the University of Chicago investigated the hypothesis that adropin levels would be lower in children with obstructive sleep apnea (OSA), especially in those with evidence of endothelial dysfunction because they might provide a reliable marker for endothelial dysfunction in pediatric obstructive sleep apnea. The results show that children with OSA and abnormal endothelial function had significantly lower adropin levels compared with match controls and with children with OSA and normal endothelial function. Adropin concentrations below 4.2 ng/mL reliably predicted abnormal endothelial function. It was interesting that adropin levels assessed after adenotonsillectomy in a subset of their patients showed a significant increase in adropin levels post-operatively if they had pre-existing endothelial dysfunction, but not if they did not. The authors conclude that plasma adropin levels are reduced and correlate with endothelial dysfunction in children with OSA and that they returned to normal values after adenotonsillectomy. They propose that assessment of plasma adropin concentrations may provide a reliable indicator of vascular injury in the context of OSA in children.

[Article page 1122](#) ►

Decreasing gestational age and increased hospitalization in the first year of life

— Sarah S. Long, MD

Investigators assessed population-based data in New South Wales, Australia, to seek associations between maternal and infant characteristics and hospitalization in the first year of life. They found that gestational age <37 weeks was most strongly associated with hospitalization once, and severe neonatal morbidity was associated with multiple hospitalizations. However, the majority of hospitalization burden on health systems was due to the hospitalization of infants without severe morbidity. Hospitalizations and costs increased with decreasing gestational age even for infants born 37 through 38 weeks of gestation. These findings, as well as additional maternal characteristics (eg, adolescent age, smoking, not married), associated with infant hospitalization raise considerations for targeted public health strategies.

[Article page 1014](#) ►

Prevalence of Down syndrome population in the US

— Robert W. Wilmott, MD

A new approach recently was developed for estimating the prevalence of Down syndrome, and it already has been applied in Ireland, The Netherlands, and England/Wales. This approach estimates prevalence using maternal age and Down syndrome risk, along with Down syndrome mortality rates derived from multiple studies. A similar strategy was used to estimate the prevalence of Down syndrome in the US, using estimates of annual births of people with Down syndrome over the past century. The results of this study by Presson et al show that on January 1, 2008, the prevalence of people with Down syndrome was approximately 250 700 with a 90% uncertainty

interval of 185 900 to 321 700, which corresponds to a prevalence of 8.27 people with Down syndrome per 10 000. This estimate is about 25% to 40% lower than estimates based solely on birth prevalence. The data should be useful for planning health and social services for people with Down syndrome and for developing public health policies.

[Article page 1163 ►](#)

Vascular effects of Kawasaki disease

— Stephen R. Daniels, MD, PhD

There always has been concern that an episode of Kawasaki disease could have long-lasting effects on the coronary arteries and other components of the cardiovascular system. In this issue of *The Journal*, Ishikawa and Iwashima report the results of a study to evaluate vascular function using endothelial function and vascular structure using carotid intima-media thickness in children in the 5 years after an acute episode of Kawasaki disease. They found that the children had evidence of endothelial dysfunction, but no evidence of vascular structural changes.

The clinical importance of these findings is not completely clear. It is known that endothelial dysfunction is associated with increased risk of cardiovascular disease in adults. It will be important to understand whether these changes persist over a longer period of time. The fact that endothelial dysfunction is associated with a longer duration of fever during the acute episode suggests that early detection and treatment of Kawasaki disease may help prevent vascular abnormalities.

[Article page 1117 ►](#)

Development and validation of Distress Thermometer for Parents

— Robert W. Wilmott, MD

There has been a significant increase in the numbers of children with chronic disease in recent years. Parents of such children are more likely to report higher levels of parental distress and lower levels of health-related quality of life than parents of healthy children. In this issue of *The Journal*, Haverman et al from Emma Children's Hospital, Amsterdam, The Netherlands, present the results of developing a questionnaire for parents of a chronically ill child—the Distress Thermometer for Parents. They examined its internal consistency and validity in a sample of parents with a chronically ill child and determined a cutoff score to identify distressed parents. They propose that this is a valid tool for rapidly screening parents of children with chronic illness for parental distress.

[Article page 1140 ►](#)