Up or down?

— **Thomas R. Welch, MD**

Cryptorchidism is one of the commonest indications for elective surgery in young boys. Current guidelines call for recognition and surgical management of the condition before the age of one year. We do not, however, have good population-based data on the condition, specifically the ages at which surgery is generally occurring.

In the current volume of *The Journal*, Bergbrant et al provide very comprehensive data from Sweden addressing these questions. They provide us with information from every boy in the country in whom the diagnosis of cryptorchidism was made over a 15 year period—over 20,000 children in all.

One of the most striking pieces of information is that over 94% of children had their surgery beyond the guideline-recommended age of one year. Even though Sweden is a country with near-universal health care for its children, there was considerable variation from region to region in the timeliness of surgery. Not all of these delays can be attributed to late recognition or referral; the bimodal age distribution, with another peak in school age likely reflects acquired cryptorchidism.

Fortunately, there were few complications of surgery and no deaths. The study was not designed to address such long term questions such as fertility.

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Not all emergency departments are alike

— **Denise M. Goodman, MD, MS**

A medical emergency requires timely, immediate care. With that in mind, the notion that certain conditions require special expertise is not new, nor the concept that outcomes are improved when emergent care is provided in specified centers rather than in the closest available emergency department (ED). The result is the creation of trauma centers, stroke centers, and the like.

The same could be said for the ability to render appropriate care to children. A prior project, the National Pediatric Readiness Project, surveyed EDs nationwide for availability of pediatric-specific equipment, personnel, and processes, and created a weighted score for pediatric readiness. A score of 100 indicates that essential requirements are met for pediatric readiness. A prior study showed that the median score nationally is 68.9 (*JAMA Pediatr* 2015;169:527-34).

In this volume of *The Journal*, Ray et al address the issue of geographic accessibility to emergency care for children. The authors examined the percentage of children living within 30 minutes of a pediatric-ready ED as defined by the National Pediatric Readiness Project. The results are striking—while 93.7% live within 30 minutes of any ED, only one-third live within 30 minutes of an ED scoring 100, and a little over one-half live within 30 minutes of those scoring in the 90th percentile of readiness; 70% live within an ED scoring within the 75th percentile.

The policy implications are clear—the gaps were not in availability of an ED, but in lack of EDs with high pediatric readiness. This means that children presenting to those EDs may not have access to age-appropriate equipment, personnel, or processes, a concern for both families and providers. Fortunately there are already programs aimed at improving pediatric readiness, such as the quality improvement efforts of the Emergency Medical Services for Children (EMSC) program (https://emscimprovement.center/). When considering the well-being of our children, this sort of geographical analysis may permit focused, effective investment, and improved outcomes.

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Recognition of *Kingella kingae* as a major cause of osteoarticular infections in young children

— Sarah S. Long, MD

Juchler et al have done a service to the pediatric community in their assiduous and aggressive approach to the bacteriologic confirmation of etiologic agents of osteoarticular infections (OAIs). Using culture and molecular techniques, their work is a weighted modern compendium of relevant pathogens. They also carefully categorized cases and causes by age and a constellation of markers of the host's inflammatory responses, which will improve clinical decision making. Remarkably, *Kingella kingae* represented 88% of etiologically identified cases in the age group of 6 through 47 months, and *Staphylococcus aureus* 78% of cases in those 48 months and older. They also documented that a patient with *Kingella* OAI compared with *S. aureus* OAI is more likely to be afebrile or only modestly febrile, have elevated sedimentation rate and platelet count, but only a modestly elevated C-reactive protein level.

The authors are cautious about generalizability of their documented *Kingella* prevalence to other regions and continents. They needn't be overly cautious. As we in the US have picked up on specific molecular testing of blood and bone and joint specimens in the relevant age group, *Kingella kingae* is confirmed not infrequently. The finding of *Staphylococcus aureus* as the predominant organism in school-age children seems generalizable. However, the virtual absence of methicillin-resistant *S. aureus* (MRSA) in the Geneva case series over 14 years is "special." Across multiple studies in the US since the 1990s, staphylococcal infections have increased, and community-acquired MRSA is responsible for approximately one-half of staphylococcal OAIs.

A final, interesting speculation of the authors is that the finding of 21% of clinical cases of OAI without proven etiology despite aggressive pursuit suggests that other fastidious microorganism(s) may yet be discovered. *Borrelia burgdorferi* certainly is long ago discovered and is on the list for culture-negative pyogenic arthritis in regions of endemicity. Additionally, some culture-negative cases undoubtedly occur as autoinflammatory or autoimmune conditions.

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In search of biomarkers for HIE

— Paul G. Fisher, MD

To predict the clinical course, severity, and outcome of disease, organ-specific proteins have been examined as candidate plasma biomarkers of injury. To date, the sensitivity and specificity of such biomarkers for routine clinical use have been low. Yet the pursuit of biomarkers to characterize brain injury in critically ill children has continued.

In this volume of *The Journal*, Massaro et al report a secondary analysis evaluating plasma brain specific proteins and cytokines as biomarkers of brain injury in 50 newborns with hypoxic-ischemic encephalopathy extracted from a phase II multi-center randomized trial evaluating erythropoietin for neuroprotection. Some elevated plasma brain-specific proteins and cytokine levels in the first 24 hours of life were associated with worse brain injury on subsequent brain MRI, but by day 5 only tau and BDNF proteins were found to relate to neurodevelopmental outcomes. The authors suggest that further prospective studies with more frequent sampling are warranted, but maybe we should instead pause here and consider whether mass sampling of multiple plasma proteins and other blood components will lead us to selecting optimal therapies or predicting outcomes. Perhaps we need to consider other non-plasma biomarkers and even innovative technologies to predict better the clinical course and final outcome in children with critical illness.

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