THE FLORIDA PEDIATRICIAN
The Peer Reviewed Journal of the Florida Chapter of the AAP
Volume 37, Issue 2
Spring 2018

THE TRAINEE EDITION
Hello Colleagues,
Because of the tragic event of school shooting in Florida in February I am using the message sent to us by Dr. Gorski instead of my usual Editor’s note.

Mobeen H. Rathore, MD, CPE, FAAP, FPIDS, FSHEA, FIDSA, FACPE
Editor, The Florida Pediatrician
Professor and Director
University of Florida Center for HIV/AIDS Research, Education and Service (UF CARES)
Chief, Infectious Diseases and Immunology, Wolfson Children’s Hospital Jacksonville
Jacksonville, FL

Interested in joining the FCAAP Editorial Committee or submitting an article for a future publication?
Contact the Editorial Committee at info@fcaap.org for more information!
Once again, this time on Valentine’s Day in a high school filled with children and adults celebrating within the sanctuary of school, we are reminded that hatred puts us all at risk and that trauma too often begins in the hearts and minds of children. In the flash of an instant, gunfire shattered the lives of a community prized for its sense of safety, reawakening persistent fears held by Americans everywhere who want to believe that we live in peace among neighbors. Once again, a new generation of Americans is recalibrating its sense of trust and security. The young survivors at Marjory Stoneman Douglas High School will hopefully recover emotionally and return to their freshly blossoming lives. Yet I suspect that their youthful faith in the greatness of human possibilities may be scarred for life. Their acute grief will likely heal but their capacity for inner peace and shared intimacy may be displaced forever.

How can we create peace in our homes, streets, schools and nations? Certainly, we must, as a moral society, reject violence as a solution. Many citizens are calling for stricter gun control laws, tighter security systems at schools and more funding for mental health diagnosis and treatment. More and more citizens are raising their voices to hold their elected government officials responsible for promoting the interests of gun manufacturers over the health and safety of American citizens. Indeed, while our President called for “tackling the difficult issue of mental health,” his administration’s budget proposal for the next fiscal year includes no new restrictions on the sale of firearms but a $665 million cut in funding to the federal Substance Abuse and Mental Health Agency and a 30% cut to the National Institute for Mental Health.
Given the ease of acquiring a deadly weapon in the U.S., the task of disarming dangerous individuals becomes nearly impossible. Considering, on the other hand, the common developmental history for becoming a killer, the achievable goal of prevention must focus equally on childhood experiences that shape mental health and avoid psychological trauma. Violence is an end product of hatred – usually self-hatred as much as hatred toward others. During the first years of life, children learn how the world values them. Kids who are loved consistently and unconditionally, whose parents and other caregivers demonstrate caring and service to others, whose families affiliate with a diverse group within a community, and who observe that skin color, wealth, education, and culture differentiate people’s background but not their intrinsic worth, are children who will grow to feel connected and devoted to the dignity within everyone.

In nearly all the awful instances of kids (and adults) killing kids, the perpetrators felt profoundly isolated and unaccepted. Violence erupted when these dangerous ingredients reached a boil inside the kettle of each killer’s developing psyche. The force of the final violent explosion took many years to develop. The message seems clear to me. Violence prevention begins during early childhood as we work to understand, love, guide and model for our children. Recent scientific research teaches that the emotional experience of infants and very young children directs the wiring of nerves in the developing brain. Our ability to control our emotions, to regulate our physical response to stress, to achieve mental health, even our capacity to muster an effective immune response to infection gets shaped by experiences during the first years of life. Children begin to learn as soon as they are born. Most of all, they learn how much others support, value, respect, enjoy and expect of them.

Feeling ineffective, disrespected and unwanted causes the deepest stress to our personal health and happiness. Would that we and our neighbors routinely welcomed newcomers or tolerated, appreciated and joined with people of diverse ethnicities, cultures, traditions, faiths, ideas, abilities and conditions. How many adults teach children by example the personal rewards of diverse contributions? Caring friends, community service, neighbors actively concerned for each other’s families, dignified cultures, traditions, faiths, ideas, abilities and conditions. How many adults teach children by example the personal rewards of diverse contributions? Caring friends, community service, neighbors actively concerned for each other’s families, dignified cultures, traditions, faiths, ideas, abilities and conditions. How many adults teach children by example the personal rewards of diverse contributions?

War. Yet, just as access to healthcare does not, by itself, guarantee health, so too safety depends on removing access to deadly weapons and on removing a person’s will to hate. Guns provide a means to kill, not a reason to kill. Schools and schoolyards serve their purpose when children feel like they are sanctuaries in which adults care about their well-being and development. Locked doorways, armed guards and electronic monitoring undermine children’s sense of security by adding constant reminders of deadly threats that may lurk around every corner.

Restricting access to weapons yields positive results. Nations that limit gun ownership experience less mortal violence. In contrast, the United States is becoming less safe, and more violent. Three of the ten largest mass killings in American history have occurred in the last five MONTHS. The weapon used in all these atrocities, the semiautomatic AR-15, is available for purchase by nonmilitary personnel in no democratic nation other than the United States. Every two years, more Americans are murdered in their homes, streets, schools and churches than died in combat over the entire ten years of the Vietnam War. Yet, just as access to healthcare does not, by itself, guarantee health, so too safety depends on removing access to deadly weapons and on removing a person’s will to hate. Guns provide a means to kill, not a reason to kill. Schools and schoolyards serve their purpose when children feel like they are sanctuaries in which adults care about their well-being and development. Locked doorways, armed guards and electronic monitoring undermine children’s sense of security by adding constant reminders of deadly threats that may lurk around every corner.

Given the ease of acquiring a deadly weapon in the U.S., the task of disarming dangerous individuals becomes nearly impossible. Considering, on the other hand, the common developmental history for becoming a killer, the achievable goal of prevention must focus equally on childhood experiences that shape mental health and avoid psychological trauma. Violence is an end product of hatred – usually self-hatred as much as hatred toward others. During the first years of life, children learn how the world values them. Kids who are loved consistently and unconditionally, whose parents and other caregivers demonstrate caring and service to others, whose families affiliate with a diverse group within a community, and who observe that skin color, wealth, education, and culture differentiate people’s background but not their intrinsic worth, are children who will grow to feel connected and devoted to the dignity within everyone.

In nearly all the awful instances of kids (and adults) killing kids, the perpetrators felt profoundly isolated and unaccepted. Violence erupted when these dangerous ingredients reached a boil inside the kettle of each killer’s developing psyche. The force of the final violent explosion took many years to develop. The message seems clear to me. Violence prevention begins during early childhood as we work to understand, love, guide and model for our children. Recent scientific research teaches that the emotional experience of infants and very young children directs the wiring of nerves in the developing brain. Our ability to control our emotions, to regulate our physical response to stress, to achieve mental health, even our capacity to muster an effective immune response to infection gets shaped by experiences during the first years of life. Children begin to learn as soon as they are born. Most of all, they learn how much others support, value, respect, enjoy and expect of them.

Feeling ineffective, disrespected and unwanted causes the deepest stress to our personal health and happiness. Would that we and our neighbors routinely welcomed newcomers or tolerated, appreciated and joined with people of diverse ethnicities, cultures, traditions, faiths, ideas, abilities and conditions. How many adults teach children by example the personal rewards of diverse contributions? Caring friends, community service, neighbors actively concerned for each other’s families, dignified cultures, traditions, faiths, ideas, abilities and conditions. How many adults teach children by example the personal rewards of diverse contributions? Caring friends, community service, neighbors actively concerned for each other’s families, dignified cultures, traditions, faiths, ideas, abilities and conditions. How many adults teach children by example the personal rewards of diverse contributions?
INTRODUCTION:

Neurofibromatosis Type 2 is a relatively uncommon central nervous system (CNS) tumor predisposition syndrome. Recent incidence estimates are as high as 1 in 25,000 with prevalence now risen to almost 1 in 60,000 due to earlier diagnosis and improved therapeutic modalities [2]. While it is inherited in autosomal dominant fashion, approximately 50% of cases result from de novo mutations and 33% have mosaic mutations making it difficult to rely on genetic testing as a sole feature for diagnosis [4]. Previously NF1 and NF2 were considered to be a single disease entity. In 1987 it was determined that they are distinct diseases with specific genetic anomalies for NF1 on chromosomes 17 and for NF2 on chromosome 22. While NF1 possesses strong cutaneous components and a proclivity for diagnosis at a young age, NF2 is largely considered to be an adult onset disease characterized by the development of slow growing neural tumors including schwannomas, meningiomas, ependymomas, and other spinal masses. Neurofibromas are actually rarely seen in NF2 prompting a recent movement to change the name to “Multiple Inherited Schwannomas, Meningiomas, and Ependymomas (MISME).” Overall, NF2 has a variable pattern of presentation in the pediatric period that has not been well described in the literature. The following case represents a unique presentation in which diagnosis was established based on identification of cutaneous tumor burden – a rare manifestation of NF2. Subsequent imaging revealing bilateral acoustic neuromas as well as extensive intrathoracic involvement.

CASE:

An 11-year-old Caucasian male with history of mild persistent asthma and ADHD presented for routine annual evaluation following family relocation. A mass above his left eyebrow was present - noted to be causing embarrassment to the child and beginning to obscure his visual field. Similar smaller skin lesions that were gradually increasing in size over the past several years were also reported. 3 years prior a dermatologist performed a biopsy of one of the lesions and diagnosed it as a ‘benign neurofibroma’ with no sub-specialty follow-up needed. History otherwise included mildly delayed motor milestones (including delayed walking until age 2 years of age) and parental concerns for poor coordination – citing that he always seemed “more clumsy than other kids his age.” Targeted review of systems also identified a possible gradual unilateral decline in hearing with patient preferring to use his right ear to speak on the phone. He was otherwise doing well in school and had no known intellectual disability. There was no known family history of neurologic or genetic disorders.

On physical examination, 10-15 painless flesh colored cutaneous papules measuring 4-10mm in diameter were noted on the face, trunk, and upper extremities. A subcutaneous flesh-colored nodule measuring 10 mm was located immediately inferior to the left eyebrow and distorted the superior eyelid. There was no axillary or inguinal freckling and there were no café au lait macules. Neurologic exam demonstrated subtle hearing deficit of the left ear; mild left upper extremity dysmetria / dysdiadochokinesia; and a wide-based ataxic gait. The rest of his physical examination was unremarkable.

Excisional biopsy of two skin lesions revealed schwannomas. Subsequent MRI revealed 3.9 x 2.2cm left and 1.6 x 1.4 cm right acoustic neuromas, 3 central schwannomas, 2 central meningiomas, 2 intra-axial CNS masses (gliomas vs. ependymomas), and several spinal extradural intradural masses, including one 10.7 cm x 7.3 cm intra-thoracic mass extending anteriorly into the mediastinum and encasing portions of the trachea, main stem bronchi, and major vessels (see Figure 2). Formal audiology evaluation revealed bilateral type A tympanograms with normal hearing in the right ear and profound left-sided sensorineural hearing loss. Given biopsy proven schwannomas and imaging findings, the patient was diagnosed with MISME / NF2.

DISCUSSION

Largely considered an adult onset disease with minimal relevance to the pediatric population, NF2 is a chromosomal disorder linked with derangements in Chromosome 22q along the portion that encodes for the cell-membrane-related protein merlin (or schwannomin). Abnormalities in these proteins lead to a lack of tumor suppression and subsequent predisposition to the development of multiple slow-growing neural neoplasms. Given their relatively slow growth, the average age of diagnosis is usually between 18 and 24 years of age. Formal diagnosis of NF2 is based on clinical findings and neuroimaging studies. Modified NIH diagnostic criteria for Neurofibromatosis Type 2 suggested by Baser et al [2002] [see table] and since accepted in the public realm have improved...
Approximately 70 percent of patients with NF2 have cutaneous findings (see Figure 1) [1]. Despite this prevalence, <10% of patients present with symptoms ranging from isolated mononeuropathies (such as facial nerve paralysis often confused with Bell’s Palsy and foot drop) to cutaneous lesions (usually schwannomas or neurofibromas) and ocular abnormalities (cataracts, optic atrophy). This being said, cutaneous schwannomas are not pathognomonic for NF2. The differential diagnosis of NF2 includes sporadic cases of schwannomas. If peripheral findings of schwannomas are identified by biopsy, it is imperative to obtain central axis imaging to differentiate between NF2 and alternative diagnoses.

In regards to therapy, treatment of NF2 is complex and optimally managed by a team of specialists through a multidisciplinary approach to provide comprehensive care for all related sequelae of disease. The initial steps to management primarily include surgical resection of symptomatic tumors and frequent repeat resections as needed. Alternative promising treatment options studied, especially in regards to non-resectable progressive tumors, include radiation therapy and other systemic chemotherapeutic agents designed to inhibit angiogenesis (Bevacizumab) or tyrosine kinase function (Lapatinib).

In summary, NF2 is a debilitating tumor predisposition syndrome with subtle clinical findings that are often overlooked in the pediatric population [6,7]. It is often up to the general pediatrician to identify concerning cutaneous, neurologic, and alternative diagnoses.

REFERENCES:
4. Evans DGR, Birch JM, Ramsden R. "Pediatric presentation of type 2 neurofibromatosis." Arch Dis Child 1999;81:496-499. doi:10.1136/adc.81.6.496
6. A unique feature of this case is that it not only solidifies the teaching that NF2 has a myriad of known subtle cutaneous and neurologic findings - it also adds to the body of literature regarding the potential manifestations of this illness. Literature review revealed no previously documented cases of NF2 with significant thoracic tumor burden. In our case, central imaging revealed thoracic tumors impacting mediastinal structures including trachea, mainstem bronchi, and major vessels. This could potentially explain or have contributed to the patient’s previous history of persistent asthma in the absence of apparent atopy or known family history. There have been reports of intrathoracic meningiomas in NF1 – however no such features have been identified in NF2 to our knowledge [8,9].

**DIFFERENTIAL DIAGNOSIS FOR NF2**

<table>
<thead>
<tr>
<th>DIAGNOSIS</th>
<th>DISTINGUISHING FEATURES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sporadic Vestibular Schwannomas</td>
<td>Typically unilateral and isolated</td>
</tr>
<tr>
<td>If age &lt; 30 years, may represent initial manifestation NF2 with gradual development of contralateral vestibular schwannoma possible Increased monitoring indicated If age &gt; 30 years, risk of NF2 minimal</td>
<td></td>
</tr>
<tr>
<td>Neurofibromatosis Type 1</td>
<td>Liisch nodules (pigmented iris hamartomas) characteristic of NF1 - rarely seen in NF2 Schwannomas associated with NF1 have capacity to undergo malignant transformation – unlikely in NF2 Spinal root tumors most likely to be neurofibromas in NF1 and schwannomas in NF2</td>
</tr>
<tr>
<td>Inherited Schwannomatosis</td>
<td>Autosomal dominant development of intracranial and peripheral schwannomas NF1 more commonly associated with cognitive impairment than NF2 Importantly spares vestibular nerve</td>
</tr>
</tbody>
</table>

**TABLE 2: Differential Diagnosis for patients with Central and Peripheral Neural Axis Tumors**

In regards to therapy, treatment of NF2 is complex and optimally managed by a team of specialists through a multidisciplinary approach to provide comprehensive care for all related sequelae of disease. The initial steps to management primarily include surgical resection of symptomatic tumors and frequent repeat resections as needed. Alternative promising treatment options studied, especially in regards to non-resectable progressive tumors, include radiation therapy and other systemic chemotherapeutic agents designed to inhibit angiogenesis (Bevacizumab) or tyrosine kinase function (Lapatinib).

In summary, NF2 is a debilitating tumor predisposition syndrome with subtle clinical findings that are often overlooked in the pediatric population [6,7]. It is often up to the general pediatrician to identify concerning cutaneous, neurologic, and ophthalmologic findings that warrant central imaging and further sub-specialty evaluation. Early detection leading to initiation of therapy at a younger age has been shown to positively impact morbidity and mortality outcomes.

**REFERENCES:**
5. Evans DGR, Birch JM, Ramsden R. "Pediatric presentation of type 2 neurofibromatosis." Arch Dis Child 1999;81:496-499. doi:10.1136/adc.81.6.496
Fractures in the pediatric population are common and have a broad spectrum of treatment options. Traditionally, orthopaedic consultation is the initial step in the treatment algorithm for pediatric patients suffering from fractures, but with recent literature backing a more minimalistic approach to handling certain fractures, it is imperative that general pediatricians further familiarize themselves with the art of fracture care. Basic management of patients by pediatricians suffering from a simple fracture helps prevent unnecessary healthcare usage and cost, avoids stressful healthcare interactions, and allows for earlier treatment. Due to these reasons, optimal and timely acute fracture care by pediatricians is prudent.

In order for the generalist to help mend broken bones, knowledge concerning how and when a pediatrician should treat a patient suffering from a fracture, as well as at what point orthopaedic expertise is necessary for an ideal outcome is critical. Basic variables such as fracture type, fracture location, amount of fracture displacement, and patient age all contribute to determining if further attention from an orthopaedic surgeon is appropriate.

This article seeks to aid general pediatricians by:

1) Helping pediatricians become familiar with the variables of Pediatric fracture care,
2) Providing generalists with a protocol to discern which type of fractures (excluding growth plate fractures) requires the attention of a specialist, and;
3) Offering a straightforward, evidence-based review on current treatment recommendations for patients with a wide variety of fractures that do not demand orthopaedic assessment.
INTRODUCTION

Pediatric fractures are a common acute problem pediatrics face. According to Narang et al., the annual incidence of fractures in pediatric patients between the ages of 0-19 presenting to the ED is 180 per every 1000 encounters in the United States. This high incidence of fractures is not unique to the United States; Ladnin et al. performed a similar study and found that fractures constituted 10%-25% of Switzerland’s total injuries in the pediatric population. Given these statistics, it is not surprising that pediatric patients suffering from fractures are a significant public health issue.3-6, 8, 9

Despite the significant number of fractures occurring in the pediatric population only 1 of 18 fractures are admitted to the hospital for inpatient treatment. Currently, 49% of RVUs obtained for treatment of pediatric fractures occurs in the outpatient setting—compared with just 10% of RVUs for adult orthopaedic trauma. The high demand for outpatient fracture treatment has led to manpower changes with increasing use of nurse practitioners, physician assistants, and pediatricians with knowledge of Pediatric fracture care. Furthermore, evidence indicates that excessive healthcare interactions induce unnecessary stress to both parent and patient, with up to 33% of pediatric patients with orthopaedic trauma experiencing some degree of PTSD.9 This evidence of regular outpatient fracture management as well as the psychological ramifications of excessive healthcare interaction hopefully serves as an impetus for the management of simple fractures by qualified generalists.2, 5, 8, 9

At times, it may be obvious that inpatient orthopaedic care is in the patient’s best interest. Open fractures, widely displaced fractures, and certain fracture-dislocations are such examples; however, as previously alluded, these incidents only represent a fraction of treated pediatric orthopaedic trauma.10 Management of other pediatric fractures presenting to the outpatient setting is contingent on the appreciation of variables contributing to fracture severity. The most important variables include displacement, location and age. In general, largely displaced fractures are less likely to heal without manipulation and/or fixation, whereas minimally displaced fractures are more amenable to non-operative treatment due to their healing potential; this can help guide the generalist in deciding if further intervention by a specialist is required. Not all bone is created equal, and fractures located in a joint and/or involving growth plates are of concern. A complete discussion of growth plate injuries is beyond the scope of this article, and thus, the Saltzer Harris classification will not covered. However, it is important to recognize that complex fractures involving the physis and/or articular surfaces necessitate the care of an orthopaedic surgeon. Lastly, patient age helps determine the amount of acceptable fracture deformity and its inclusion in treatment decisions assist in predicting remodeling potential.2, 6

Given the frequency of Pediatric fractures, its acknowledgement as a public health issue, and sparse literature pertaining to broad-spectrum treatment of pediatric fractures, the University of Florida Department of Orthopaedics and Rehabilitation believed it prudent to review numerous sources of contemporary pediatric orthopaedic surgery literature and summarize fundamental pediatric fracture principles7-10. Our goal is to lay a foundation of fracture management guidelines for non-orthopaedic pediatricians.

TREATMENT RECOMMENDATIONS

The breadth of treatment options for pediatric fractures is broad and can be intimidating if one is not familiar with general treatment guidelines. The following guide was created to provide a straightforward reference for generalists confronted with pediatric patients suffering from fractures. Orthobullets.com can be utilized for excellent correlating fracture images.

COMPARTMENT SYNDROME

A proper neurovascular exam and assessment of all muscle compartments must be done for all fractures regardless of severity.2 The importance of checking for compartment syndrome cannot be over emphasized. Compartment syndrome results from an increase in the intra-compartmental pressure of a specific muscle compartment in any area of the body. This may lead to decreased perfusion of the muscles, increased pressure on the neurovascular structures within that compartment, and eventually muscle necrosis and neurovascular compromise that can be limb threatening. If there is concern for ongoing or impending compartment syndrome, immediate orthopaedic attention is necessary. A comprehensive neurovascular exam can prevent significant adverse sequelae.7 Findings to be cognizant of include8

- Paralysis
- A late finding
- Irreversible damage has occurred
- Absent pulses
- A late finding
- Potential amputation required

CLAVICLE FRACTURES

15% of all pediatric fractures are of the clavicle.13 Clavicle fractures usually occur after a direct blow to the clavicle and/or falling on an outstretched hand. When dealing with pediatric clavicle fractures, it is of benefit to divide the clavicle into three segments: medial-third, middle-third, and lateral-third. Segmenting the clavicle this way allows the management team to foresee if intervention beyond immobilization is required. The following are treatment recommendations for each of the three divisions:

- **Middle-third**
  - Fractures that are not 100% displaced can be treated with immobilization in a sling for 2-3 weeks.1
  - **Lateral-third**
  - Known as a distal clavicle physeal injury
  - Treated by immobilization in a sling for 2-3 weeks.1
  - **Medial-third**
  - Known as a medial clavicle physeal injury
  - Requires attention of a specialist.6
  - Significant skin tenting, shortening of the clavicle, total fracture displacement, and/or neurovascular compromise requires orthopaedic consultation.16

PROXIMAL HUMERUS FRACTURES

The majority of humeral growth occurs at the proximal humerus and thus, the proximal humerus has a high remodeling potential; resulting in an excellent prognosis.6 The mechanism of injury for proximal humerus fractures is from direct blunt trauma or indirect trauma such as excessive overhead throwing (Little Leaguer’s Shoulder).6 Treatment consists of:

- Immobilization using a simple sling for approximately 2-3 weeks recommended for minimally displaced proximal humerus fractures and Little Leaguer’s Shoulder.6

SUPRACONDYLAR HUMERUS FRACTURES

Suprcondylar humerus fractures in children most commonly occur between the ages of 5 and 7.15 The Garthland Classification system for suprcondylar fractures stratifies fractures into four groups and helps guide treatment. Type I fractures have no displacement and Types II-IV are displaced in increasing order of severity. Of note, neuropraxia of the anterior interosseous nerve (most common) and radial nerve palsy are typical findings associated with some suprcondylar fractures—nearly all cases resolve spontaneously.7 Management consists of:

- Immobilization for 3-4 weeks with follow up radiographs at week one for type I fractures.15
- Type II-IV fractures may require surgical intervention and an orthopaedic surgeon should be consulted.15

DISTAL RADIUS FRACTURES

Of the pediatric population presenting with fractures, the majority of fracture pathology seen in acute care settings is that of the distal radius.14 Distal radius fractures are usually the result of falling on an outstretched hand and often occurs during sporting events or play.14 Under the age of 10, distal radius fractures have greater potential to restore normal anatomy without advance fracture care.14 Management consists of:

- Assessing the forearm as well as the elbow for associated injuries.
- Immobilization in a long arm cast from 3 weeks and up to 6-8 weeks for minimally displaced fractures.14
- Significant angulation, displacement, and/or rotational deformity demands orthopaedic attention.14

BOTH BONE FOREARM (BBFA) FRACTURES

Management of pediatric BBFA fractures can be straightforward if the fracture is minimally displaced. 80% of BBFA fractures occur after the age of 5.5 These injuries usually are secondary to a high fall and are commonly associated with trampoline accidents.3 For minimally displaced BBFA fractures:
• Be sure to assess the wrist as well as the elbow for associated injuries.
• Location of the fracture dictates arm positioning for immobilization.
  6
• Proximal 1/3 fractures, cast in supination.
• Middle 1/3 fractures, cast in neutral position.
• Distal 1/3 fractures, cast in pronation.
• Short arm cast for distal 1/3 BBFA fractures for 4-12 weeks or long arm cast for fractures effecting proximal 2/3’s for 4-12 weeks (older pediatric patients immobilized longer as they approach skeletal maturity)
• Radiographs after the first 1-2 weeks to check for angulation.
• Significant angulation, displacement, and/or rotational deformity demands orthopaedic attention.

BUCKLE FRAC TURES OF THE FOREARM
Buckle fractures of the forearm have a similar demographic to BBFA and distal radius fractures. 20 Traditionally, buckle fractures of the wrist are treated with casting and orthopaedic follow-up with serial radiographs. Current practice is moving however, towards a more minimalistic approach with the literature now supporting a less in-depth model by use of removable splints and minimal follow-up. 16 Traditional treatments consists of:
• Assessing the forearm as well as the elbow for associated injuries.
• Immobilization with a long arm cast for up to 3-8 weeks for minimally displaced fractures. 15
• Significant angulation, displacement, and/or rotational deformity demands orthopaedic attention.

PHALANX AND METATARSAL FRACTURES
A wide array of injuries affects the hand. Here we discuss basic care of phalanx and metacarpal fractures. Most phalanx fractures affecting toddlers occur from crush injuries, such as a finger getting stuck in a door. In adolescents these fractures are usually sports related. 14 A common fracture to the metacarpal after striking a solid object with a clenched fist occurs at the neck of the 5th metacarpal—better known as a boxer’s fracture. 7 Treatment consists of:
• Ensuring that there is no rotational deformity for metacarpis and phalangeal fractures. 16
• Non-displaced metacarpal fractures treated with ulnar gutter splints for fractures effecting metacarpis 4 & 5 and radial gutter splints for fractures effecting metacarpis 2 & 3. 16
• Be sure to immobilize the metacarpophalangeal joint in 70 to 90 degrees of flexion with the wrist in 30 degrees of extension and the proximal interphalangeal joint in full extension to prevent any iatrogenic hand stiffness (intrinsic plus position). 13
• For proximal, middle, or distal phalanx extra-articular, nondisplaced fracture, treatment consists of:
• The use of aluminum finger splint for 3 weeks is sufficient for minimally displaced, extra-articular phalangeal fractures. 20

FEMUR FRACTURES
Pediatric traumatic femur fractures, especially those of the femoral shaft, are the most common severe pediatric injuries that orthopaedic surgeons treat. 12 Non-operative management includes hip spica cast application for toddlers and young children and use of special harnesses/splints for newborns and infants; in school age children, surgery is preferred. 13 Therefore, pediatric patients suffering from a femoral shaft fracture are treated with the care of an orthopaedic specialist.

TIBIA AND TODDLER’S FRACTURES
Fractures involving the tibial shaft account for 15% of all pediatric fractures. 20 The mechanism of injury varies between minor falls to high-energy trauma with the tibia is involved in 30% of trauma cases. 20 Toddler’s fractures typically occur in patients 1-4 years of age and present to the ED with a complaint of refusal to walk or bare weight and trivial history of trauma. 25 Radiographic evidence of Toddler’s fractures may be subtle but often consists of a faint oblique fracture line beginning laterally and ending medially. 24 Treatment consists of:
• Nondisplaced fractures of the tibial shaft should be immobilized in a long leg cast for 3-6 weeks with subsequent weight bearing as tolerated in a short leg cast for an added 3-6 weeks. 22
• For a widely displaced tibia, or involvement of the fibula, refer patient to an orthopaedic specialist.
• Toddler’s fractures of the tibia need only be casted for 4 weeks with return to activity after injury site is no longer tender to palpation plus radiographic evidence of healing is present. 22

ANKLE FRACTURES
Patients affected with ankle fractures are typically between the ages 8-15. The mechanism of injury is usually secondary to sports requiring sudden changes in directions as occurs in soccer, football, basketball, or skateboarding. 14 Due to the high incidence of growth plate involvement, complex progression of physeal closure, and intricate anatomy of ligaments surrounding the ankle, this guideline will only broach management of minimally displaced distal tibia fractures/Salter-Harris type I injuries. Treatment consists of:
• For minimally displaced, extra-articular fractures involving the distal tibia, a below the knee cast/splint for 3 weeks is appropriate with conversion to a walking boot at week 3. 24
• A follow up radiograph is recommended in the first week after injury to assure no further displacement has occurred. 24

PHALANX AND METATARSAL FRACTURES
In the pediatric population, 61% of all foot fractures involve the metatarsal. 21 Fractures of the metatarsi and phalanges are secondary to direct crush injuries or rotation of the hindfoot with the forefoot in a fixed position. 18 The 1st and 5th metatarsals are more mobile and thus more prone to injury. 21 Isolated metatarsal fractures and phalane x fractures with minimal displacement carry a good prognosis utilizing conservative treatment. 4 Generalists are able to manage treatment of minimally displaced fractures of the metatarsi and phalanges as long as no associated hindfoot and/or midfoot injuries are present. Management consists of:
• A walking boot or hard-sole shoe and weight bearing as tolerated. 6

CONCLUSION
In essence, pediatric patients suffering from fractures make up a significant segment of encounters in the acute care setting. The varieties of fractures affecting pediatric patients are extensive but due to the high remodeling potential of the pediatric skeleton , general pediatrics can treat a sizable portion of fractures by immobilization with a splint or cast and referral to a local orthopaedic surgeon for follow-up care. Depending on the severity of trauma, management of pediatric fractures by a generalist is not only ideal in regards to efficiency, but also in avoiding excess healthcare cost, stress induced by extensive provider interaction, and redundant radiation exposure. In order for a provider to manage patients suffering from fractures, the ability to differentiate if fracture care can be managed in the outpatient setting or requires a specialist’s attention is paramount and derived from a familiarity with fracture severity.

The guidelines described above provide a foundation and assist the generalist in treating a broad spectrum of pediatric orthopaedic trauma acutely and subsequently referring these patients to an orthopaedic surgeon for further evaluation and long-term management.

REFERENCES
Improving Adolescent Immunization Rates: A School Nurse - Pediatrician Collaboration

Kathleen C. Rose, RN MHA BS NCSN

The Advisory Committee on Immunization Practices (ACIP) recommends that youth between the ages of 11 and 12 begin receiving all the recommended adolescent vaccines, not just those mandated by individual states. (CDC 2016) The school nurse, knowledgeable about adolescent immunizations and the rationale for the immunization schedules, is in a unique position to work collaboratively with pediatricians, nurse practitioners and other physicians to ensure the timely administration of these vaccines. The school nurse can use interactions with the parents in the school clinic, at Open Houses, Health Fairs and other venues to address parent concerns and support the efforts of other healthcare providers to complete the adolescent vaccines.

(Rose, 2017)

Promotion of immunizations is central to the public health focus of school nursing. School nurses are in agreement with the American Academy of Pediatrics (AAP): vaccines are the most significant medical innovation of our time, ranking second, only to clean water. They protect children’s health, save lives, and prevent life-threatening diseases, including cancer. (AAP 2017) Ironically, vaccines are so successful that their success has created a barrier. The majority of parents and guardians have never seen some of diseases that vaccines prevent. This results in some parents and guardians looking at the vaccine risk instead of the disease risk, resulting in lower vaccination rates. (NASN 2015)

Every October data is collected on the immunization status of every kindergarten and seventh grade student in all the public, private and charter schools in Florida. In April 2016, the Florida Department of Health released data indicating that our immunization rates were at their lowest point in many years, 93% for kindergarten and 90.6% for seventh grade. (FL DOH,
To improve the school nurses’ ability to support the physician, we need to address the barriers in FL SHOTS, our Immunization Information System. All physicians and nurse practitioners should be receiving the immunizations they give. School nurses employed by the Department of Health have the ability to make entries into FL SHOTS, but others do not. Although doctors’ offices and pediatricians have access to specific lists from our state IS registry, school nurses cannot. This could limit the school nurse’s support. The nurses may not have the time to look up each individual student in FL SHOTS, but with a school specific list, they can identify students missing the recommended adolescent vaccines and make appropriate referrals.

Outdated physicals are a third systemic barrier. Current Florida Statutes require a physical upon the student’s initial entrance into a Florida school. (ES., 2016) Adding a middle school entrance physical would significantly increase vaccine rates. As students go for their middle school physical, physicians are in a position to administer all the recommended adolescent vaccines. Currently, when students go for their mandated Tdap, many pediatricians use this opportunity to do a physical and administer all the adolescent vaccines. This spillover effect is remarkably effective in increasing immunization compliance. (Moss, et al., 2016) Not all county health departments have primary care to do a physical, but they work to increase full immunization compliance among the students they see.

THE SCHOOL NURSE’S ROLE

The school nurse’s role in improving immunization rates begins with the student and extends into the community. When coordinating care, the school nurse can identify students with incomplete immunizations, work to overcome vaccine hesitancy and connect the family to resources. Quality improvement will occur with accurate input of data, compiling and sharing reports and aggregate data, and developing plans to improve immunization rates. The school nurse can serve her community by keeping current immunization information in her clinic, attending Open Houses and Health Fairs, or writing a newsletter article. The nurse facilitates better public health when immunization screenings are completed and incompletely immunized students are identified. The school nurse assumes a leadership role when she advocates for policies that support student health on local, state and federal levels. (Hoffman, 2017)

Do vaccines really make a difference? Children born between 1994 and 2013, saw the recommended vaccines prevent 322 million illnesses, 21 million hospitalizations and 732,000 premature deaths. (CDC, 2014) With a school nurse-pediatrician collaboration, these numbers can continue to improve. “We don’t vaccinate just to protect our children. We also vaccinate to protect our grandchildren and their grandchildren. With one disease, smallpox, we…eradicated the disease. Our children don’t have to get smallpox shots any more because the disease no longer exists. If we keep vaccinating now, parents in the future may be able to trust that diseases like polio and meningitis won’t infect, cripple, or kill children. Vaccinations are one of the best ways to put an end to the serious effects of certain diseases.” (CDC, 2012, p.1).

REFERENCES
A previously healthy 15-year-old white male presented to the emergency department (ED) with a one-month history of worsening sore throat and acutely worsening left neck swelling. The patient reported seeing his pediatrician one month earlier for a sore throat and tested negative for Group A beta hemolytic streptococcus (GABHS) at that time. He returned two weeks later due to worsening symptoms. Again he tested negative for GABHS. He was managed with ibuprofen as needed. The patient came to the ED when he started developing rapid left neck swelling with non-bloody, non-bilious emesis and worsening odynophagia.

In the ED, he was found to be febrile to 37.2°C with significant left neck swelling. His respiratory rate was 14/minute, pulse 74/minute and blood pressure 121/52 mm of Hg. On examination the patient was not in respiratory distress, and there was slight swelling of the right side of the neck without overlying erythema or tenderness. Patient did not have pharyngeal erythema, tonsillar enlargement, petechiae, exudate, and asymmetry of the pharyngeal arches or deviation of the uvula. The rest of the examination was unremarkable. The complete blood count on peripheral smear showed a white blood cell count of 13,470/dL with 76% neutrophils, 12% lymphocytes, 11% monocytes and 1% basophils. A CT scan of the neck showed a large, 4.6 cm enhancing fluid collection in the left peritonsillar region with local extension consistent with a peritonsillar abscess. There was significant deviation of the airway to the right with mild airway narrowing. (Figures 1 and 2)

He was started on intravenous ampicillin-sulbactam, clindamycin, and decadron. Incision and drainage of the abscess was performed. The specimen from the abscess grew Fusobacterium necrophorum. After two days of intravenous antibiotics he was discharged on oral Amoxicillin-Clavulanic acid to complete an additional 8 days of antibiotic therapy.
DISCUSSION:
Peritonsillar abscess, also referred to as quinsy, is one of the parapharyngeal abscesses. It is a purulent infection localized between the capsule of the tonsil and the pharyngeal muscles. They account for over 50% of deep neck infections in children and adolescents. Symptoms at presentation include odynophagia, fever, “hot potato voice”, lymphadenopathy, trismus, and uvular displacement away from the affected side. Pathogens responsible for peritonsillar abscess include both aerobes (GABHS, S. aureus including methicillin resistant) and anaerobes (Fusobacterium and Prevotella. Complications include respiratory distress secondary to tracheal compression from large abscesses or spontaneous rupture of the abscess causing aspiration.
Treatment includes a combination of both medical and surgical modalities. Medically, patients should be treated empirically with antibiotics effective against aerobes and anaerobes most likely to cause the infection such as amoxicillin-sulbactam or clindamycin if there is concern for MRSA. Surgically the abscess should be drained by needle aspiration or incision. While needle aspiration can be performed in the outpatient setting, fewer complications (bleeding) are seen with incision and drainage under general anesthesia, making it the preferred surgical intervention.

SUGGESTED READING:

The University of Florida Department of Pediatrics had another exceptional year in each of the core academic missions. In addition, our department continued its mission to provide the subspecialty care to underserved areas of the state through new and expanded programs in Tallahassee and Pensacola.

The University of Florida Department of Pediatrics in Gainesville now numbers more than 180 faculty members. In addition, there are 15 adjunct University of Florida faculty members at Arnold Palmer Hospital in Orlando, and more than 20 faculty members at Studer Family Children’s Hospital in Pensacola.

In Gainesville, University of Florida practitioners cared for more than 70,000 children in our primary care program, and our expert subspecialists cared for more than 60,000 children. Importantly, University of Florida physicians have served the Tallahassee region for more than two decades. Over the past year, we expanded our local care program for the children in Tallahassee via a new telemedicine program, which means that children are seen locally rather than having to travel for subspecialty care. We also developed an affiliation with Studer Family Children’s Hospital at Sacred Heart in Pensacola, to provide the subspecialty care for children in this important region of the state. We are especially proud that the University of Florida Department of Pediatrics continues to have a major impact on the care of children with medically complex conditions in the state through its nationally recognized Ped-I-Care program sponsored by the Florida Department of Health.

At both Orlando Health and the Studer Family Children’s Hospital, the University of Florida sponsors pediatric graduate medical education programs. In 2017, 17 residents and 10 fellows graduated from the Gainesville program, 14 residents from the program in Orlando, and 9 residents from the program in Pensacola. Overall, about half of trainees entered fellowships after graduation, and half took positions in primary care or hospitalist medicine. Our program also developed and implemented new educational models over the past year. With changes to our educational program, coupled with the graduation of more than 50 trainees per year, our program will have a lasting impact on the provision of care for years to come in our state and around the country.
In conjunction with Boston Children’s Hospital and the National Institute of Child and Human Health, we sponsored the Fourth Annual Pediatric Medical Student Research Forum, with 100 students from across the United States attending. This forum represents the only setting in the United States where medical students interested in pediatrics come together to present their work. This program is made possible through the collaborative efforts of the Florida Chapter of the American Academy of Pediatrics.

Several exceptional physician scientists joined our faculty this past year to expand our academic base. Dr. Sumita Bhaduri-McIntosh, formerly of the State University of New York and Yale University, and Dr. Michael McIntosh of the United States Department of Agriculture, became faculty members focusing on virology and emerging pathogen research, respectively. Dr. Eric Nelson joined us from Stanford University and is focusing on the management of epidemics in Bangladesh and Haiti.

In 2017, our department’s total grant and contract funding, including clinical care subcontracts, exceeded $225 million. Research support overall was $57 million. Federal research funding, including support from the National Institutes of Health, topped $30 million.

The University of Florida Department of Pediatrics continues to be groundbreaking several areas of clinical research. Several firsts-in-human gene therapy trials took place at the University of Florida this past year. The University of Florida initiated novel immunotherapy trials for the treatment of children with central nervous system cancers. The University of Florida Diabetes Institute is also making strides in understanding the Immunology of type 1 diabetes, as well, receiving international recognition.

Clinically, many department programs received national accolades. Six programs were recognized as among the nation’s best, in the areas of cardiology and heart surgery, diabetes and endocrinology, pulmonology, cancer, neonatology, and neurology and neurosurgery. It is important to note that University of Florida Department of pediatrics has the only nationally recognized Hematology/Oncology program in our state. The Congenital Heart Center was recognized with a special proclamation read in the United States Congress for continued success in heart transplantation. In 2017, the University of Florida Congenital Heart Center ranked among the top transplant programs in the United States.

These and other highlights of our program can be found in our recent progress report. https://indd.adobe.com/view/4251539c-9b67-49c5-a9ed-b26b2a86a47

Lastly, our department is especially proud of its wonderful and growing relationship with the Florida Chapter of the American Academy of Pediatrics. Recognizing the importance of the Chapter to children and pediatricians in our state, our department joined as an institutional member. Thus, all our faculty members enjoy the benefits of Florida chapter membership, and more importantly, contribute to the improvement of pediatric care in our state and nationally.

Florida Pediatric Residents,
All of us pursued pediatric residency because we care about the welfare of children. This past year has been challenging for Florida’s children and families, from the aftermath of Hurricane Irma to the recent tragedy in Parkland, Florida. Now, more than ever, as the next generation of pediatricians, we need to act on that passion to protect Florida’s children. Join us at the FCAAP annual conference! Come and learn how you can be an advocate for your patients. Network with like-minded individuals, including medical students, residents, fellows, attendings, and FCAAP leadership with similar goals. Attend educational sessions on a variety of topics, improve your simulation skills, present your research or quality improvement initiatives, and participate in the annual resident Brain Bowl! Come and learn how you can shape the future of pediatrics! We hope to see you in Orlando!

Sincerely your Florida Chapter Resident Co-Chairs,
Elissa Engel and Jillian Hagerman

DOWNLOAD THE OFFICIAL FCAAP MOBILE APP
Register for Events
Create a Personalized Schedule for FCAAP Conferences
Participate in Polls & Raffles
Connect with Other Members!

SEE THE FULL RESIDENT FORUM AND CONFERENCE AGENDA, ABSTRACT SUBMISSION DETAILS, AND REGISTER AT HTTP://FCAAP.ORG/EVENTS
Working continuously to balance the
SCALES OF JUSTICE.

We're taking the mal out of malpractice insurance.
As a relentless champion for the practice of good medicine, we continually track, review, and influence federal and state bills on your behalf. All for one reason: when you can tip the scales in favor of the practice of good medicine, you get malpractice insurance without the mal. Find out more at thedoctors.com