Weighing the Evidence

Featured Stories

- Literature Summary – IV or PO on UTIs
- RVUs and You
- Are Pediatric Hospital Medicine Fellowships necessary?

You are the Hospitalist: A patient with fever, hip pain and something unexpected

Pediatric Hospital Medicine Abstract Research Award Winner Samir S Shah, MD, MSCE, FAAP

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

The Section on Hospital Medicine of the American Academy of Pediatrics is dedicated to the health of all children in the hospital setting through advocacy, education and service—incorporating the core principles of safety, effectiveness, timeliness, efficiency and equitability in family-centered health care.

Our Mission

Advocacy
The Section is dedicated to being a leader in inpatient Pediatric Hospital Medicine in the Pediatric community—advocating for the health and safety of hospitalized children.

Education
The Section is dedicated to being a leader in educating health care providers, patients and families.

Service
The Section is dedicated to being a leader in identifying the professional needs of Pediatric Hospitalists.

Publication of this news journal is supported by Mead Johnson Nutritionals.
t is an incredible time to be taking over the chair position of the Section. Before expounding on that thought I need to acknowledge the tremendous effort of our outgoing chair, Laura Mirkinson. It has been an honor to serve on the Executive Committee with her. She has been a fully committed advocate for the SOHM and its membership within the Academy. She directly worked with the AAP leadership to raise the standing of the Section within the Academy and was a tireless worker within the AAP’s often complicated structure to build the Section. We would not be at this current juncture without her devotion, and I thank her.

We are now at a point in the field where we no longer need to justify ourselves or ask for recognition.

We are now at a point in the field where we no longer need to justify ourselves or ask for recognition. We have two textbooks. We have an active role in important national organizations—the AAP, the Academic Pediatric Association (APA) and the Society for Hospital Medicine (SHM)—that encourage our activities and seek our ongoing membership. We have an annual national meeting and dedicated Pediatric Hospital Medicine (PHM) time at the national meetings of the AAP, APA and SHM. We have venues for presenting our scientific work, and the quantity and quality of that work dramatically increases yearly. And soon there will be a journal for the field of Pediatric Hospital Medicine. These are all requirements of a specialty.

How do we set ourselves apart in a way that fosters continued growth of the field and best serves our patients?

That being said, the question I am often asked is, “Are we a specialty?” Having given the question much thought, I’m not sure it is the right question. What does it mean to be a “specialty”? The American Board of Pediatrics is clear that specialty status, that of official sub-board certification, is reserved for those who are specifically trained to be academics in their unique set of knowledge and skills. I do firmly believe that Pediatric Hospital Medicine (PHM) is different from general/outpatient pediatrics and that it does represent a knowledge base and skill set that is unique. However, I do not believe that most of the PHM providers are prepared or eager to be “academics” (as opposed to being academic in their practice). More importantly, I don’t think that formal three-year fellowship training is in the best interest of our patients because, as we have seen with other generalist subspecialties, it will limit the number of people who will enter the field. So the question I have is how do we set ourselves apart in a way that fosters continued growth of the field and best serves our patients? Answering that question will solidify PHM as a career path and facilitate the vision set forth at the recent PHM roundtable, a meeting of PHM leaders from across the nation: “Pediatric hospitalists will transform the delivery of hospital care for children.”

Pediatric hospitalists will transform the delivery of hospital care for children

It is my goal to answer that question. We are already hard at work doing so. It cannot be done without the input of SOHM members. Any solution that is not acceptable to the general membership will not flourish and will only serve as a setback. There will be multiple opportunities to weigh in on this at meetings and through the listserv®. The first answer may not be the final one but will hopefully move us forward. I eagerly look forward to working with all of you on this important issue. I also hope to maintain current section efforts in multiple areas that impact our ability to care for hospitalized children, many of whom are discussed elsewhere in this issue. I urge all of you “lurkers” to get involved with any of these areas. We need your energy and expertise.
LETTER FROM THE EDITOR

Weighing the Evidence

Jennifer Daru, MD, FAAP, FHM
jadaru@gmail.com

As we enter the New Year, *Hospital Pediatrics* is looking at how “the literature” should be influencing your practice. For Pediatric Hospital Medicine (PHM), the literature includes research and review journals (Adult and Pediatric, but none specific to PHM yet), American Academy of Pediatrics’ (and other well known organizations’) policy statements and position papers, medical as well as business textbooks and perhaps an on-line news source. Being a well rounded PHM-er means that you have to balance all of these sources to be a skilled and successful practitioner.

This issue of *Hospital Pediatrics* will provide you with a good synthesis of much of the above, with a few outside and new influences as well (Improv anyone? See page 7). There are too many highlights to review here so take a quick look at the table of contents and enjoy. There’s plenty more to say!

WRITERS WANTED!!
or
What’s up with you?

What’s going on in your hospital or in your city?

A conference or workshop?

An intriguing case? A new perspective, procedure or protocol?

Share what you do!

If you have an idea for an article that might interest your colleagues across the continent, let us know because we’re looking for new contributors to *Hospital Pediatrics*!

Contact Jennifer Daru, Editor-in-Chief, at jadaru@gmail.com.

Statements and opinions expressed are those of the authors and not necessarily those of the American Academy of Pediatrics.
The term RVU frequently comes up as a possible metric to compare workloads between different Pediatric Hospitalist job sites or programs. There is also a proposed change— they may have gone through by the time this article arrives to you—to the Centers for Medicare and Medicaid Services (CMS) RVU conversion factor. For these reasons, I thought it might be a good time to review the definition of RVU, the components used to calculate an RVU, and the reasons why RVUs might be one possible measure of physician workload.

In simple terms, RVU stands for Relative Value Unit. It is a metric designed to measure the amount of resources used to provide physician services. CMS has used RVUs since 1992 to reimburse physicians according to a national payment schedule.

Each RVU for physician services is composed of three separate components:

- **Work RVU** or wRVU (55%)
- **Practice expense RVU** or peRVU (42%)
- **Physician liability insurance RVU** or liRVU (3%)

The work component is directly related to the physician work in caring for a patient. It includes the physician time, as well as physical exertion and mental effort, applied to a case. The practice expense component includes both direct expenses, such as medical equipment and supplies, and indirect expenses such as administrative staff. The physician liability insurance component is based on data collected from commercial and physician-owned insurers.

Each of the above components of the RVU is then adjusted by a geographic practice cost index (GPCI). The GPCI adjusts for cost differences of resources for providing an episode of care in various regions of the country, compared to the national average for each RVU component.

\[
\begin{align*}
\text{wRVU} & \times \text{wGPCI} = \text{adjusted wRVU} \\
\text{peRVU} & \times \text{peGPCI} = \text{adjusted peRVU} \\
\text{liRVU} & \times \text{liGPCI} = \text{adjusted liRVU}
\end{align*}
\]

The adjusted components are then added together to arrive at a total adjusted RVU:

\[
\text{adjusted wRVU} + \text{adjusted peRVU} + \text{adjusted liRVU} = \text{total adjusted RVU}
\]

Right now, you might be thinking, “that’s nice, but show me the money.” This is where the Conversion Factor (CF) comes into play. The total adjusted RVU is multiplied by the CF to produce a payment:

\[
\text{Total adjusted RVU} \times \text{CF} = \text{$$$}
\]

Once you understand how a RVU is calculated, you can begin to see the possibility of utilizing RVU data to compare workloads between physicians or programs. Within a group, RVU data can be a marker for productivity and potentially be used to calculate productivity-based bonuses. Since RVUs are used nationally, a group can compare themselves with a national norm.

Remember that the calculation of an RVU is based on the complexity of resources used to provide an episode of care. For example, a level 2 admission (99222) might have a work RVU total of 3.38, while an initial newborn admission (99460) might have a work RVU total of 1.54. Tracking RVU data would help account for why a Pediatric Hospitalist program that does not cover newborns might have a smaller individual patient count per day vs. a program that covers newborns. Although the total number of patients seen in the first program may be less than those of the second program, a comparison of RVU data would give a more accurate picture of the complexity of the care provided.

CMS has released a proposal that would decrease the Conversion Factor by 21.2% starting in January 2010. Now that you know how the CF is related to RVUs, you can begin to appreciate the potential negative financial impact of this proposal. This proposal is not finalized yet, and there will likely be changes prior to January 1, 2010. Look for updates from myself, likely via the AAPSOHM listserv, as the proposal is finalized.

Have a coding conundrum? Contact James O’Callaghan, MD, at jjocallaghan@aap.net with your question.
YOU ARE THE HOSPITALIST — LISA ZAOUTIS, MD, FAAP, EDITOR

Case: 6 Year Old Boy with Fever and Hip Pain

Kavita Parikh, MD, FAAP. kparikh@cnmc.org
Pediatric Hospitalist Faculty, Children’s National Medical Center
Assistant Professor of Pediatrics, The George Washington University Medical Center

You are the pediatric hospitalist seeing a patient who was transferred from an outside hospital for evaluation of fever and hip pain. The patient is a 6 year old Hispanic male who presented to the outside hospital one day prior to transfer with complaints of refusal to walk, severe hip pain, and fever. These symptoms started acutely and worsened over the two days prior to presentation to the outside hospital. Four days prior to presentation, the boy had complained of right shoulder and wrist pain, which resolved before the hip pain began. The parents noticed that when the various joints were bothering him, he had limited motion in the joints and they were very tender to touch, but they did not remark on erythema or swelling. Low-grade fevers were present, but there was not history of trauma, rash, vomiting, diarrhea, weight loss, night sweats, or chills. There was no recent travel, and no known exposures to ticks or wooded areas.

His past medical is notable for culture positive group A Streptococcus (GAS) pharyngitis three weeks prior treated with 10 days of amoxicillin. Surgical and family history is unremarkable. He has no current medications, no known drug allergies, and his immunizations are up to date.

The work-up from the outside hospital included bilateral hip radiographs which were normal. Ultrasonography of his hips revealed hypoechoic effusions bilaterally, more pronounced on the right side. Blood work from the outside hospital included a normal complete blood count, and a mildly elevated erythrocyte sedimentation rate. He was given a dose of IV ketorolac for pain control, which provided some relief, and was transferred to your institution due to concern of septic arthritis.

On arrival to your hospital you note his vital signs: temperature 38.2 C, heart rate of 114 bpm, respiratory rate of 20 bpm, blood pressure of 109/71 mm Hg, and oxygen saturation of 100% on room air. He appears to be in no acute distress, resting in the hospital bed with his right leg flexed and externally rotated. Although he is anxious about your going near his right hip, on inspection you notice no erythema, ecchymosis, or swelling. He has extreme pain with attempts at passive movement of the right leg. Range of motion is limited by pain and he is unable to bear weight to assess gait. All other joints and the rest of the physical examination are normal.

Initial laboratory investigations included white blood cell count of 7.13 K/µL (with 61% segs, 25% lymphs, 9% monos). His hemoglobin, hematocrit, and platelets are within normal limits. Inflammatory markers reveal a mildly elevated ESR of 40 mm/hr (normal 0-20), and normal C - reactive protein of 0.44 mg/dL (normal 0.06-0.79). His basic metabolic panel and urinalysis are negative. MRI is obtained which reveals bilateral hip effusions, with no marrow signal abnormalities to suggest osteomyelitis. Orthopedics was consulted, and joint aspiration was performed. Synovial fluid analysis showed 20,000 white blood cells/µL with 20% segs and no organisms seen on the Gram stain.

What is the most appropriate next step in the management of this patient?

A. Initiate intravenous vancomycin while awaiting the results of the bacterial culture of the synovial fluid.
B. Provide nonsteroidal anti-inflammatory medications for symptom relief for toxic synovitis.
C. Send serology for Lyme disease and initiate intravenous cefotaxime while waiting for the results.
D. Obtain an electrocardiogram and consult cardiology for echocardiography.

Continued on page 8
The Pediatric Hospitalist and Improv

Ann F. Beach, MD, FAAP, FHM, Ann.Beach@choa.org
Scottish Rite Pediatric and Adolescent Consultants, Children’s Healthcare of Atlanta

It’s five minutes until show time. Eight of us are behind stage, nervous and excited. We’ve practiced for weeks. In just a few minutes we’ll perform before a live audience (including my family and friends), yet we don’t know our lines, or which part we’ll play. We don’t even know what the subject of our performance will be. But we do know it’ll be great fun! It’s Improv!

If you don’t know, Improv is a form of comedy based on spontaneous skits or games using suggestions from the audience, with no script developed beforehand. It requires great teamwork, a quick wit, great listening skills, and a willingness to be zany.

I’ve been a practicing pediatrician for over twenty years. I have spent years taking care of sick children in my office. As a hospital administrator, I’ve spent time focusing on quality of care and prevention of medical errors. Currently, as a pediatric hospitalist, I’m caring for ill children in the hospital. All pretty serious stuff. And I felt the need to try something different—to use the other side of my brain—to stretch myself a bit. So at my husband’s urging (and with a Christmas gift of classes), I began taking Improv classes a couple of years ago. Since then, I’ve taken classes with three different instructors (at Dad’s Garage and at Laughing Matters in Atlanta) and performed on stage for “graduation” four times. I’ve had fun, I’ve been scared, I’ve laughed out loud, I’ve been embarrassed, I’ve been frustrated, and I’ve been proud of myself.

What have I learned? Well first of all, I learned that it’s very liberating to try something different and go outside of my “comfort zone.” I learned how fun it was to have friends who are really different from me. In all of my classes, I have usually been the oldest (I’m not that old, but I’m by no means a young 25 year-old gen-x-er). I’ve been the only one who is married with a child and living a pretty conventional life. I’ve found myself surrounded by cartoon artists, computer graphics experts, musicians, teachers and hoping-to-be-discovered actors. Initially, I felt stodgy and conservative and then realized that I was having fun doing something with a bunch of like-minded incredibly creative people. My age and my background were only an issue if I let them be.

Two Rules of Improv:

“**Yes, and …**
Learn to embrace the current reality, believe it fully and try to figure out how to add to it.

“**Be willing to put yourself in danger.**
Be comfortable with doing something even when you don’t know how or what you’re going to do, have faith in your own abilities, step into something that you’ve never done before, and be willing to try something new.

One of the first rules of Improv (yes, there are rules!) is “**Yes, and …**” which means that whatever suggestion or reality your Improv partner throws at you, you must immediately accept it as the current reality and add to it. For example, if the audience suggestion is a skit about a rabbit, and my stage partner says, “I’m sorry Ma’am, the tests show conclusively that you are allergic to rabbits!” I must agree, and add to it. So, I might say, “Well it’s a good thing I just traded all of my rabbits for chinchillas!” or, “But my husband is Roger Rabbit! What will we do?” But I must never say, “Oh no, I’m not allergic to rabbits!” So I’m learning to embrace the current reality, believe it fully, and try to figure out how to add to it.

“**Yes and …**” translates to my life as a hospitalist as well. If my hospitalist colleague says we have eleven critically sick children awaiting admission in the ED, my Improv training helps me say, “Yes, and … I think I can figure out how to double my efficiency!” Or if our group’s budget doesn’t let us hire another doctor we were hoping to hire, perhaps I can say, “Yes, and … some new clinical pathways will help us be more care-focused, and we can re-do our on-call schedule to meet this challenge!”

The second rule of Improv is “**Be willing to put yourself in danger.**” Nope, this doesn’t mean leaping in front of speeding cars! It means that you must be excited about the prospect of doing something even when you don’t know how or what you’re going to do. In Improv we often do tag-team monologues, during which my stage partner starts telling a story about something, and I leap in and continue the story, interrupting him in mid-sentence. And we continue to interrupt each other, telling the story in bits and pieces. I can’t wait until I know what I’m going to say to jump in and interrupt him; I have to just have faith that words will come out of my mouth. I must stop thinking and just react! And sometimes that’s the right thing to do in the rest of my life- stop thinking and just react. Be comfortable with putting myself in danger, having faith in my own abilities, stepping into something that I’ve never done before, and being willing to try something new.

Being willing to put myself in danger works well for a hospitalist. This attitude can lead to a willingness to teach residents in a way not done before, a positive attitude about the new family-centered rounds, active participation in a new committee, interest in a new skill like sedation, and better communication with that usually stand-offish consultant.

So, will you see me again, doing a graduation performance at the local Improv Theatre? Probably so! I’ve gotten addicted to the rush of having a “**Yes and …**” attitude—of “putting myself in danger” and trying things I didn’t think I could do! See you there!
Answer: D

Discussion
The patient’s constellation of clinical and laboratory features are consistent with acute rheumatic fever (ARF). The patient was evaluated by cardiology, and his echocardiogram and electrocardiogram were normal. However, the findings of migratory polyarthritis, elevated ESR, fever, and history of a documented recent GAS pharyngitis meet the current Jones criteria for ARF.

Acute rheumatic fever (ARF) is a delayed, nonsuppurative sequel of a pharyngeal infection with group A streptococcus (GAS). The Jones criteria were established to aid in diagnosis of acute rheumatic fever was first published by T. Duckett Jones, MD, in 1944 and has been revised over the years, with the latest guidelines from 1992. These most recent guidelines were reaffirmed in 2002 by the American Heart Association and should continue to be the accepted standard for diagnosis of initial attacks of acute rheumatic fever. The Jones criteria were established to avoid the overdiagnosis of ARF, such that meeting the criteria does not establish the diagnosis, but not meeting the criteria is meant to exclude the diagnosis and limit overdiagnosis.

Clinical Features
ARF occurs most frequently in children from four to nine years of age, and is characterized by an acute febrile illness that may present in several ways, including migratory polyarthritis, carditis, chorea, or skin manifestations (subcutaneous nodules or erythema marginatum).

Arthritis, which occurs in 80% of patients, is often an early symptomatic manifestation of ARF. It usually involves multiple large joints, particularly the knees, ankles, elbows, and wrists, while hips and smaller joints of hands and feet are less commonly involved. The typical pattern of the arthritis is a migratory polyarthritis where symptoms in one joint resolve before another joint becomes symptomatic. However, some overlap in joint involvement can occur and the pattern may appear to be more additive. The joints are often described as exquisitely tender to touch, and very responsive to nonsteroidal anti-inflammatory drugs. This form of arthritis rarely causes permanent joint deformity.

Carditis may present as chest pain, pleuritic pain, or congestive heart failure. Echocardiography has helped to affirm the role of valvular pathology, rather than myocardial disease, in the clinical manifestations of rheumatic heart disease. Nearly 60% of patients with carditis develop isolated mitral valve involvement, followed in prevalence by combined mitral and aortic valve involvement. Suspicious signs for carditis include new or changing valvular murmurs, cardiomegaly, congestive heart failure, and/or pericarditis.

Sydenham chorea is a neurologic disorder consisting of abrupt, purposeless, involuntary movements. Patients with chorea may also have muscle weakness or emotional disturbances. Subcutaneous nodules are another feature of ARF. These nodules are firm and painless, and the overlying skin is generally not inflamed. Erythema marginatum is the classic rash associated with ARF. This rash is an evanescent, non-pruritic rash, generally on the trunk. Both skin disorders (subcutaneous nodules and erythema marginatum) usually occur in patients with carditis.

Diagnosis
There is still no single sign, symptom, or laboratory test that is diagnostic of acute rheumatic fever. The current Jones criteria include clinical and laboratory criteria, including documented proceeding GAS infection. The clinical and laboratory findings are divided into major and minor manifestations based on the diagnostic importance of the particular finding. If supported by evidence of preceding group A streptococcal infection, the presence of two major manifestations or of one major and two minor manifestations indicates a high probability of acute rheumatic fever. There are three circumstances in which

Guidelines for the Diagnosis of Initial Attack of Rheumatic Fever
(Jones Criteria, 1992 Update)*

Major Manifestations
• Carditis
• Polyarthritis
• Chorea
• Erythema marginatum
• Subcutaneous nodules

Minor Manifestations
Clinical findings
• Arthralgia
• Fever

Laboratory findings
• Elevated acute phase reactants (erythrocyte sedimentation rate, C-reactive protein)
• Prolonged PR interval

Supporting Evidence of Antecedent Group A Streptococcal Infection
• Positive throat culture or rapid streptococcal antigen test
• Elevated or rising streptococcal antibody titer

*If supported by evidence of preceding group A streptococcal infection, the presence of two major manifestations or of one major and two minor manifestations indicates a high probability of acute rheumatic fever

the diagnosis of ARF can be made without adherence to the Jones Criteria. In these situations, the diagnosis should remain presumptive until other causes have been excluded. 1. Chorea as the only manifestation. 2. Indolent carditis as the only manifestation in patients who come to medical attention months after the acute infection. 3. Recurrent rheumatic fever with relapsing symptoms.

Differential Diagnosis

The distinction between acute rheumatic fever (ARF) without carditis and poststreptococcal reactive arthritis (PSRA) remains an area of discussion because the potential relationship remains unresolved. PSRA is defined as arthritis of > 1 joint, usually non-migratory, associated with recent group A streptococcal infection in a patient who does not fulfill Jones criteria for ARF. Various definitions have been suggested, but this one is most widely accepted. Some suggested distinguishing features of PSRA described in adults include:

1. Onset within 10 days of GAS infection, as opposed to 2 to 3 weeks in ARF
2. Prolonged or recurrent arthritis, in contrast to ARF, in which the arthritis lasts a few days to 3 weeks
3. Slow and partial response to nonsteroidal anti-inflammatory drugs, whereas prompt and more complete improvement is noted with ARF.

Barash et al. reviewed 68 patients with ARF and 159 patients with PSRA (all patients younger than 16 years of age), and concluded that at least 4 factors differed significantly enough to show that the two diseases are distinct; PSRA involved lower ESR levels, lower C-reactive protein levels, longer duration of joint symptoms after initiation of anti-inflammatory treatment, and relapse of joint symptoms after treatment cessation, compared with ARF. These authors concluded that ARF and PSRA are distinct entities, because if PSRA was a milder form of the spectrum of ARF, a slower response to treatment or a longer course of arthritis would not be expected from a milder form of the disease.

The distinction between PSRA and ARF without cardiac involvement remains a controversial topic, mainly because of the unknown risk of carditis after the first attack and the need for prophylaxis antibiotics. Some believe that PSRA is a distinct entity and carries a much lower risk for cardiac damage, so perhaps secondary prophylaxis is not required. However, a small proportion of patients with PSRA have been reported to later develop valvular heart disease, so others recommend secondary prophylaxis for several months while they are observed carefully for possible cardiac involvement. If carditis occurs, the patients should be diagnosed with ARF, and secondary prophylaxis should be continued for years.

Our patient’s presentation seems to be consistent with ARF without carditis. The time course between GAS pharyngitis and presentation with joint pain was 3 weeks, which is consistent with ARF compared to PSRA. Also, features of his joint pain is also more favorable for ARF compared to PSRA. His upper extremity joint pain resolved within a few days, which is not consistent with PSRA, in which a longer course of arthritis is expected. PSRA also tends to not to be migratory in nature, and this patient distinctly reports pain of upper extremity joints that resolved prior to developing hip pain. And, finally, his pain improved with NSAID treatment, which is more consistent with ARF compared to PSRA.

Answer A is not the best choice since the synovial fluid cell count and gram stain are not consistent with a bacterial process. In bacterial septic arthritis, synovial fluid cell counts range between 50,000 to 100,000 cells/mL, and gram stain may reveal bacteria. White blood cell count and inflammatory markers may also be higher. Answer B is not the best choice because aspects of his patient’s history are not consistent with toxic synovitis (TS). TS is the most common cause of nontraumatic hip pain in children, typically presenting between 3 to 8 years of age, and commonly presents after a viral upper respiratory infection. TS typically involves the hip joint, and may present with unilateral or bilateral hip effusions. However, this patient had other joint involvement (shoulder and wrist) which is not typically of TS, along with recent GAS infection, which is not associated with toxic synovitis. Inflammatory markers are often normal with TS, and this patient had an elevated ESR.

Answer C is not the best choice because this patient’s arthritis is not consistent with Lyme arthritis. While the classic rash associated with Lyme disease, erythema migrans, is often not present when arthritis develops, Lyme arthritis is not particularly painful and the joint is usually very swollen and warm. Monoarthritis of the knee is most common. This patient did not have knee involvement, and his hip joint and other upper extremity joints (by parental report), were not swollen or warm to touch. Answer D is the best choice given that features of this patient’s presentation warrant evaluation by cardiology for ARF. These features include: migratory arthritis, elevated ESR, fever, and documented recent GAS infection.

Prevention and Treatment

Although the precise mechanism by which streptococcal organisms cause disease is not well understood, a key goal of therapy is prevention of primary ARF and recurrent rheumatic fever. Prevention of first attacks (primary prevention) is directed at identification and prompt and appropriate antibiotics therapy for GAS pharyngitis. Patients already affected by rheumatic fever are at higher risk of developing recurrences and need continuous antimicrobial prophylaxis to prevent such recurrences (secondary prevention). The American Heart Association scientific statement on the prevention of rheumatic fever recommends that the duration of prophylaxis depend on the number of previous attacks, the time elapsed since the last attack, the risk of exposure to GAS infections, the age of the patient, and presence of cardiac involvement. Penicillin is the antibiotic of choice for both primary and secondary prevention. Red Book 2009 recommendations include penicillin G IM injection every 4 weeks or penicillin V 250 mg oral twice daily, or sulfonamide drugs. For patients who are allergic to penicillin or sulfonamide drugs, macrolides, like erythromycin is recommended.

There is no therapy that slows progression of valvular damage in the setting of ARF. The goals of treatment include symptomatic relief, eradication of GAS, and prophylaxis against recurrent rheumatic fever.

Continued on page 10
Patient Update

The patient's joint pain improved with NSAID therapy, and he was discharged to home on penicillin prophylaxis dosing of 250 mg twice a day. At his follow-up appointment with Infectious Diseases one month after discharge, he was doing well with complete resolution of his joint pains. Parents did not notice any limping or any limitation of movement of his extremities. At his follow-up appointment with Cardiology 6 weeks after discharge, his repeat echocardiogram continued to show no evidence of carditis or valvular abnormality. Cardiology recommended continuing prophylaxis with penicillin until at least 18 years of age.

References


Top Ten Articles and Issues in Pediatric Hospital Medicine 2009 as presented at the AAP 2009 NCE

Shawn Ralston, MD, shawnralston@msn.com
University of Texas Health Science Center at San Antonio

• Hewitt IK, et al. Early Treatment of Acute Pyelonephritis in Children Fails to Reduce Renal Scarring: Data From the Italian Renal Infection Study Trials. Pediatrics. 2008; 122: 486-490. (Another piece of data suggesting that our interventions may have less impact on eventual outcomes in pyelonephritis in children than we would like to think.)

• Montini G, et al. Value of Imaging Studies After a First Febrile Urinary Tract Infection in Young Children: Data From Italian Renal Infection Study 1. Pediatrics. 2009;123:e239-e246. (Further data questioning our ability to predict eventual renal scarring based on initial imaging and/or presence of vesicoureteral reflux.)

• Pennesi M, et al. Is Antibiotic Prophylaxis in Children With Vesicoureteral Reflux Effective in Preventing Pyelonephritis and Renal Scars? A Randomized, Controlled Trial. Pediatrics 2008;121:e1489-e1494. (Further evidence that prophylaxis may not be particularly useful in most grades of vesicoureteral reflux.)

• St. Peter SD. Thorascopic decortication vs tube thoracostomy with fibrinolysis for empyema in children: a prospective, randomized trial. J Peds Surg. 2009;44:106-111. (One of only three prospective trials of early VATS in children with empyema and a strong argument against it.)

• Newman TB; et al. Numbers needed to treat with phototherapy according to American Academy of Pediatrics guidelines. Pediatrics 2009;123:1352-1359. (An exceptionally useful stratification of risk of reaching exchange transfusion level of bilirubin based on gestational age, chronological age and gender; and an implicit criticism of the sensitivity of the AAP bilirubin nomogram.)

• Bonkowsky JL, et al. Death, Child Abuse, and Adverse Neurological Outcome of Infants After an Apparent Life-Threatening Event. Pediatrics 2008;122(1):125-131. (One of the better uses of retrospective data to clarify eventual outcomes after ALTE, demonstrating a very high risk of child abuse.)

• Caviness AG, et al. The Prevalence of Neonatal Herpes Simplex Virus Infection Compared with Serious Bacterial Illness in Hospitalized Neonates. J Pediatr 2008;153:164-9. (Another clever use of retrospective data, finding that the prevalence of HSV disease in infants under 28 days of age was quite similar to that of bacterial meningitis.)

• Finelli L, et al. Influenza-Associated Pediatric Mortality in the United States: Increase of Staphylococcus aureus Coinfection. Pediatrics 2008;122:805-811. (Data showing that an increase in influenza related mortality is likely associated with the community-acquired MRSA epidemic.)

• Luo Z, et al. Nebulized hypertonic saline/salbutamol solution treatment in hospitalized children with mild to moderate bronchiolitis. Pediatrics International. Epub. Sept. 2009. (Yet another article purporting to show a major benefit from using 3% saline in hospitalized bronchiolitis. Have we finally found a useful therapy for the scourge of pediatric hospital medicine?)

• Zaoutis T, et al. Prolonged Intravenous Therapy Versus Early Transition to Oral Antimicrobial Therapy for Acute Osteomyelitis in Children. Pediatrics 2009;123:636-642. (A large database review of osteomyelitis management showing wide variation in antibiotic regimens across 29 children's hospitals and no discernible impact on outcome. Also, points out a not insignificant rate (3%) of PICC line associated complications.)
Pediatric Hospital Medicine Fellowship Programs

Fellowships available in certified pediatric subspecialties and general academic pediatric training are listed each year (January) in *The Journal of Pediatrics Online*. The listing is for the academic year beginning 18 months after publication. In June letters are sent to the Chairman of the Department of Pediatrics at major hospitals in the United States and Canada directing them to an online form for submitting fellowships available for the academic year. Questions about the fellowship submission or listing should be directed to pedsfellowships@elsevier.com.

Baylor/Texas Children's Hospital (Houston, TX) Contact: Geeta Singhal at grsingha@texaschildrens.org
Children's Hospital Boston (Boston, MA) Contact: Chris Landrigan at clandrigan@partners.org
Children's National Medical Center (Washington, DC) Contact: Neha Shah at nshah@cmmc.org
Cincinnati Children’s Hospital (Cincinnati, OH) Contact: Pat Conway and Jeff Simmons at Jeffreysimmons@cchmc.org
Emory Healthcare (Atlanta, GA) Contact: David Lloyd at david.lloyd@choa.org
Geisinger Medical Center Janet Weiss Children's Hospital (Danville, PA) Contact: Paul Bellino at pbellino@geisinger.edu
Hospital for Sick Kids (Ontario, CA) Contact: Patricia Parkin at patricia.parkin@sickkids.ca
Indiana University/Riley Children's Hospital (Indianapolis, IN) Contact: Benjamin Bauer at bdbauer@iupui.edu
Kaiser Oakland (Oakland, CA) Contact: Jorge Gutierrez
Seattle Children's Hospital (Seattle, WA) Contact: 
Other: Affiliated with Washington University
University of California San Diego/Rady Children's Hospital (San Diego, CA) Contact: Erin Stucky at estucky@rchsd.org
University of San Francisco/All Children’s Hospital (San Francisco, CA) Contact: Rani Gereige at rgereige@health.usf.edu
Other: GAP with Hospitalist Track
University of North Carolina Chapel Hill (Chapel Hill, NC) Contact: Kathleen Bradford
Other: Program Currently on Hiatus
University of Rochester (Rochester, NY) Contact: Peter Szilagyi at Peter.Szilagyi@urmc.rochester.edu
Other: GAP with Hospitalist Track
University of South Florida Health Sciences Center (Tampa, FL) Contact: 
In Development
Children’s Hospital Los Angeles (Los Angeles, CA) Contact: Jennifer Maniscalco at jmaniscalcomd@gmail.com
Children’s Hospital Cleveland Clinic (Cleveland, OH) Contact: Wendy van Ittersum at vaniteree@ccf.org
St. Louis Children's Hospital (St. Louis, MO) Contact: Doug Carlson at Carlson@kids.wustl.edu
University of Texas Health Sciences Center San Antonio (San Antonio, TX) Contact: Noemi Adame at adamen@uthscsa.edu

For updates or if you would like to add (or delete) your program from the Pediatric Hospital Medicine Fellowship listing, please contact Niccole Alexander at nalexander@aap.org

---

**WANTED:** Child Life Specialists, Physician Assistants, and Nurse Practitioners!

If your responsibilities include general inpatient care, you can become an Affiliate Member of the Section on Hospital Medicine.

The total cost for Affiliate Membership is $60 -- no additional fees whatsoever! Visit us at www.aaphospmed.org.
Co-management of Pediatric Patients—can it really be done?

Shelley Wells Collins, MD, FAAP, seccgator@peds.ufl.edu
Chief Pediatric Hospital Medicine Division, Clinical Assistant Professor of Pediatrics, University of Florida College of Medicine, Gainesville, Florida

Co-management of pediatric patients can be very rewarding to both patients and providers if handled properly. Differences of opinion, alternative approaches to a problem, and varied interpretations of the literature are to be expected when you practice in a setting where multiple people are involved in a patient’s care. Coordination of care can be difficult due to the complexity of both the patient and the relationship between caregivers. At the University of Florida, we have explored the concept of co-management of pediatric patients to understand the benefits and problems to consider when designing a co-management model of care. Although there are many issues to address, key issues include identifying a leader who will direct care and maintaining clear, open and accessible communication between all services.

The literature supports clear advantages to using a co-management model with data that reflect successful patient outcomes for co-managed patients. Bekmezian et al describe a staff only version of pediatric hospitalist care of subspecialty patients. In their article the authors showed a significant decrease in cost and hospital days for hospitalist-directed co-managed patients after they controlled for severity of disease. They demonstrated a trend towards a lower mortality and readmission rate on the hospitalist service versus that of the subspecialty service. Their data seems to indicate an improved quality of care for the subspecialty patients when a hospitalist co-managed. Most believe that the increased availability of the hospitalist may contribute to more timely and efficient use of resources and can allow for earlier decision making with regard to test results. Furthermore, because the hospitalist is available to return to the bedside, early improvements or deteriorations can be caught sooner, potentially leading to fewer complications and a lower mortality rate. From a subspecialist standpoint, having hospitalists available to serve as a primary attending allows them increased freedom to oversee busy clinics and assist with more patients.

The Congenital Heart Center (CHC) at the University of Florida embarked upon an experiment with co-management two years ago with a team that was made up of a cardiothoracic surgeon, cardiologists, and a hospitalist. Originally, the hospitalist was to serve as a consultant to the team to address general pediatric issues that arise in the CHC inpatient population. Over time it evolved into an arrangement that looked more like a co-management model than a consultation model. This transition required a maturation of the relationship between the hospitalist, the cardiologists and the surgeons and encountered issues regarding who would be attending, daily communication, care and discharge decisions, nursing calls and billing.

Communication
The hospitalist and subspecialists must feel comfortable openly discussing patient care decisions, options, and disagreements. Early in our relationship it meant daily rounds and frequent discussions about patient care with joint team decisions. Key aspects of the relationship discussed included: who is the admitting physician, who will be responsible for the daily notes and nursing calls, and who makes the final discharge decision and takes care of the discharge planning and paperwork. As the team became more comfortable working together, the interactions between the hospitalist and the subspecialist became routine. The team quickly evolved into an arrangement where the patient is admitted to the cardiologist on service with the hospitalist serving as the primary attending with involvement of the cardiologists and surgeons as needed. Daily notes and nursing calls are handled by the hospitalist with resident support. The discharge decision is made by the hospitalist, but up to the point of discharge there are daily discussions with subspecialist (surgeon or other) regarding discharge criteria in anticipation of discharge. Discharge orders and dictation summary are the hospitalist’s responsibility. Discussing these details may seem laborious, but they are important in developing a solid working relationship amongst physicians on the team.

Working with Surgery
Care decisions for co-managed surgical patients can be more challenging because surgeons may be less available for direct communication and less willing to negotiate with the hospitalist team regarding management questions. Just as with any medical subspecialist, the grounds rules must be established at the beginning of the relationship. In the co-management model at the University of Florida, the involvement with the cardiothoracic patients occurs before surgery and then within a few days postoperatively. Issues such as nutrition, antibiotic choices, management of fever and pain control are left to the discretion of the hospitalist. Questions that relate to cardiac medications or rhythm disturbances are handled either by the cardiologist, the hospitalist, or a combination. Problems directly related to the surgery are handled by the surgeons. Daily rounds and open discussions have led to a comfortable co-existence where the expertise of all is respected.

Continuity
Continuity is an important component of care for increasingly complex patients. In our model, the cardiologist rotates off service weekly, but the hospitalist stays on service for 2–4 weeks. This helps increase the level of familiarity with the patient and allows for earlier recognition in status changes and better patient outcomes.

Billing
Billing for this type of arrangement is a primary concern for all team members. Since the hospitalist rounds every day and provides the continuity, the admission, daily visits, and the discharge are always billed by the hospitalist. If the subspecialist is involved in the care of the patient then he or she will bill for a consultation and followup visits as necessary. If the patient is complex, and additional time is spent with the patient, then both the subspecialist and hospitalist will code using a higher level. Sometimes there is a variation in roles and responsibility, if necessary to efficiently take care of the patient. Our
congenital heart center has established a group RVU target that includes hospitalists, cardiologists, and surgeons as well as individual targets with an agreed upon formula used to calculate bonus compensation. This makes it easier for the team to divide work and responsibilities with less concern about financial pressures.

Conclusion
The most important aspect of co-management of the pediatric patient is good team communication that centers first on the needs of the patient. If everyone agrees that the patient is the biggest beneficiary of a co-management model, then it creates a smoother path for everyone to follow. Further team communication revolves around team function with special focus on team member roles—admitting/consulting, and expectations—daily notes, billing, discharges. The relationship also requires constant reassessment of the service as successful partnerships allow for adaptability and change. Through careful creation and evaluation of a co-management model there is potential for improved patient care, better outcomes, shorter lengths of stay, and improved team financial reimbursements.

References
1. Bekmezian A, Chung PJ, Yazdani S. Staff-Only Pediatric Hospitalist Care of Patients with Medically Complex Subspecialty Conditions in a Major Teaching Hospital. Arch Pediatr Adolesc Med 2008; 162 (10):975-980

Pediatric Research in the Inpatient Setting (PRIS) Network
http://www.ambpeds.org/research/research_pris.cfm

Over the past several years, momentum to develop a PRIS network to collaboratively study key questions in inpatient pediatrics has steadily mounted. We now have over 200 hospitalists from 80 centers participating in the network, representing centers from the United States and Canada. In 2009, the Pediatric Hospital Medicine Strategic Roundtable led to a series of discussion and outline for a plan how PRIS would achieve extramural funding to conduct studies that address clinically relevant questions germane to inpatient pediatrics. PRIS formed a new Executive Council of hospitalist-investigators from core PRIS sites (in addition to the existing centers) and worked through issues pertaining to mission, vision, values, governance, funding strategies and early discussion of particular questions that may be studied.

Members of the Executive Council are:
• Rajendu Srivastava, MD, MPH, Chair
• Christopher P. Landrigan, MD, MPH, Past Chair
• Patrick Conway, MD, MSc
• Ron Keren, MD, MPH
• Sanjay Mahant, MD, MSc
• Samir Shah, MD, MSCE
• Tamara Simon, MD, MSPH
• Joel Tieder, MD, MPH
• Karen Wilson, MD, MPH

PRIS remains an independent entity founded through a collaborative effort of three organizations: the American Academy of Pediatrics, the Society for Hospital Medicine, and the Academic Pediatric Association. Core network management support has been generously provided by the Academic Pediatric Association (APA). The APA has remained a key organization that has helped PRIS in the redesign and will continue to work with PRIS in the execution of the network goals. The mission of PRIS is to improve the health of and healthcare delivery to hospitalized children and their families. This will be done so by conducting larger, multi-institutional studies of inpatient pediatric care inadequately addressed to date through smaller studies and/or single site studies.

If you are interested in being a part of this network, please email Raj Srivastava at raj.srivastava@hsc.utah.edu and Nui Dhepyasuwan at nui@academicpeds.org.

SOHM Visiting Professor Consultation Grants Program

The Visiting Professor Consultations Grants Program was created by the Section on Hospital Medicine (SOHM) Executive Committee last year to assist hospitals and group practices in assessing and developing their Pediatric Hospital Medicine Programs.

Each award would provide a $3,000 honorarium for a 2-day consultation.
This honorarium would not include travel, hotel or meals
(selected program would be expected to cover those expenses).

Possible activities for the consultant include educational programs, meetings with key institutional stakeholders, detailed SWOT analysis of the program, review of business plans, and more.

For more information on this grant program, please visit the Section web site at www.aaphospmed.org.

2009 Recipient

Program: Children’s Hospital Los Angeles Hospital Medicine Program
Consultant: Erin R Stucky, MD, FAAP
Critically Appraised Topic:
In infants under 1 year of age with pyelonephritis, is initial therapy with IV vs. oral antibiotics associated with lower rates of treatment failure or renal scarring?

Brian Alverson, MD, FAAP, briankalverson@gmail.com
Hasbro Children’s Hospital, Providence, RI

Reviewers:
Michael Bendel-Stenzel, MD, FAAP, University of Minnesota, Minneapolis, MN
Kelly Wood, MD, FAAP, Primary Children’s Medical Center, Salt Lake City, UT

Summary Statement
In infants under 1 year of age, UTI is the most common form of serious bacterial infection, affecting roughly 5% of febrile infants.1,2 Previously, standard of care for pyelonephritis management in infants under 1 year of age was a course of IV antibiotics. Several studies are now available demonstrating the non-inferiority of early transition to oral antibiotics after short-course IV therapy.3 Recently, other studies have addressed the question of primary oral antibiotic management of these infants.4-8 The minimum age at which it is safe to treat infants with primary oral antibiotics for urinary tract infection has not been fully elucidated.

Clinical Bottom Line:
1. Primary oral therapy for infants with uncomplicated pyelonephritis appears equivalent to primary intravenous therapy.
2. It may not be possible to distinguish complicated from uncomplicated pyelonephritis immediately upon presentation, therefore, initial IV therapy is still recommended by some for the youngest infants (<90 days of age per NICE guidelines).
3. Primary oral therapy has not been significantly evaluated in infants under 1 month of age.

Brief Review of Important Prospective Studies Assessing Initial Oral Therapy for UTI in Infants:
Hoberman et al2 performed a prospective randomized trial of 306 infants between 1 and 24 months of age presenting to the emergency room with a febrile urinary tract infection. Excluded patients included those with known abnormalities of the urinary tract, underlying chronic disease, or with clinical sepsis. Patients were randomized to either oral cefixime for a 14 day course or intravenous cefotaxime for 3 days or until afebrile for 24 hours, whichever was longer, followed by a completion of a 14 day course with oral cefixime. Short-term outcome of 24 hour test-of-cure cultures were negative in all patients tested. Time to defervescence was similar between groups. The re-infection rate was equivalent in the two groups, and incidence of asymptomatic bacteriuria was similar in the two groups. Despite a tested oral compliance rate of 85%, there was no difference in new renal scarring between the two groups 6 months from therapy. No difference in scarring was notified when stratified for age less than 1 year and those 1 to 2 years. It is important to note that while the study included infants between 4 and 7 weeks of age, there were only 13 patients (4 on oral therapy and 9 on initial intravenous therapy) who were in that age range. The authors did not provide a detailed age range of the patients in the study and did not stratify for any detailed statistical correlation between age and renal scarring. It should be noted that this study reported a lower-than-previously reported rate of renal scarring in this population and had a marked predominance of girls (90%), despite a mean age of 8 months, as female predominance is not expected until over 1 year of age. Lastly, in this study the dose of oral therapy was doubled on the first day of therapy, which is not common in general practice.

Montini et al6 published a prospective randomized trial of 502 children ages 1 month to 6 years with a clinical diagnosis of pyelonephritis. Pertinent exclusion criteria included clinical sepsis, abnormal prenatal ultrasound findings, or chronic kidney disease. All children were randomized to either 10 days of oral amoxicillin/clavulanic acid or a three-day course of ceftriaxone followed by seven days of oral amoxicillin/clavulanic acid. Randomization was stratified for age (less than two years versus more than two years), resulting in a mean age in both groups of 8 months, with a standard deviation in both groups of about 12 months. As expected, sex of infants in this study population was heavily influenced by age. In the end, the authors recruited over 70 girls and over 110 boys between 1 and 6 months of age. After 6 months, there were more girls in the study. It should be noted, however, that the authors again did not delineate how many infants in the study were between 1 and 2 months of age, nor did they stratify results based on young infancy. The authors concluded that there were no differences in time to defervescence or renal scarring at 12 months from the time of initial infection between the two groups. These results were consistent when the group under 2 years of age was separated out from the entire population (however those data were not shown). It should be noted that only 80% of the initially enrolled patients were available for the 12-month followup to assess for renal scarring, potentially limiting the study.

Neuhaus et al5 performed a prospective randomized trial of 365 children ages 6 months to 16 years with a clinical diagnosis of pyelonephritis. Children with chronic kidney disease and certain abnormalities of the urinary tract were excluded. Children were block-randomized to receive either 14 days of oral cefitibuten or intravenous ceftriaxone for 3 days followed by 11 days of oral cefitibuten. After a substantial dropout rate in the study, there were 80 children in the oral group and 72 in the intravenous/oral group who completed the follow-up scintigraphy for renal scarring.
6 months after treatment. There were no differences in renal scarring rates in children who received oral versus intravenous/oral therapy at 6 months; however, the authors did not stratify results by age. This lack of association between route of therapy and renal scarring held even when patients were analyzed by degree of underlying urinary tract pathology, such as vesicoureteral reflux. It should be noted that the authors found no difference in rates of renal scarring between infants 6-12 months and in the older children. Also, the dose of oral therapy was doubled on the first day of therapy, which is not common in general practice.

Baker et al,7 conducted a small prospective randomized trial of 69 children ages 6 months through 12 years presenting to an emergency department with fever and clinical diagnosis of urinary tract infection to evaluate if addition of a single dose of intramuscular ceftriaxone to oral treatment course resulted in more rapid sterilization of urine and clinical improvement. Mean age of the patients was 3 years in both groups. The authors did not stratify results by age. Patients were randomized to either a single dose of IM ceftriaxone followed by 10 days of oral trimethoprim/sulfamethoxazole versus 10 days of oral trimethoprim/sulfamethoxazole. Treatment failure was defined as either microbiologic or inability to tolerate oral medications. There were no differences in rates of treatment failure in either group; however, it should be noted that treatment failures were statistically more likely to be boys (67% boys in the failure group). The authors did not assess for renal scarring or other long-term outcome during this study.

Hewitt et al8 pulled patients from two previous studies, Italian Renal Infection Study 1 and 25. Hewitt's sample included 287 patients previously enrolled in these prospective trials who were between 6 months and 7 years of age. They then tabulated the duration of fever prior to evaluation and intervention, and assessed the degree to which renal scarring was found to be present, and showed no correlation between time to initial therapy and renal scarring at 12 months from infection. When age stratifying by quartiles, they did not find an association with age and predilection for scarring between 6 months and 2 years of age. While 149 of these children received an initial PO dose of antibiotics and 138 received an initial dose of IV antibiotics (as described in the previous paper by Montini), the authors did not stratify risk of renal scarring at 12 months of age for delayed oral versus delayed IV therapy. However, results from the original Montini study showed no difference between these two groups as a whole, as discussed previously.

Incidence of Bacteremia in Infants with UTI:
Shaw et al undertook a prospective prevalence study of UTI in all young infants under 1 year of age and girls ages 1 to 2 years. They found an overall rate of urinary tract infection of 3.3% and a rate of bacteremia in UTI of 2.5%. Bachur, in a study of children under 90 days retrospectively identified 316 patients with UTI, of which 11 (3.4%) had concomitant bacteremia.5 Children with clinical sepsis were excluded from the prospective oral therapy articles by Montini, Neuaus and Baker, so rates of bacteremia cannot be identified from those articles.40 Hoberman carefully tracked bacteremia and its resolution in his study, where 4.3% of the patients who had blood cultures done were positive. He noted that infants with bacteremia in the setting of UTI were significantly younger (5.4 months average as compared to 8.5 months of age), and 77% of those patients with bacteremia and urinary tract infection between 1 and 6 months of age were indistinguishable from infants without bacteremia in the setting of UTI in terms of clinical appearance and labs. Bacteremia was cleared in all patients within 24 hours of starting antibiotics regardless of mode of delivery of antibiotics, questioning the need for routine blood cultures in non-septic appearing infants and children with an acute UTI. It should be noted, also, that per protocol, patients who were deemed ill were not randomized to oral therapy, and the authors did not report how many patients on oral therapy were bacteremic. Incidence of scarring between blood culture positive and negative patients were similar; however, reinfecction was more common in the blood culture positive group.

Further Studies:
Given that the rate of bacteremia in the youngest infants with UTI may be as high as 5% and that this information is not available on initial evaluation of the infant, it is important to further evaluate outcomes of bacteremic infants with UTI. Some practitioners may remain reluctant to act on the information that oral routes do not negatively impact outcomes in UTI if they are concerned about high rates of concomitant bacteremia.

References

Additional reference:
The Value in Pediatrics (VIP) Network – Pediatric Hospital Medicine’s “Escape Fire”

Matthew Garber, MD, FAAP, matthew.garber@palmettohealth.org
Steve Narang, MD, FAAP, snarang@pcaqfor.com
Brian Pate, MD, FAAP, bpate@cmh.edu
Shawn Ralston, MD, FAAP, shawnralston@msn.com
Mark Shen, MD, FAAP, mshen@seton.org
The VIP Network Steering Committee

Better is possible. It does not take genius. It takes diligence. It takes moral clarity. It takes ingenuity. And above all, it takes a willingness to try. – Atul Gawande, MD, MPH

How does your hospital treat bronchiolitis? What is your rate of bronchodilator use and steroid use? How about chest x-rays and RSV testing? What is your pulse oximetry “cutoff” to need oxygen? How about your patient with cutaneous abscess and cellulitis? What is your rate of incision and drainage? How about vancomycin use? How does your group treat osteomyelitis? What is your rate of early switch to oral versus outpatient IV antibiotic therapy? What is your rate of use of antibiotic use for community acquired pneumonias? What is your rate of chest x-rays in your patients with asthma? What is your length of stay, cost, and readmit rates for these three common diagnoses? What if there was a hospital in your region that had shorter length of stays, lower readmissions and lower costs in treating these common diagnoses compared to yours, and had implemented an innovative system to ensure that best practice processes were practiced at all times? What could you learn from that high performing organization? What could you teach each other? How can everyone improve and get better?

Don Berwick, one of the most powerful figures in modern healthcare and president of the Institute of Healthcare Improvement, believes strongly that the secret to improvement is that that there are no secrets. In one of his many renowned speeches, entitled ‘Escape Fire,’ Berwick eloquently tells the story of a 1949 Montana forest fire that fiercely and rapidly engulfs a group of firefighters. While most of the group begins to panic and lose their sense of teamwork and cohesion, their commander, Wag Dodge, immediately recognizes a simple solution. Taking out some matches, he sets the tall dry grass ahead of him on fire, and steps in the middle of the open burned-out area. With that simple maneuver, he calls his group towards him, hoping to lead them towards this new path into safety. However, instead of following their commander into what later came to be known as an “escape fire,” most of his men lost their ability to act like a team and think coherently. All but two of his men died in the inferno, while inside his escape fire, Dodge survived essentially unharmed.

Our healthcare system needs an “escape fire” – innovative leaders and organizations that forge the path ahead to safer, more effective, equitable and patient-centered care. Dr Berwick believes that, in order to create an ‘escape fire’ in medicine, we must find the innovators and best performers among us by measuring our performances and by being more open about what we do in our daily practice. According to Dr Berwick, “‘No secrets’ is the new rule in my escape fire.” If we want to learn how to deliver better health care, we must learn from each other. “The lessons are hidden. But if we open the book on physicians’ results, the lessons will be exposed”. If we are genuinely curious about how the best among us achieve their results, their practice will spread among us.

Founded in the fall of 2008, the Value in Pediatrics (VIP) Network is the “escape fire” for pediatric hospitalists. It is a national benchmarking database that allows hospitals of all sizes and locations to contribute their secrets on how they manage common pediatric inpatient
diagnoses with one simple goal in mind: to improve. Founded by five pediatric hospitalists fueled by the energy provided by the AAP SOHM listserv®, and with no start-up funding, the VIP Network today has over 25 members who contributed data for the VIP Network's 1st project: “Benchmarking Bronchiolitis.” Early on it became very clear that, even though there was incredible variation in the various hospitals' processes and outcomes, there were several high performing hospitals that were willing to share their secrets on how to develop a system of care that allows for selective utilization of bronchodilators, steroids and other best practice processes.

At the Pediatric Hospital Medicine 2009 meeting last July in Tampa, Florida, over 20 representatives of the VIP Network member-institutions spent a magical evening together sharing ideas and stories. It is clear we can learn many lessons from each other. Was the use of a Respiratory Therapist-driven protocol the secret to decreasing overuse of unnecessary bronchodilators? Was there an ED communication tool that would engage our colleagues in that silo to deliver best-practice care to our bronchiolitic patients? How about the use of a lower pulse ox cut off to decrease length of stay? Collaboratives formed in search of improvement. As the night wound down, the energy was still palpable. There were clearly no secrets. An “escape fire” had been created and unlike Dr Berwick’s story, the whole group stayed together, committed to creating a new path of collaboration.

The story of the VIP Network is still being told. Over 25 members strong, we are open to new members and new ideas. Currently, we are in the process of collecting 2008 bronchiolitis data and are awaiting results on our RT-driven protocol collaborative. We are also actively seeking support for funding as we continue to lay the foundation for what we believe will be a sustainable model for pursuing improvement in all aspects of pediatric hospital medicine. As we watch our elected officials grapple with the challenging issues of balancing cost, access and quality in our complex health care system, we challenge our colleagues in Pediatric Hospital Medicine to open up their secrets, measure themselves and challenge each other to improve.
KidsLink, The Hospitalist Program at Phoenix Children’s Hospital

Ryan S Bode, MD, rbode@phoenixchildrens.com
Hospitalist Division and Section Chief, Phoenix Children’s Hospital, Associate Program Director, Pediatric Residency Program, Assistant Professor of Clinical Pediatrics, University of Arizona

**Program History and Overview**

The Hospitalist Division at Phoenix Children’s Hospital (PCH), also known as KidsLink, officially separated from the General Pediatrics Division in November of 2007. Up to that point, we were traditional academic general pediatric faculty who saw unassigned and medically complex children that were hospitalized, and we also staffed the general pediatric clinic. As fewer community pediatricians rounded on their hospitalized patients, the volume of our inpatient service increased dramatically. At the same time, patient acuity continued to rise, and the move toward 24/7 in-house coverage increased the demand for hospitalist services. The creation of the Hospitalist Division has enabled us to meet the clinical need and promote further growth and expertise. PCH currently has 300 beds but is in the midst of a $600 million expansion project including an 11-story patient tower that will increase bed capacity to over 600 by its completion in 2012.

In addition to the academic group, there are two private hospitalist groups in Phoenix that see patients at PCH as well as at the surrounding community hospitals. The academic group sees approximately 60% of general pediatric inpatients, with the two private groups admitting the remainder. In September 2008, we created a Hospitalist Section within the medical staff. The Section is primarily charged with credentialing and privileging, as well as quality and peer review. It also gives a voice to hospitalists within the medical staff.

**Clinical Service and Programs**

Using projections from data through September 2009, we estimate our Hospitalist Division will have over 4,500 admissions for the year with an average of 12 admissions per day, and 15,000 subsequent visit encounters. The majority of hospitalized patients at PCH are admitted under the hospitalist service with specialists serving as consultants when appropriate. Exceptions to this include Hematology/Oncology, dialysis and chronic kidney disease, and epilepsy monitor unit patients.

We also provide a consultation service, which is primarily utilized by our general and specialty surgical services. We are heavily involved and serve as the primary attending for the majority of PCH’s Rehabilitation Program, Tracheotomy/Airway Program, Telemetry Unit, and Complex Pain Program. For the rehab program, the hospitalist works closely with a Pediatric Physical Medicine and Rehabilitation physician and a multidisciplinary team. Patients on the Tracheotomy/Airway services are primarily those with new tracheostomy or ventilator or home ventilator patients who are hospitalized with an acute illness. These patients are managed with the assistance of the Pediatric Pulmonary service. We also run the Rapid Response Team, which is comprised of a hospitalist, senior resident, respiratory therapist and PICU nurse.

**Staffing**

Coverage at PCH is 24/7 in hours through a shift model. There are four hospitalists daily from 7 am to 3 pm. The hospitalists serve as the key teaching faculty for the Pediatric and Medicine-Pediatric Residency Programs at PCH – over 90% of our patients are on the resident teaching service. Each of these hospitalists leads a team of one senior resident, two interns and up to three 3rd and 4th year medical students. Each team is capped at 20 patients with a daily average census per hospitalist of approximately 10-15 patients. An additional “admitting” hospitalist works daily from 1 pm to 9 pm, and a “nocturnist” then covers from 7 p.m.
to 7 a.m. Nearly 70% of our admissions are between 12 pm and midnight, and this additional and overlap coverage enables timely and efficient care of new patients. We have an expectation that all new patients and ICU transfers must be assessed and care initiated within 4 hours from the time of admission.

The Hospitalist Division is composed of 19 physicians representing approximately 14 clinical FTEs. A full time clinical provider works an average of 39 weeks on service per year. Additional responsibilities of these physicians include: Associate Director of the Residency Program, Director of Medical Student Education, Medical Director of the Telemetry Unit, and Director of the Mobile Health Van. We are integral members of various hospital committees including: Medical Executive, Medicine, Institutional Review Board, Bioethics, IT and Forensics.

Medical Education
The Hospitalist Division has a critical role in the education of our pediatric and medicine-pediatric residents as well as medical students from the University of Arizona and Midwestern University. Rounds are conducted daily with an emphasis on family centered aspects and bedside teaching. The hospitalists are also integral participants in morning report, and regular contributors to the noon conference lecture series. We have 3 out-of-training Chief Residents, and each of them fulfills a junior faculty role, serving 2 mentored months of Attending on the hospitalist service. We have representation on the Graduate Medical Education Committee, Residency Curriculum Committee, Continuing Medical Education Committee and Medical Student Liaison Committee.

Scholarly Activities
We have been very active in hospital quality initiatives, including protocol and clinical pathway development. With revisions to our Bronchiolitis Protocol, primarily changing from continuous to spot pulse oximetry, we decreased our length of stay by 21% - almost an entire day – between 2008 and 2009. A revised asthma protocol was recently rolled out, replacing the use of small volume nebulizers with metered-dose inhalers. We have research interests in bronchiolitis, ALTE, HIV, injury prevention, resource utilization and medical education. We also have tremendous opportunities for clinical research, and expect a significant growth in this area.

Future Directions
Our clinical service will continue its rapid growth, particularly with an anticipated doubling of our inpatient capacity at the completion of PCIH’s expansion. The vision of the KidsLink Hospitalist Program is for the involvement and success in program development, medical education, administrative and leadership positions and scholarly production to grow at a similar rate. For more information, please contact Dr Ryan Bode at rbode@phoenixchildrens.com.

Interested in having your hospitalist group featured in Practice Profile? Email Susan Wu at suwu@chla.usc.edu.
What do you think about a hospitalist fellowship?"  
A bright-eyed third-year resident sat before me, eagerly anticipating my response. On that day it felt like a lot of pressure having to come up with a suitable answer to address her lifetime career goal of becoming a pediatric hospitalist. "I feel like I need to make a decision pretty soon so that I can get my life organized and move forward with this," she continued. More pressure. Without discouraging her, how was I going to comfortably balance some of the tensions noted in recent discussions on the AAP SOHM listserv® sparked by the question, "Should programs hire hospitalists straight out of residency training?"

The answer to that last question is actually straightforward, and it's an immediate, unqualified "yes." The laws of supply and demand, coupled with the lack of a regulatory requirement for additional training, make fellowships unnecessary for just landing a job. Furthermore, 94% of us believe that our training was adequate preparation for the clinical roles of a hospitalist.1 Although this view may be changing in the era of duty hours restrictions, it is clear that residency training is still viewed as a sufficient demonstration of clinical competence by many groups. But just as the enlightened pediatric hospitalist views his or her job as much more than the immediate clinical care of the diseases of our inpatients, somewhere along the way our view of fellowship training needs to evolve as well. Outside of clinical competence, there are many other domains like quality improvement, education, and administration in which hospitalists wish they had more preparation and training.1 If we are committed to sustainable and successful careers in an emerging young field, we must pay close attention to our collective development in these areas. Perhaps no one role is more illustrative of our untapped potential than that of the clinical educator.

It is unfortunate that after almost a decade of trial and error, I'm still not sure whether I am an effective teacher. On one hand, I am pretty good at teaching knowledge. I know how to copy and paste from UpToDate® to PowerPoint. I can pimp with AAP PREP questions. And on an advanced level I illustrate flaws in clinical reasoning by complaining about emergency department million-dollar workups and soft admissions. But at some point, in all of this fun, I've realized that there are a lot of educational concepts where I don't remember "seeing one" before I tried to make the leap to "doing one" let alone "teaching one" (as in a Residents As Teachers curriculum). How do I address the resident that aces shelf exams but communicates poorly with others? How do I actually teach the importance of life-long learning? What about the unprofessional student? How do I best illustrate the complexity of the health care system or the importance of quality and safety?

As I sit on the other side of the curtain, reviewing feedback on education in my own hospital medicine program, I wonder if better training could remedy some of these common complaints from both residents and attending.

• All of the attendings do things differently, and I feel like I have to just memorize what they each do; they don’t let me make decisions.
• Morning report is so painful; residents don’t know how to think anymore.
• No one gives me feedback until it’s too late.
• When the attending pimps me at the bedside, I’m afraid the family will not trust me anymore when I don’t know the answer.
• That resident needs to fail this rotation … wait, why are his evaluations always above average?

I'm going to guess that these are not unusual complaints in any program. And, yet, hospitalists are perfectly poised to be problem-solvers, if not leaders, in medical education.2,3 Getting from here to there, however, will require a significant shift in the currently accepted ontogeny of clinician-educators. We should begin by acknowledging that residency training provides little in the way of formal education theory—that most attendings lack any semblance of preparation for the role. We must highlight the incredible complexities of teaching ACGME competencies at the bedside in an interdisciplinary and family-centered manner. Given this chasm between where most attendings start and what they must master, we will set standards for both the learning and ongoing assessment of teaching skills.

On a formal level, this is most readily accomplished through structured training programs, whether fellowships or dedicated protected time for faculty development. Most academic
true careers in hospital medicine, we must address our deficiencies. And, thus, as I returned my attention to the future hospitalist sitting across from me, I smiled as she explicitly acknowledged the need for a stronger introduction to quality improvement, further training in education, and continued mentoring of her clinical experience. She was making the decision to thrive in our field and was searching for the most nurturing environment for her early development as a pediatric hospitalist.

This careful attention to the formative context of our early careers, whether achieved through fellowship training or protected time for faculty development, must become an integral part of our culture in Pediatric Hospital Medicine. The alternative is continued physical growth with pubertal delay, an admittedly awkward time for everyone involved. Hospitalist fellows are expected to grow up to be leaders for the field. Given the rapidity with which our field has matured, shouldn’t we all be leaders by now?

Hospital Medicine fellowships clearly aren’t necessary for the job. Residency and on-the-job experience allow most of us to figure out how to punch the clinical clock. But for those who seek centers find fellowships to be the more financially feasible option. And although this may sound an impossible proposition given current workforce demands, the alternative is the status quo, where generations of learners are taught by clinicians, not all of them educators. If we demand three years of residency training to assure clinical competence for patient care, how can we accept zero years of training in education for the teachers of those same residents? Should all attendings be permitted to obtain further training in teaching only if it interests them and only on their own time? And to return to our other roles as hospitalists, if we are similarly expected to lead quality and safety efforts, how long must we agonize in hospital committee meetings before we are given improvement tools for success?

References:

See listing of Pediatric Hospital Medicine Fellowship Programs on page 11.
Hospitalists in Transport: Opportunity or Albatross?

Bryan R Fine, MD, MPH, FAAP, bfinemd@gmail.com
Director, Division of Pediatric Hospital Medicine, Children’s Hospital of The King’s Daughters

Vignette: A call comes in concerning a 4-year old child who is currently inpatient at a small outlying institution. The patient was admitted for simple pneumonia, and remains hypoxic. The parents are requesting transfer to your regional pediatric center. The pediatrician caring for the patient, while not particularly concerned about the child’s status, agrees that a transfer is reasonable, both for clinical assessment and parental peace-of-mind.

The transfer of children from hospital-to-hospital – interfacility transports – has traditionally been handled by intensive care and emergency room pediatricians. What began more than three decades ago as specialty-trained teams for the transport of critically-ill neonates has grown to encompass an industry of pediatric transports, represented most clearly by tertiary care centers that own ambulances and helicopters and employ full-time staff – including nurses, respiratory therapists, paramedics, and sometimes physicians – to be on-call at a moment’s notice for the pick-up of sick children.

Over this time, the nature of transports has changed, as has the make-up of hospital teams. With the closures of pediatric wards at many community hospitals due to financial constraints, pediatricians and emergency room doctors are faced with children who, while ill, may not require true critical management but rather are dispositioned according to age. At smaller hospitals there may be no beds for a two-year old, or no nurses who are comfortable with this age group. Additionally, families may request transfer to the regional pediatric center for a sense of comfort.

Hospitalists are well situated to assist in the safe, efficient, and timely transport of these children. Since this is a change from the historical norm, there are several issues to address by institutions considering putting hospitalists in this role.

The Process
Before detailing specifics, it is important to understand how existing pediatric transport teams function. Oversight is handled by a Medical Director, usually an intensivist or an emergency physician. In some cases there will be two Medical Directors, one for pediatric transports and the other for neonatal services. The Medical Director(s) oversees the entirety of the operation, including qualifications and training of personnel, selection of equipment, development of policies and protocols, and quality monitoring and improvement. Some hospitals have separate neonatal and pediatric teams, including separate staff and equipment, while others combine the services.

Medical Control physicians oversee individual transports. These pediatricians activate transport, communicate with the transport team to provide medical guidance while the stabilization and transport are in progress, and then assume shared responsibility – along with the referring physician – for the safe management and transport of patients from the referring site. The responsibilities of the medical control physician are determined by the Medical Director.

Are Hospitalists qualified?
The first question we, as hospitalists, must address is whether we are qualified by our training to serve this population. Historically pediatric transfer has focused on clinical situations where intensivists and ED physicians have more experience. Traumatic head injuries and critical airways, for example.

Hospitalists have evolved into very different roles at our different institutions. We have no standard competencies as yet. Some of us will be housed in newborn nurseries, others will service mostly inpatient wards, and others may actively practice in intensive care units. Our breadth of services is vast. Ultimately, our qualifications to assist with transports come with the caveat: Know your resources and limitations, and know when to consult your back-up and specialty physicians.

The safe transport of children is clearly the primary goal. This can be addressed by standardizing the transport process as much as possible and minimizing variability between providers. Routine use of a transport checklist and / or transport intake record is strongly advised, and maintenance of a transport log will allow for real-time review of cases for quality improvement and data management.

Credentialing
If you are involved in transports, or anticipate doing so as Medical Control physician, there is the question of credentialing. Unfortunately, there is no standard rule - fifty states with fifty different regulations and regulatory bodies. The basic guidelines to protecting yourself and your institution are to 1) closely review your state guidelines regarding interfacility transport and 2) review your hospital medical staff privileges form.

While Medical Directors are fairly closely regulated given their administrative role over the whole process, the requirements for Medical Control are far less clear, and it is this role where hospitalists will likely serve (at least initially).

Basic recommendations for minimal qualifications include mandatory maintenance of BLS, PALS, NRP and/or ACLS, as appropriate, and a documented
Ultimately, hospitalist efforts will land ultimately in that ever-nebulous category of ‘value-added.’ The community will likely appreciate speaking with a hospitalist for moderately-ill children that need transport; the emergency department may appreciate the off-loading of children who otherwise might gurney into their crowded rooms and hallways; children could be diverted so as to not get unnecessary exposures in the ED; and intensivists may appreciate being removed from calls that don’t meet their criteria for ‘critical.’

We are nicely situated, with a finger on the pulse of bed control and a deep knowledge of treatment for moderately-ill children, to serve as a portal into the institution. Our understanding of the hospital environment, our familiarity with hospital process and – broadly speaking – our clinical skill sets should qualify us to serve in this important transport role.

Recommended References

Figure 1: At Children’s Hospital of The King’s Daughters, a direct line is provided to community providers, where dedicated operators – with referring physician guidance – direct calls to the appropriate clinician. A discussion ensues, leaving the hospitalist with three choices: a) defer to ED or PICU physician, b) arrange a walk-in direct admit, or c) activate transport for ward admission. Once the nurse-RT-paramedic team arrives on site, further assessment is done and Medical Control is contacted. Patient can be redirected if necessary.
A B is born at 37 weeks gestation after an uneventful pregnancy with Apgars of two, four and five at one, five and ten minutes respectively. The child is intubated and transferred to the NICU. Birth weight is 3800 grams. Initial arterial blood gas has a pH of 6.9 with BE -22. Child is subsequently transferred to the regional Children’s Hospital for further care of presumed perinatal asphyxia.

Over the next 2 weeks, the child has multi-organ failure, including the liver and kidneys, as well as pulmonary dysfunction and severe encephalopathy. Initial EEG is severely abnormal and initial CT scan of his brain also shows absence of gray-white matter differentiation. Seizures begin on day five of life and become difficult to control. At a week of age, the child’s respiratory status has improved to the point that the ventilator can be withdrawn. However, due to the severe encephalopathy, the family, in consultation with the neonatologist, agrees to place a DNR (do-not-resuscitate) order if the child suffers a cardio-respiratory arrest.

The care team obtains consultations from Neurology and Pain and Palliative Care services in addition to the Ethics Committee. Repeat EEG at 14 days of age shows brain waves no longer as close to flat as the original one but very abnormal and diminished with seizure activity. Repeat CT scan is very abnormal with marked cerebral edema. Neurology’s interpretation is that the brain will most likely liquefy and that the child will be left with extremely limited, if any, function in the future.

At this time, with the child at 2 weeks of age, the family requests the discontinuation of all medical treatments, including medically provided fluids and nutrition (i.e. total parenteral nutrition, IV fluids and/or NG feedings). However, they plan to continue to provide oral feedings as tolerated and basic comfort measures. The neonatologist agrees to the parental request to stop life-sustaining treatments but believes that discontinuing medically provided fluids and nutrition at this point is inappropriate. At the same time, the neonatologist feels that NICU care is no longer needed and would feel comfortable transferring care to another physician outside of the NICU.

The Hospitalist Service is contacted to see if they would accept this patient on their service with the expressed intent by the family of providing hospice care to the child and only offering fluids and nutrition that the child can take by mouth. Other comfort care measures, including pain medications would be continued.

The American Academy of Pediatrics Committee on Bioethics recently stated that “the withdrawal of medically administered fluids and nutrition for pediatric patients is ethically acceptable in limited circumstances.”

Ethics Case Discussion
This case raises many different ethical issues. Some are specific to the request for the hospitalist to accept the patient onto his/her service while others are organizational ethics issues dealing with reluctance of one service (or particular individual) to provide requested care.

It is acceptable to withdraw medical treatments, such as ventilators, vasopressors, and extra-corporeal membranous oxygenation (ECMO) as well as medically provided fluids and nutrition (i.e. feedings by IV, NG or GT) if these therapies no longer benefit the patient, or if the continuation of therapy causes unacceptable harm to the patient. This has been an accepted part of clinical medicine for over 25 years. For adults, such a request may come from the patient or from surrogate decision makers; in Pediatrics, it is more common for the parents or guardians to act on behalf of the child.

In addition, ethicists have debated the issue of whether there is a difference between starting a type of therapy and later stopping/withdrawing it as compared to never starting the therapy in the first place. Most ethicists (although not all pediatric subspecialists, and this varies by specialty) believe there is no difference in withdrawing care as compared with withholding or never initiating care. This approach often allows one to initiate life-saving care when the outcome may be uncertain (e.g., a drowning victim or a premature newborn) and then later withdrawing it when the likely outcome becomes clearer.
Discontinuing feeds is a complicated area. While fairly common and generally accepted among providers caring for the debilitated and elderly, pediatric providers are less familiar with questions about discontinuing medically provided nutrition and hydration. A number of different views on the subject can be put forth. Some suggest that the act of feeding needs to be examined with an eye on the invasiveness of the feeding route. For example, one might look differently at providing nasogastric feedings, which are minimally invasive, as compared to surgically placing a gastrostomy or central line (for TPN). Others would suggest that the provision of any type of fluids and nutrition is a basic “right” (along with being kept warm and treated with dignity) and that medically provided nutrition and hydration should be provided to everyone. The American Academy of Pediatrics Committee on Bioethics recently stated that “the withdrawal of medically administered fluids and nutrition for pediatric patients is ethically acceptable in limited circumstances.”

Finally, even if the inherent issues for a neonate or an infant are no different than those for an adult patient, the reality is that withdrawing fluids and nutrition in young children often causes more intense feelings on behalf of the staff involved.

Many pediatricians specifically chose their field so that they would not routinely need to deal with dying patients. However, hospitalists, as well as neonatologists, pediatric intensivists and many other subspecialists, will often deal with dying patients in the course of their careers. As such, gaining a degree of “comfort” with all aspects of dying is a crucial skill for a hospitalist to have. Many families prefer to be at home with their dying child surrounded by their extended family and friends. Others prefer a hospice approach in the hospital. In some institutions, arrangements can be made to set up a family in a private room with only the attention that the family desires, and to allow their child to die in the manner that the parents and family prefer.

In this particular case, if the transfer out of the NICU to a lower acuity setting resulted from a desire to be less disruptive and to allow the child to die, then the request likely would have met with the complete support of all members of the health care team, as well as the hospital leadership. However, if the request for transfer is only coming from the attending neonatologist due to his/her discomfort with the proposed plan of care, then the issue deserves further discussion with NICU and hospital leadership.

As was pointed out at the beginning of this discussion, the hospitalist needs to decide if accepting an in-hospital hospice patient is acceptable for the service. Most hospitalists agree to accept a patient on their service, regardless of whether the patient is coming from the ED, an outside referral or within the institution from a different unit (e.g., NICU) if the patient’s needs can be appropriately provided by the accepting service. In this case, the requested level of care was low and did not pose a problem.

In addition, the accepting hospitalist needs to believe the choice of hospice treatment is within the standard of care and ethically acceptable (which does not mean he/she would personally choose that approach). In this case, the hospitalist needs to agree to two aspects of care: the parent’s decision to allow the child to die (including having the DNR order in place) with comfort care provided and the provision of oral fluids and nutrition as tolerated.

As stated above, providers should consider limiting or withdrawing life-supporting therapies if they are harmful to the patient or non-beneficial (and some would also include if it was felt to be futile, i.e., unlikely to achieve the goals of the care or return the person to their previous state of health). In this particular case, the only life-supporting therapies provided to the patient are fluids and nutrition since the child is no longer on a ventilator or on other medications to support the cardiovascular system. The child’s parents did not request a cessation of all fluids and nutrition (which is a much more complicated issue to address) but rather a cessation of feeds given by tube or IV. They requested the continuation of oral feedings, as tolerated.

If the hospitalist (and colleagues) can agree to these requests, the transfer should take place. If the hospitalist, and/or the other members of the hospitalist service are not comfortable with the plan of care, and the “discomfort” or disagreement cannot be resolved with the family (or with the assistance of an ethics consult, if available), then the request for transfer should go to another physician or service.

References:
6. Personal experience at Children’s Hospitals and Clinic of MN.

If you are interested in submitting an ethics case to be discussed, or you have a case and discussion for the Ethics Consultant column, please contact Sheldon Berkowitz, MD at Sheldon.Berkowitz@childrensmn.org
Characteristics of Pediatric Inpatient Rounds: A National Survey of Residency Programs

Priti Bhansali, MD, FAAP, Assistant Professor of Pediatrics, University of Connecticut School of Medicine
Christine Skurkis, MD, FAAP, Assistant Professor of Pediatrics, University of Connecticut School of Medicine
Georgine Burke, PhD, Associate Professor of Pediatric, University of Connecticut School of Medicine
Nicole Chandler, MD, Chief Resident, University of North Carolina School of Medicine
Edwin Zalneraitis, MD, FAAP, Professor of Pediatrics and Neurology, University of Connecticut School of Medicine

Contact: Priti Bhansali: Pbhansa@ccmekids.org

Introduction
We sought to identify current characteristics of pediatric inpatient rounds at academic residency programs, given the importance of rounds in both patient care and the medical education process. In order to better characterize this educational setting, we surveyed pediatric chief residents to ascertain details of the inpatient rounding process at their institutions, including format, duration, participants, and determinants of length of rounds.

Method
A forty-two-question survey to examine particular characteristics of the inpatient service and inpatient rounding process at academic pediatric residency training programs. Surveys were distributed to 198 pediatric residency program directors from accredited training programs by email between April and July of 2007 via the online survey tool “SurveyMonkey.com”

Responses were summarized using descriptive statistics. Work rounds were defined as rounds with the inpatient pediatric team where the primary goal was to discuss patient care. The rounding practice at each residency program was characterized as either combined work and teaching rounds (COMBINED), where an attending physician was present on rounds to teach the team on topics related to their patients, or separate work and teaching rounds (SEPARATE). Comparisons between COMBINED and SEPARATE programs included: reported time spent to complete rounds, reported time devoted to teaching on rounds, location of rounds, and other characteristics. Responses were categorical ranges, such as 10-15 minutes, or 10 to 20%, as appropriate. For the analysis, the response was converted to the midpoint of each range and treated as an ordinal variable. Non-parametric statistics (Spearman Rho, Chi Square, Wilcoxon) were used to compare responses. Results are reported as the categorical response. Associations of a magnitude (rho) ≥0.18 were significant at p<0.05.

Results
Of 198 programs contacted, 152 responded (77%). Of these, 22 opted out of participating in the survey, leaving 130 (66%) programs having completed the survey. We received responses from programs belonging to all geographic regions as grouped by the Association of Pediatric Program Directors [Table 1]. Eighty-nine programs (68%) stated that inpatient pediatric rounds were combined work and teaching rounds (COMBINED), while 41 programs (32%) had separate work and teaching rounds (SEPARATE).

In both COMBINED and SEPARATE, the most frequently reported category of time spent teaching on patient care rounds was 20-30%, reported by 34%. More teaching was perceived to occur in COMBINED than in SEPARATE rounds (p<0.007, Wilcoxon).

At the time of this survey, rounds took place at the patient bedside less than 13% of the time in both COMBINED and SEPARATE. Rounds were reported to be lengthier in COMBINED than in SEPARATE (P=0.0001): 47% of COMBINED indicated that rounds last 2-3 hours, with 9% over 3 hours, while 55% of SEPARATE had work rounds that last 1-2 hours, with none longer than 3 hours. Nurses and pharmacists were the non-physician multidisciplinary team members to most often participate on rounds. However, 45% of both groups reported that nurses “rarely” or “never” participated in rounds. Thirty-eight percent of COMBINED and 57% of SEPARATE reported that a pharmacist “rarely” or “never” participated.
The composition of teams, including presence of an attending, higher numbers of non-pediatric physician trainees per team, and a higher (non-physician) multidisciplinary participation score, were each associated with longer LOR. Table 2. In multiple logistic regression models, spending 10 minutes or more to discuss a pre-existing patient (p<0.009) and having 3 or more non-pediatric physician trainees on the team (p<0.005) were significantly associated with LOR >3 hours.

Discussion

Teaching comprised a significant portion of rounding time in most programs responding to the survey. Over two-thirds of responding residency programs met the Residency Review Committee (RRC) requirements for inpatient teaching by combining the presence of an attending with teaching responsibilities and patient care rounds. The amount of time spent teaching on patient care rounds was most commonly reported to be 20-30% in both COMBINED and SEPARATE. However, more COMBINED spent greater than 30% of the time on patient care rounds teaching compared to SEPARATE.

Location of rounds at the bedside was not reported as a common practice in either COMBINED or SEPARATE. At the time of this survey, less than 13% of patient care rounds routinely occurred at the patient bedside.

The duration of inpatient rounds is a concern for all members who participate, as a lengthy rounding process limits the amount of time for patient care duties and other required activities. In our study, this finding is independent of the average patient census. Likewise, even though LOR was greater with the presence of an attending physician, this was independent of the amount of teaching done on patient care rounds.

The limitations of the study include the survey methodology and the selection of a chief resident serving as a representative of all members on rounds. In addition, participant responses were perceptions of inpatient rounds based on recall, rather than by direct measurement. However, this study represents a comprehensive assessment of the inpatient rounding process at United States pediatric residency programs.

References

1. Finley, R. SurveyMonkey.com. Portland, Oregon USA
Resident Voices from the 2009 Pediatric Hospital Medicine Conference

Four residents each received a travel grant from the AAP Section on Hospital Medicine to attend the 2009 Pediatric Hospital Medicine Conference last July in Tampa, Florida. Below are three of the personal commentaries written after attending the conference. The fourth, by Bridget Allard, DO, Resident Member of SOHM, will appear in the next issue of *Hospital Pediatrics*.

The grants will be offered again this year for the 2010 conference to be held July 22nd-25th in Minneapolis, MN. If you know a trainee who wants to learn more, have them apply (and come with them to show them around!). *The application deadline is February 15, 2010.* Please contact D. Corey Lachman, MD, the AAP SOHM resident and young careerist subcommittee chair at clach79@gmail.com for more information.

Vivian Tang, MD, a second year resident at Floating Hospital for Children at Tufts Medical Center, Boston, MA, writes:

I had a wonderful time at the Pediatric Hospital Medicine conference this past July. Before attending it, my objective was to learn more about the scope of pediatric hospital medicine. The actual experience, however, broadened my understanding of the field.

Since I am a current second year resident, I enjoyed the clinical sessions offered. I still refer to my notes taken from the talks about transitioning from IV to oral antibiotics by Dr Samir Shah and Pediatric Neurologic Emergencies by Dr Edward Conway, Jr. The presentation on ALTEs given by Dr Joel Tieder was also very helpful particularly when I was presented with an ALTE case back on the inpatient unit a few weeks later. It was nice to be able to share the new updates I recently learned from the ALTE talk with residents and faculty in my program. The research platform sessions were also of particular interest to me, giving a snapshot of current research done by other hospitalists.

Finally, I enjoyed conversations with hospital medicine attendings from all over the country. During the Topic Table Luncheon, I was able to talk with three different hospitalists from California, New Hampshire and Virginia. They all had the job title of pediatric hospitalist, yet their job descriptions were quite varied. I learned that the necessary skill set and knowledge base of each hospitalist was tailored for his particular pediatric populations: from NICU to PICU to inpatient medicine.

This dynamic conference opened up a new realm of possibilities for me in the field of pediatric hospitalist medicine.

Michael Rinke, MD, a third year resident at Johns Hopkins Children's Center, Baltimore, Maryland, writes:

As I got off the plane in Tampa, I was filled with excitement but quite a bit of trepidation: how would a group of attending-level pediatric hospitalists interact with a third year resident? Would the experience of being immersed in pediatric hospital medicine for 72 hours change what I believed was my future career path? Fortunately, both concerns were upended as I rode to the conference in an airport shuttle filled with interesting, engaging, and thought-provoking pediatric hospitalists. The weekend continued to be infused with fascinating cases, incredible learning opportunities and many wonderful people interested in developing and mentoring young pediatric hospitalists.

As we debated pediatric patient safety goals, learned about teaching methodology and scratched our heads over clinical conundrums, I furiously took notes so I could apply these lessons the very next day as a senior resident on the wards. I left the conference enthusiastic about the research possibilities in the field and comforted by the veritable army of other pediatric hospitalists who would be working on the same problems. I cannot wait to start my career as a pediatric hospitalist, and I cannot wait to see this incredible group of people again next year.

D. Corey Lachman, MD, SOHM Resident and Young Careerist Subcommittee Chair and Liaison, Section on Medical Students, Residents, and Fellowship Trainees, writes:

As the Resident and Young Careerist subcommittee chair, I had two goals in attending the conference. I wanted to determine how the AAP Section of Hospital Medicine could become more relevant and useful to residents and young careerists, and I also wanted to enhance my understanding of pediatric hospital medicine.

As I conversed with various residents from Texas to Michigan and everywhere in between, most residents had a variety of reasons to come to the conference. Some were most interested in learning about topics skipped in residency but important in hospital medicine, such as quality improvement. Others were focused on career choices and networking opportunities. I obtained a better understanding of what projects would benefit residents interested in pediatric hospital medicine.

The mentor breakfast at 7 AM Sunday morning provided a great forum to answer some of these questions. Even with the early morning time, residents and young careerists rose to the occasion. I had breakfast with the legendary Dan Rauch while others were able to meet Jennifer Daru, Mary Ottolini, and others. We appreciated their willingness to wake up early. It was great to hear from these voices of experience, but also to hear the perspective from people a few years ahead.
The conference was a great chance to listen and learn. I heard details about various hospitalist programs across the country, their job duties, and their schedules. I was able to talk with fellowship directors about the benefits of fellowship and hear the triumphs of young careerists who transitioned straight into a “real job.” These conversations were probably the most useful experience I obtained and broadened my knowledge of hospital medicine.

The conference was worth all the call switches and schedule requests, and I would recommend it for any resident. I appreciate the opportunity to attend the conference and thank the SOHM Executive Committee for their generous grant.

**AAP Section on Hospital Medicine Resident Travel Grant Program**

The AAP Section on Hospital Medicine (SOHM) Resident Travel Grant Program offers $500 scholarships to 3 Residents who are interested in attending the annual Pediatric Hospital Medicine Conference – traditionally held in late July/early August.

**Primary Goals of the SOHM Resident Travel Grant Program**

- To educate resident physicians on the overall field of Pediatric Hospital Medicine;
- To present background and information on the Pediatric Hospitalist profession
- To offer a relaxed atmosphere where resident physicians are able to network with Pediatric Hospital Medicine leaders and potential mentors.

**Eligibility for SOHM Resident Travel Grant Program**

1. Applicants must be Residents at the time of the Pediatric Hospital Medicine Conference in order to be considered. Chief Residents, Pediatric Residents, Medicine-Pediatric Residents, and combined program Residents are all eligible.
2. Each applicant must submit a CV and a letter of interest (no longer than 2 type-written pages) by the deadline to be considered.
3. In the letter of interest, each applicant must demonstrate sustained interest in Pediatric Hospital Medicine either at their training hospital or through SOHM activities. Research, QI projects, professional accolades, academic achievements, and philanthropic work are weighed heavily during the selection process.
4. Recipients will be decided at spring meeting of Section of Hospital Medicine Executive Committee.

**Requirements of SOHM Resident Travel Grant Program Recipients**

All travel grant recipients are required to write an article on their experiences for the winter edition of the SOHM news journal, Hospital Pediatrics, as well as assist with a couple of post-Conference activities (i.e. completing a satisfaction survey and recommending ideas for the next Conference).

**How to Apply for the SOHM Resident Travel Grant Program**

A letter of interest and CV must be submitted by e-mail only to:

Niccole Alexander, MPP
Manager, Division of Hospital and Surgical Services
nalexander@aap.org

**Deadline:** February 15th, 2010. Recipients will be notified by April 15th, 2010.

All comments and questions should be directed to D. Corey Lachman, MD, Chairperson of the SOHM Subcommittee on Early Careerists and Residents at clach79@gmail.com
The Evidence-Based Medicine Subcommittee was recently organized and has just begun its work of creating inpatient-specific EBM resources to assist in the practice of pediatric hospital medicine. This subcommittee’s volunteers are writing and reviewing “critically appraised topics” or CATs, which are brief reviews of the current evidence on topics of interest to pediatric hospitalists. Each CAT starts with a specific, clinically relevant question and follows the principles of systematic review (i.e., all of the available evidence should be considered fairly). CATs are then thoroughly evaluated by two independent reviewers who check for inclusion of all relevant articles and for any bias on the part of the author. The goal of the committee is to put the right (properly abstracted and annotated, clinically relevant) information into the right hands (practicing hospitalists) at the right time (more up to date than textbooks or policy statements). The subcommittee is also developing a website where the CATs will be available to section members as well as links to other EBM resources (www.sohmlibrary.org/ebm/). We are very excited to be able to publish one of our first CATs written by Dr Brian Alverson and reviewed by Drs Michael Bendel-Stenzel and Kelly Wood in this issue of Hospital Pediatrics.

Residents and New Careerists

My generation of physicians is probably one of the first to rely on online resources more than the classic textbooks. We watched UpToDate learn pediatrics in medical school and saw online dermatology atlases, Google scholar, and PDAs (or iPhones) become standard medical tools during residency. I’m thrilled the subcommittee will be embracing these generational shifts as we expand our online presence with a resident web page on the Section website. My goal is that it will help the subcommittee connect with residents, especially those with limited exposure to hospitalists. I also hope it will help curious residents and transitioning new careerists learn about hospital medicine as well as introduce others to the activities of the subcommittee like the listserv®, library or travel grants. I look forward to hearing the great ideas for this project that we will be soliciting through the listserv®. I can also be reached through the email below.

This past summer, three other residents and I were recipients of the travel grant for the pediatric hospital medicine conference in Tampa, Florida (see article page 28). All agreed it was a worthwhile experience that taught clinical and professional knowledge we used as soon as we returned to our local programs. I would recommend it to any resident as topics like quality improvement, effective learning, and communication are helpful to anyone in medical training. This year we will again have $500 travel grants for the pediatric hospital medicine conference in Minneapolis July 22-25th, 2010. Applicants must be residents at the time of the conference to be eligible. Residents can also become involved in the conference by presenting clinical conundrums case presentations or posters. Details on the travel grant program can be found on page 29.

I’ve put together a list of residents, fellows, and new careerists interested in developing and implementing projects that will make the subcommittee more useful and relevant. Like Voltron (or Captain America for those who grew up in greener homes), we will be combining our skills to form great ideas for the future of the subcommittee.
SAVE THE DATE!

Pediatric Hospital Medicine Conference 2010
July 22-25
Hyatt Regency Minneapolis
Minneapolis, MN

THE ACADEMIC PEDIATRIC ASSOCIATION

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

Society of Hospital Medicine

Abstract: Intravenous Immune Globulin In Children with Streptococcal Toxic Shock Syndrome

Purpose: Streptococcal toxic shock syndrome (TSS) is a rare and severe manifestation of group A streptococcal infection. The role of intravenous immune globulin (IVIG) for streptococcal TSS is controversial. The objective of this study was to describe the epidemiology of streptococcal TSS in children and to determine whether adjunctive therapy with IVIG is associated with improved outcomes.

Methods: This multicenter retrospective cohort study used data from 36 tertiary care children’s hospitals in the Pediatric Health Information System. Children ≤18 years of age with streptococcal TSS between 2003 and 2007 were eligible. The primary outcomes were death, hospital length of stay, and total hospital costs. The primary exposure was the use of IVIG. IVIG-recipients and non-recipients were matched on propensity score to account for potential confounding by indication. Differences in outcomes were compared between an IVIG-recipient and his or her matched subject.

Results: There were 192 discharges. Median age was 8.2 years. IVIG was administered to 84 (44%) children. Total cost for all patients was $9,392,968; drug costs accounted for 23% hospital cost. Mortality was 4.2% (95% confidence interval: 1.8% to 8.0%). Median length of stay was 10 days. In propensity-matched analysis, there was no difference in mortality between IVIG recipients (n=3, 4.5%) and non-recipients (n=3, 4.5%; P=1.00). Patients receiving IVIG had higher total hospital and drug costs than non-recipients (Table). However, differences in hospital costs were not significant once drug costs were removed (median difference between matched patients, $86,139; IQR: $88,316 to $825,993; P=0.06), suggesting that the drug costs accounted for the differences in total costs.

Conclusion: This is the largest study of children with streptococcal TSS and the first to explore the association between IVIG use and clinical outcomes. We found that IVIG is associated with increased costs of caring for children with streptococcal TSS but is not associated with improved outcomes.

Table 1 Differences in Outcomes Between IVIG-Recipients and Non-Recipients.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Median Difference</th>
<th>Interquartile Range of Differences</th>
<th>P*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall length of stay (days)</td>
<td>2</td>
<td>-4 – 9</td>
<td>0.036</td>
</tr>
<tr>
<td>ICU length of stay (days)</td>
<td>2</td>
<td>-1 – 6</td>
<td>0.033</td>
</tr>
<tr>
<td>Total Cost ($)</td>
<td>12,056</td>
<td>-8,014 – 42,328</td>
<td>0.002</td>
</tr>
<tr>
<td>Drug cost ($)</td>
<td>6,555</td>
<td>301 – 14,079</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

*P<0.006 considered statistically significant because of multiple comparisons.