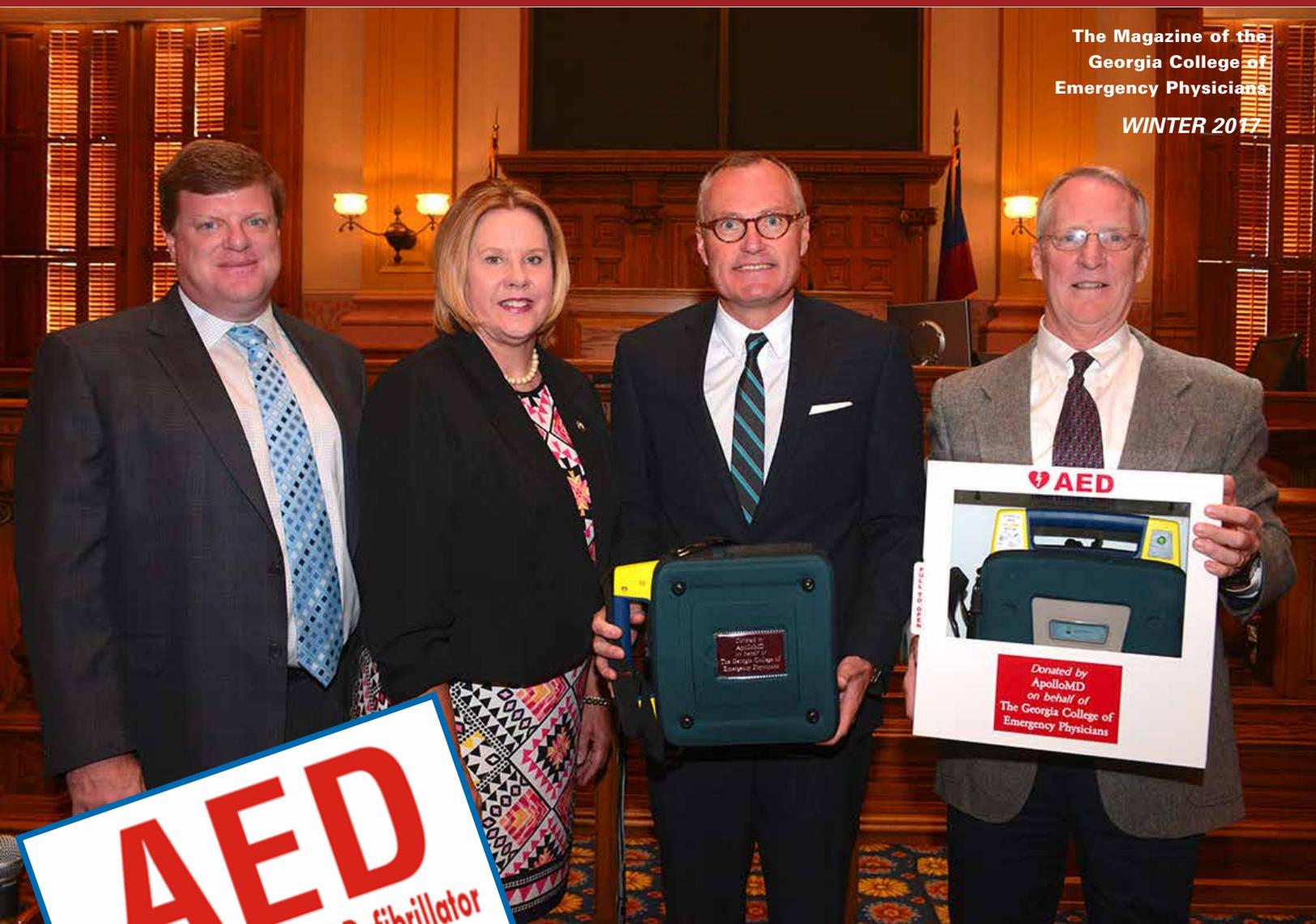


EPIC



The Magazine of the
Georgia College of
Emergency Physicians
WINTER 2017



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- ◆ **A Rare Clinical Presentation of Bartonella Infection**
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On the Cover: From left to right, Brett Cannon MD, Senator Renee Unterman, Lieutenant Governor Casey Cagle and DW "Chip" Pettigrew, III, MD along with Apollo MD and the Georgia College of Emergency Physicians donated an AED to be available at the Georgia Capitol.

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From the President

It's That Time of Year Again

Matt Lyon, MD, FACEP

As you are reading this, the Holiday season will have passed and I have so many things on my mind. GCEP has made many gains this past year – record setting participation in GCEP, record setting CME conference attendance, and so much more. I am very proud of our state chapter and all of its members.

Second, I want to make sure we keep our focus on the important issues we will face in 2017. As you read this, the Georgia Legislature has started its session. There will be 40 days of debate and votes which can dramatically affect the function and economics of our practice. As anyone who has read the *EPIC* over the last several issues know, the main issue that GCEP is focused on is “Fair Payment” for the services we provide. I and others have described “Fair Payment” but let me give a short recap. With the passage of the Affordable Care Act, insurance companies have contracted with less providers than they did in years past. This leads to “Narrow Coverage” meaning that patients have a limited selection of doctors to choose from when they need a physician (and hospital) service. For elective care, patients can evaluate if a particular hospital or physician is “in-network” and what the patient’s responsibility for the cost of care will be.

In emergency care, as you know, patients do not always have a choice of where they go for emergency care. This may be directed by the EMS discretion, regional protocols, or other factors. Further due to the time-sensitive nature of the patients perceived needs, i.e. an emergency, they do not have time to research to see if a doctor or possibly the hospital is in-network. Many insurance companies choose not to contract with emergency providers as they know we are required to treat the patient due to EMTALA obligations. Hence many emergency physicians, anesthesiologists, surgeons and others that provide emergency care are “out-of-network” for the insurance companies. As a result, these providers are often paid arbitrarily by the insurance company – often at unfair rates.

GCEP is working with many partners to assure that all emergency care is reimbursed fairly by insurance companies and that patients aren’t stuck with large out-of-pocket expenses for charges that the insurers refuse to cover. As you read this, you will have no doubt have seen advertisements, newspaper articles, editorials addressing this legislation and the issues surrounding insurance created narrow networks and emergency services fair payment. I encourage all to understand these issues, contact your state legislator and encourage them to advocate for patients by supporting fair payment legislation. Without everyone’s participation in this legislative effort, our chances at successful legislation are not encouraging.

GCEP is your organization. Emergency Medicine is your profession. Get involved. Stay active. Thank you for your support.



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Dr. Lyon is a Professor of Emergency Medicine at Georgia Regents University. He serves a Vice Chairman for Academic Programs, the Director of the Section of Emergency and Clinical Ultrasound and Director of the Emergency Ultrasound Fellowship. He is currently President-Elect for GCEP and Chairman of the Georgia Emergency Medicine Political Action Committee.

Transparency for Our Patients

Matthew Keadey, MD, FACS



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Dr. Keadey is an associate Professor and Chief of Service and Medical Director at Emory University Hospital Emergency Department.

The cost of medical care is often difficult to determine even in elective situations. I consider myself a pretty savvy consumer when it comes to our family's medical care, but even I received a balance bill once upon a time. My wife was pregnant and we needed an obstetrician. Although my family had not changed insurance providers, our prior obstetrician and hospital where we delivered were no longer considered in network. We looked around and found a new obstetric group and picked an in-network hospital. Since we had a prior caesarean, scheduled out delivery one morning and even picked out an in-network anesthesiologist. Our experience was great and we could not have been happier by our choice, but after we left the hospital some surprise bills started to roll in. First, the hospital is covered by only one pediatric group, which was out of network. Then we received a surprise bill from the pathologist who had examined the placenta and cord. As it turns out, the one pathology group was also out of network for my insurance plan. Even if I had considered these services, I would not have had an option for an in-network provider.

In emergency situations, economic transparency is even more difficult. Most patients cannot plan for every possible emergency. They may know their local in-network hospital, but it is impossible to know the status of every possible group who provides care at that facility. In an emergency, a patient's options may be limited due to time or scope of services. Some of the most common conditions, including heart attacks, strokes and severe trauma must receive care in a timely manner or worse outcomes may occur. In addition, not all hospitals are the same. If you have a heart attack or have been involved in a severe accident, you may be better served at a facility that offers these services. In many locales, there are also laws governing the transport of patients by emergency medical services. Local laws may prohibit the transport of patients to certain facilities if transport is prolonged or if it impacts the safety of the community. Even if a patient has some sort of emergency plan, there is no way to account for every possibility.

In an emergency, patients should not have to choose between an in-network facility and timely quality care that may impact their health. As narrow networks have proliferated, access to care in many situations is impacting patients. In Georgia, 83% of the new created silver exchange plans are considered narrow network (Miller, 2015). An analysis by Dorner et al (2016) found that more than 15% of narrow network exchange plans are missing critical specialists in their regional networks, including emergency physicians. Anecdotally in Georgia, one exchange plan requires pediatric cancer patients to be seen in Columbus for their cancer care, but if they require ICU admission, they must cross the state and be admitted in Macon. An recent analysis by the State Insurance Commissioner in Texas, found that for emergency services at in-network hospitals, the emergency providers were out of network more than 40% of the time. When patients are paying for insurance they expect their care, especially in an emergency, to be covered.

Why would in-network facilities have out-of-network hospital based providers? When the providers are employed by an in-network facility, out-of-network balance billing does not occur. However, most emergency departments are staffed by contracted providers who must negotiate their own rates with insurers. Due to the Emergency Medical Treatment and Active Labor Act (EMTALA, 1986), emergency medical providers cannot treat patients different based on their insurance classification, must assess every patient for an emergency medical condition, and must stabilize to the best of their capability those who do have emergency medical conditions. EMTALA provides insurers with a predetermined network for emergency services so that the insurers do not have to worry about patient access to care. Insurers can then provide low ball in-network rates or refuse to even negotiate fairly with emergency physicians. In Georgia, this leaves the emergency care safety net in

a precarious state. Data available from 2003 show that emergency physicians annually provided an estimated \$138,000 per physician in uncompensated ED care. This is ten years later and Georgia also has one of the highest uninsured rates in the country. I expect that number to be well over \$150,000 per emergency physician per year in uncompensated ED care. Additionally, Medicare and Medicaid rates do not fully cover the cost of emergency care. The federal government has left us with having only the third-party commercial insurance payers to cover these losses. However, the emergency providers, because of EMTALA, have no leverage in these in-network rate negotiations. When in-network rates and out-of-network offers are too low to accept, the only means to economically maintain the emergency care safety net is through balance billing of these out-of-network patients.

I believe that part of the solution to this problem is *Price Transparency*. Patients would like to have the ability to discover their potential charges in advance, but in our current system, this is not possible. In emergency situations, the total charges are not often known until after the services are rendered, making charge estimation in advance difficult. Average charges could be posted in the emergency department, but this does not come close to providing a true estimate after deductibles, co-pays, and co-insurance are included. In the Georgia Medicare region, posted signs in the waiting room have been viewed as EMTALA violations if they potentially prohibit patients from receiving medical screening exams.

To address the issue, GCEP has proposed the FAIR Health database and first dollar coverage as solutions. The FAIR Health database is an independent database of patient bills that arose from the Ingenix lawsuit settlement in 2009 when insurers were found guilty of manipulating their proprietary database, lowering provider payments and shortchanging patients' insurance coverage. FAIR Health also maintains a website (www.fairhealth.org), where consumers are provided resources to improve price transparency. Patients can go to the website to estimate charges for almost any procedure by geographic region. Almost all insurers participate in FAIR Health and currently this database represents more than 70% of all commercial health insurance transactions in the state of Georgia. The State of Georgia already utilizes the FAIR Health database to determine payment for workers' compensation cases.

GCEP believes patients should be taken out of the middle of the disputes over fair payments for clinical services. Patients should have fair coverage for their emergency services and should not be held responsible for a balance bill for out-of-network emergency situations when it's the insurers who have constructed these narrow networks. GCEP believes that a fair method of payment for services must be devised that is transparent to all involved. Establishing by state law that payment for out of network emergency services at the 80th percentile of charges in the FAIR Health database creates a fair standard for reimbursement based on a clearly defined usual and customary rate. By utilizing this database, the few (but often cited) egregiously high bills should go away as all payments are tied to a specific percentile of the database. In addition, by being independent, there is no risk of the insurance companies once again cooking the books in their favor.

First dollar coverage is an idea that is gaining traction. An insurer is contracted with the patient for medical care. If the patient receives medical services from a provider, the contract to pay for services lies between the patient and insurer. With first dollar coverage, the insurer provides complete payment (at the specified rate) to the provider and then is responsible for collecting contracted responsibilities from the patient. In this instance, insurers would make different insurance product decisions and create a much more transparent process.

If you are interested in joining GCEP's fight for our patients, contact us through our website at www.gcep.org. It is only through our collective effort that our patients and the safety net for patient care can be maintained.

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A Rare Clinical Presentation of Bartonella Infection

Sam Kini, MD, FACS and Kyla Mohler, MD Candidate



Sam Kini, MD, FACS

Dr. Kini is Professor of Emergency Medicine at the Medical College of GA Augusta University



Kyla Mohler, MD

Dr. Mohler is a third year medical student at the Augusta University—University of Georgia Medical Partnership.

A 52-year-old man presented to the emergency department with an inability to pass stool and difficulty with urination for 12-14 hours. He also described “band like” pain and soreness in the left axillary region, lower costal margin and around the waist, which was worse with movements.

Additionally he reported vision changes and hyperesthesia accompanied with weakness of both lower extremities. Patient denied back injury or back pain. He did not notice any zoster like skin rash.

Two weeks before his presentation to the emergency department the patient had developed dizziness, neck stiffness, fever, and a mild frontal headache accompanied by painful eye movements. He described his visual difficulty as darkness around the edges and blurring centrally. During this time, the patient visited an Ophthalmologist, who referred him to a neurologist since there was no obvious eye pathology.

Over the prior 4-6 weeks, he had a seven-pound weight loss, decreased appetite, and night sweats. During this time frame, patient had no cough or any other respiratory symptoms. In the emergency department the patient denied any pain, palpitation, or shortness of breath. His main concern was his inability to urinate and vision changes. Patient denied recent travel, chemical or pesticide exposures, or contact with others that had similar symptoms. His past, family and social history were non-contributory. He smoked a pack and half cigarettes daily and drank 2-5 cans of beer daily. His only home medication was Goat Weed herbal pills.

Vital signs: Heart Rate: 78 regular BP: 135/83 RR: 18 T: 38.3 SpO2: 98%

Physical examination revealed an average built 52-year-old male in no acute distress. He was able to ambulate. The HEENT exam was normal. Pupils were equal and reactive to light and external ocular movements were fully intact. No neck rigidity was present. Skin was normal without rashes or bruises. Muscle strength was 5/5 in upper extremities, hand grip 5/5, hip flexion 3/5, knee flexion/extension, dorsiflexion, and plantar flexion all 4/5. No other neurologic deficits were noted. His abdomen was soft and non-tender. No fullness noted in any quadrant. Prostate was of normal size and non-tender. The patient had a single, palpable, non-tender lymph node in the left epi-trochlear region.

An ultrasound of the abdomen showed a moderately distended urinary bladder, with an estimated volume of 700 ml of urine.

Laboratory results:

WBC: 8,700 Neutrophils: 88.6% Lymphocytes: 6.7% Platelet count: 110,000

Hgb: 13.4 HCT: 43%

Coagulation panel was within normal range.

ANA: negative. RPR: Negative. Chemistry panel include liver chemistry were normal.

Urine analysis was normal except for mild proteinuria. Urine culture showed no growth in 48 hours.

CSF obtained per lumbar puncture, was negative. CSF cultures were negative for bacteria, fungi and AFB.

HIV screening test was normal. VDRL was non-reactive.

Antibody screening of blood showed Bartonella IgG and IgM were high, 1.1024 and 1.256 respectively. These results were interpreted as positive current or past infection by Bartonella species.

Imaging studies:

CT abdomen and pelvis with contrast, showed multiple rounded hypo dense lesions, suspicious for abscesses. Diffuse distention of the large bowel noted without any focal obstruction.

CT chest showed no lung nodules, masses or cavitary lesions. No mediastinal adenopathy. No pleural effusions. Prominent lymph node in left axilla was noted.

MRI of the brain revealed multiple small areas of ill-defined contrast enhancement, some in cortex, one in left frontal lobe white matter, left thalamus posteriorly and in the central pons. The radiologist felt that this is highly unlikely due to Multiple Sclerosis.

MRI of the spine revealed mildly increased T2 signal in the conus and lower thoracic cord. Findings could be suggestive of Lymphoma, Leukemia, and Transverse Myelitis.

An Ultrasound guided biopsy of the left axillary lymph node was obtained. Biopsy results ruled out malignancy.

Management:

This patient was admitted to the services of a hospital physician, from the emergency room, with no definitive diagnosis. The main concerns were headache, vision changes, fever, urinary retention; lower extremity weakness and an enlarged left axillary lymph node.

After extensive diagnostic tests, the diagnoses considered were Encephalomyelitis, Meningitis and Bartonella infection.

The serious diagnoses ruled out were TB, HIV and Malignancy.

The management of this patient included pain control, Doxycycline, and Acyclovir. Corticosteroids were also given secondary to the patient's neurologic symptoms, unfortunately, no significant improvement in his symptoms were appreciated after administration of steroids.

Patient's urinary retention was initially relieved with indwelling Foley Catheter, which drained 800-+ml urine. Almost all his symptoms gradually improved over next 10 days. Patient was discharged home with instructions for close follow-up.

Case management discussion:

This was a challenging case in the emergency department and during the early days of his hospitalization. List of differential diagnoses was long. Although the history of cat bite and cat scratches were not discovered during the time he spent in the ED, the managing physician team felt obligated to exclude more common and more serious diseases that present with similar clinical presentation.

Once meningitis, Encephalitis, TB, HIV and Malignancy became less likely or even unlikely, Cat Scratch Fever was considered more likely, which was subsequently supported by the positive *Bartonella* tests.

The management was focused on infectious etiology and Intravenous Doxycycline was chosen as the treatment of choice.



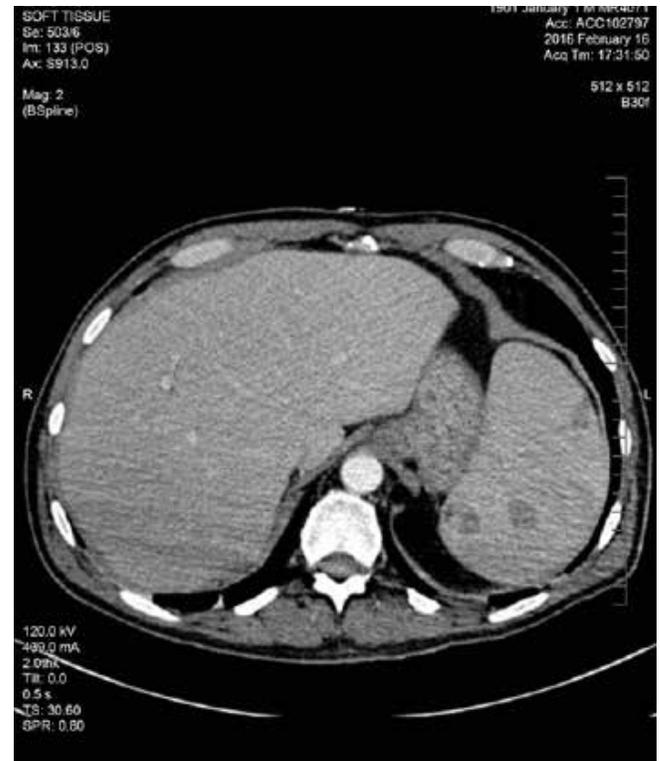
LT Axilla Lymph Node Biopsy



Left ax Lymph node



Splenic Lesions 1



Splenic Lesions 2

Discussion

Fourteen species of the Proteobacteria *Bartonella* have been identified as agents in human disease. Among them is *Bartonella henselae*, which is implicated in the infection commonly known as “cat scratch disease”. Over 24000 annual cases of cat scratch disease (CSD) occur in the United States with 2000 of those patients requiring hospitalization.¹

Traditionally in the immunocompetent patient *B. henselae* causes a self limited disease presenting with a pustule at the inoculation site 3-10 days post cat bite or scratch. Painful lymphadenopathy then develops in the regional nodes and can remain for up to two years. In about 5-20% of patients, *Bartonella* infections present as systemic diseases.³ When it does present as such it is most likely seen in the pediatric population or those who are immune-compromised. Rarely, the infection can present with infective endocarditis, bacteremia, prolonged fever, neuroretinitis, hepatitis, neuralgias, or myalgias.² The role of *B. henselae* in endocarditis warrants particular attention because this infectious endocarditis is classified as a blood-culture-negative endocarditis. This often leads to a delay in diagnosis and treatment. As such, patients presenting with suspicion of infectious endocarditis should be questioned specifically about feral cat exposures. Recently, the idea that *B. henselae* infection of endothelial cells has been proposed as a mechanism for some of its manifestations. The bacteria play a role in blood vessel formation, explaining some of the cutaneous

as well as the hepatosplenic manifestations. Additionally, the idea that *B. henselae* can infect and possibly damage the regenerative capacity of endothelial cells could mean that the bacteria plays a role in cardiovascular disease development in infected patients.⁶

Diagnosis of *Bartonella* infections relies on clinical clues but is confirmed using serology and molecular methods. In immunofluorescence assay serology, IgG titers of 1:64 or greater indicate a positive *Bartonella* result but species identification usually can not be made due to cross-reactive antibodies between *Bartonella* species. Polymerase chain reaction amplification and sequencing can be performed on blood or tissue to identify a particular *Bartonella* species. The current anti-Bartonella IgM ELISA has been critiqued for being neither sensitive nor specific enough. More specific antigens are being developed to more accurately serodiagnose CSD.⁴ Cultures are not an effective tool in diagnosis of CSD as the organism is only rarely isolated from a lymph node.² Diagnosis of the more systemic forms of Bartonella infection is more difficult. Initially, a CT scan should be performed due to its higher sensitivity for hepatosplenic complications.

Treatment:

Due to the relatively benign and self-limiting course of traditional CSD, there is no directed treatment for *B. henselae*. Close monitoring and analgesics for pain are the most commonly seen interventions. To treat persis-

tent and bulky lymphadenopathy patients can be given azithromycin or alternatively have the nodes surgically removed. There is a role for surgical excision of nodes that persist despite lengthy antimicrobial use (greater than sixteen weeks) due to the risk for systemic spread of infection.⁵ For the more rare presentations of CSD patients are given antimicrobial therapy to alleviate and prevent further sequela.²

Summary:

The value of this patient's case is that these types of bizarre presentations are not uncommon in the Emergency Department. When the clinical diagnosis is unclear after initial work-up, most of these patients get admitted to the hospital Service for further evaluation, tests, diagnosis and treatment.

It has been proven beyond doubt, that a good history yields a good diagnosis. When an infectious etiology is considered, the source of infection could be an animal bite or even a scratch, like in this case.

It is not surprising that this patient, like many we encounter, may disregard an injury or an exposure to bites and stings as insignificant and not think to volunteer the information as relevant to their symptoms unless specifically asked.

This patient improved over 4-5 days after in-patient treatment and was discharged home with close follow up.

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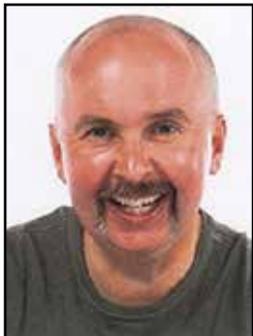
The Soto Ramp for Neonatal Lumbar Puncture

Mario Soto, MD, FAWM, DiMM and Larry Mellick, MS, MD, FAAP, FACEP



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Introduction

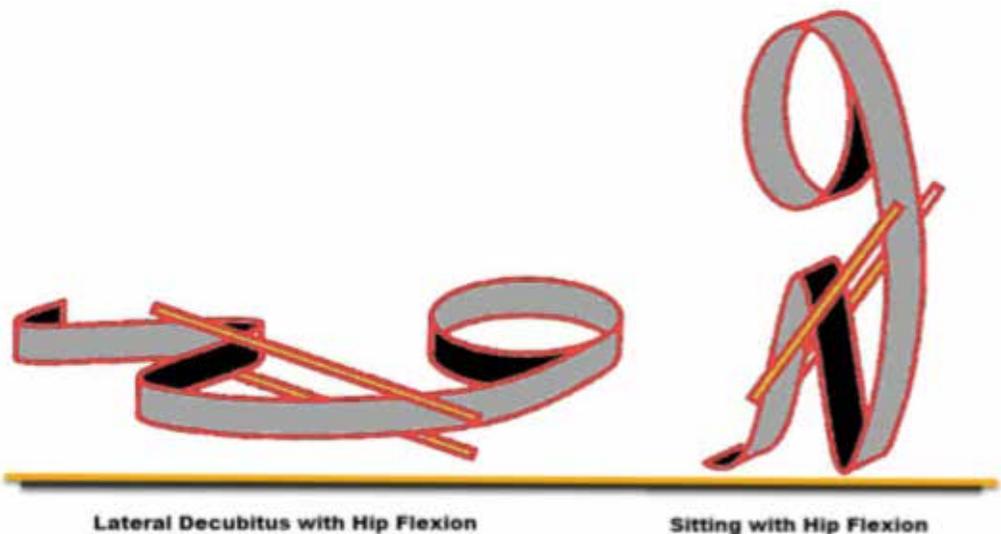
Lumbar punctures are commonly performed in the pediatric emergency department in neonates and infants. Multiple studies have looked at patient positioning to maximize interspinous distance, and the consensus is that hip flexion in the seated upright position provides the largest space in which to introduce a lumbar puncture (LP) needle. We will review the current literature and propose an idea on patient positioning to increase hip flexion and make the collection of cerebrospinal fluid (CSF) easier.

Discussion

The positioning of neonates for the lumbar puncture procedure seems to be very much an issue of personal preference. In fact, most clinicians use the flexed lateral decubitus position for neonatal LP's,¹ but the evidence from a number of prospective and observational studies suggests for several reasons that the upright sitting position with knees maximally flexed is the best.

In a 2010 publication, Abo et. al utilized portable ultrasound to evaluate pediatric subjects in 5 different positions. Their results demonstrated that hip flexion, both in the seated and lateral recumbent position, significantly increased interspinous space. However, maximum interspinous space was achieved when the subject was seated with flexed hips. Other studies confirm these findings for both neonates and adults.^{2,3,4,5,6} Whether or not the increased interspinous space translates to greater success is not clear. In fact, both a retrospective and prospective randomized trial by Hanson et al. suggests that that the seated, upright position may not improve the success rate of neonatal lumbar punctures as compared to the lateral decubitus position. Nevertheless, both of these studies acknowledged an important limitation. The authors acknowledged that the operators were possibly less experienced with the upright position as compared to the more popular lateral decubitus position. Consequently, the providers' familiarity with the lateral position might have biased their results toward more success in that position.^{7,8}

Nevertheless, there are other excellent and evidence based reasons for recommending the upright position for neonatal lumbar punctures. First, the risk of oxygen desaturations is



less with the seated upright position as compared to the lateral decubitus position.

Gleason et al. found that oxygen desaturations were significantly less common in the upright position when the sitting upright position was compared against two lateral recumbent positions in preterm infants undergoing lumbar puncture.¹ In another randomized controlled trial by Weisman et al 26 neonates with illness receiving LP were studied in the sitting, lateral knee-chest or lateral without knee-chest positions. The mean transcutaneous oxygen pressure was lowest in the lateral knee-chest position as compared to the other two positions.⁹

Additionally, it is the author's opinion that the upright seated position allows the easiest identification of iliac crest and vertebral spinous process landmarks as well as monitoring of the shoulders for unwanted rotation or loss of vertical straightness to the vertebral column.

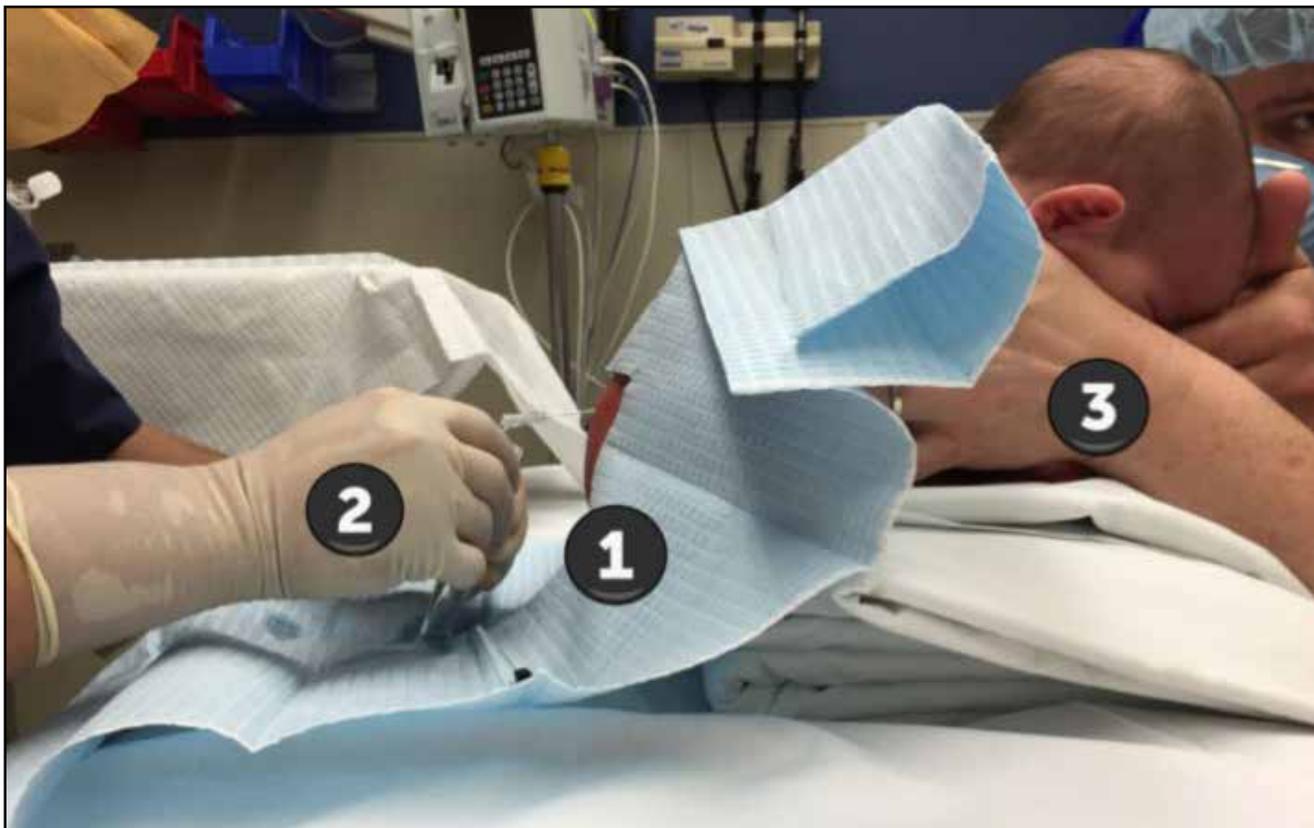
THE SOTO RAMP

The positioning of an infant or neonate in the seated position with flexed hips while maintaining adequate room for CSF collection is difficult to achieve without an adjunct. It is possible that this position can occur by ramping with folded sheets under the infant and allowing the infant's buttock to slightly hang over the edge.

In this paper we introduce the Soto ramp concept for neonatal lumbar punctures. There are at least three potential benefits of this technique.¹ The upright infant's knees can be maximally flexed if the buttocks is allowed to slightly hang over the edge of the stacked towels. ² Without the Soto ramp the lumbar puncture needle extending from the lower back can often be located only centimeters from the bed. The ramp elevates the spinal needle draining cerebral spinal fluid (CSF) from the back several inches from the flat surface of the bed and allows greater space for maneuvering the tubes used to collect the dripping CSF.³ The holder of the infant is allowed a comfortable padded ramp on which to stabilize his or her hand forearms and hands that are grasping the infant's arms and legs. Since lumbar puncture success is anecdotally often attributed to the skills of the healthcare provider holding the infant, this may be an especially important contribution.



Continues on page 12



Emergency Medicine Residency Update: Medical College of GA at Augusta University

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Dan graduated from the Georgia Regents University Emergency Medicine Residency Program in 2013. He is currently serving as an Assistant Residency Director in the Department of Emergency Medicine at the Augusta University at Medical College of Georgia.



As the weather gets colder, the interview season is upon us again. We are both humbled and excited by the applicants to our program. We have received over a thousand applicants for our civilian match. Gifted applicants from across the country will be coming to interview with us in the coming months.

This year's applicant pool is not only excellent in quantity, but it is also stellar in quality. In addition to excelling academically, applicants this year have been recognized for their charitable work and clinical skills. The commonly recited joke of prior graduates that they are relieved that they did not have to compete with the current applicants has never been more true.

We have just completed our selection of military candidates for next year's intern class. We continue to be the country's only emergency medicine resident that trains both active duty military and civilian residents. It is our honor to work with those interested in serving their country through providing excellent emergency medical care.

Our residents have recently won the national EMRA MedWAR competition in Red Rock Canyon National Conservation Area. They raced against nine other teams on a course that was over 12 miles long. Carissa Chalut, Darrel Douglas, and Parker Smith had a time of one hour and 55 minutes, which was over an hour ahead of the second place team! This is the third MedWAR that our residents have won this year, showing their dedication both to wilderness medicine as well as endurance racing.

Our department also continues to serve our local hospital and community. Many faculty and residents assisted with the care of hundreds of people displaced by Hurricane Matthew. Another group recently returned from a medical missions trip to Haiti. We have also been busy teaching every resident at MCG in how to use ultrasound to place central lines more safely. The hours are long, but the work is very gratifying.

Looking back on 2016, our residency continues to improve. We are very excited by all that 2017 will bring!

Summary

In summary, the seated upright, hips flexed position allows the greatest possible interspinous width for adults, children and infants. And, the wider the interspinous space theoretically gives the best possible conditions for entering the spinal canal and a successful spinal tap. The Soto Ramp for neonatal lumbar puncture is a refinement to upright knees flexed position. Maximal knee flexion, a greater distance between the gurney mattress and the needle allowing safer maneuvering of the CSF tube and a more comfortable arm support for the operator holding the infant are accomplished with this technique. For a video describing the technique: <https://www.youtube.com/watch?v=TVPtC2SIY8o>

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Left Ventricular Aneurysms

Stephen Shiver MD, FACEP

A 60-year-old male presents to the ED with a complaint of chest pain. He reports a history of previous MI and states that his current pain is somewhat different than the pain associated with his prior infarction. He reports no nausea, vomiting, diaphoresis, or shortness of breath. He is well appearing and has unremarkable vital signs.

The patient's EKG reveals a sinus rhythm with a rate of 76, 1st degree AV block, and a slightly prolonged QRS duration consistent with an intraventricular conduction delay. There is also a single premature ventricular contraction present. What about the ST segments? There is clear ST elevation in the anterior leads, best demonstrated in V1-3.

The evaluating physician is immediately concerned about a possible anterior STEMI and activates the cath lab. Ultimately, the patient is ruled out for ACS and diagnosed with left ventricular aneurysm.

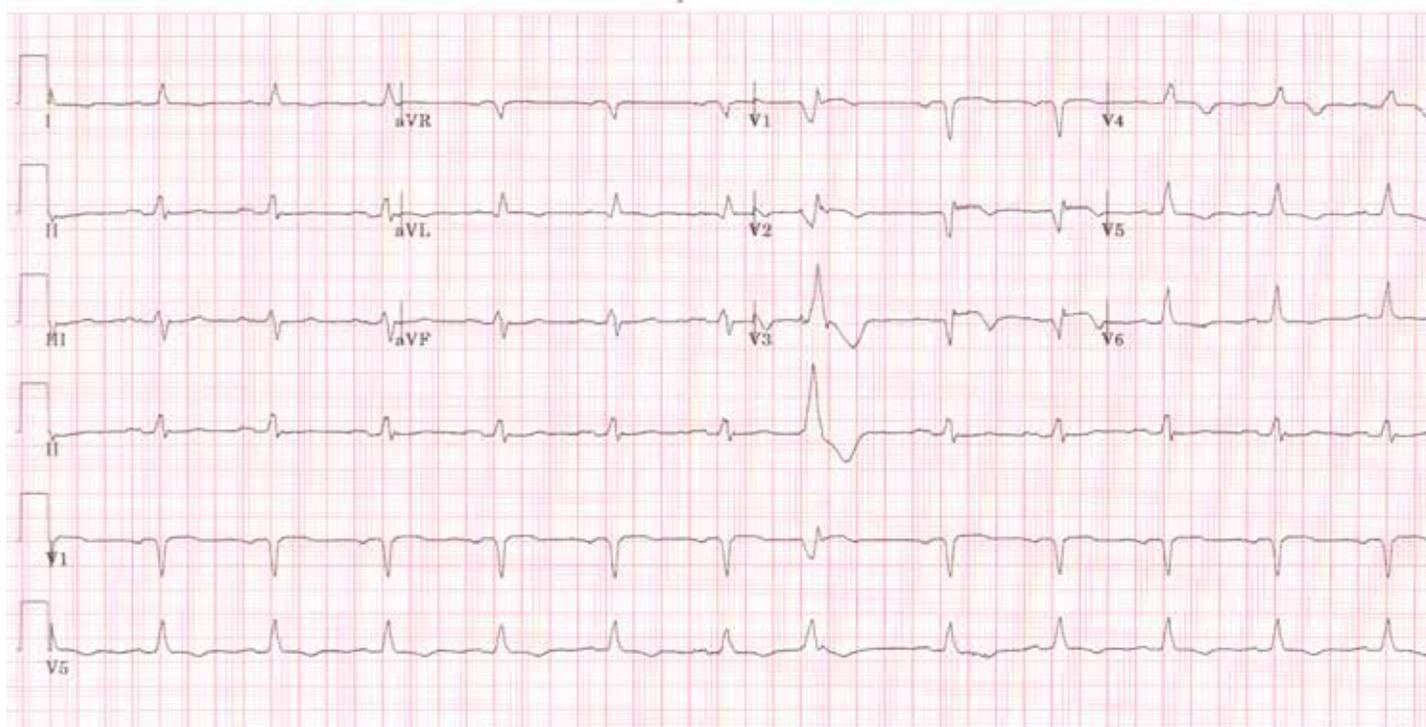
Left ventricular aneurysms are thought to arise in less than 5% of patients with STEMI and most frequently result from large transmural anterior MI's. The associated EKG changes are most commonly noted in the anterior leads, consistent with the known predilection for aneurysms to form in the anterior wall. Following a typical MI, the ST segments may remain elevated for a period of time (usually less than 2 weeks). Q waves, however, tend to persist. The post infarction development of a left ventricular aneurysm is well known to produce persistent ST elevation in the absence of acute ischemia. Factors favoring left ventricular aneurysm as opposed to acute STEMI include no EKG changes compared to prior tracing, concave up ST segment morphology, no dynamic EKG changes, presence of well-developed Q-waves, and no significant reciprocal changes (particularly ST depression).

EM providers should add left ventricular aneurysm to their differential for causes of non-ischemic ST elevation. One should always maintain a high index of suspicion for STEMI, however, and it is preferable to make an occasional overcall rather than miss a true STEMI. Having the ability to review a prior EKG can be immensely helpful and it is critically important to interpret all EKG's in the context of the patient's clinical presentation.



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Bedside Ultrasound Guided Pericardiocentesis via a Left Parasternal Approach: A Case Report

Darrel Douglas, MD and Jedidiah Ballard, DO



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Abstract:

This case discusses a 78-year-old male patient who presented to the emergency department with a pericardial effusion, hemodynamic instability, altered mental status and in respiratory distress. Emergent pericardiocentesis is traditionally performed via a subxiphoid approach, however, with the increasing use of bedside ultrasound in the emergency department, multiple approaches can be performed under direct visualization. We discuss in this case the use of bedside ultrasound and routine emergency department equipment to perform a pericardiocentesis via a parasternal approach under direct visualization which resulted in rapid and significant hemodynamic improvement.

Introduction:

Pericardial effusion and development of tamponade physiology is a frequent consideration for most critical patients in the emergency department. While definitive therapy via pericardial window or pericardiostomy is performed in the operating room, rapid stabilization by pericardiocentesis is an important and potentially life saving procedure that emergency medicine physicians must be prepared to perform. With the increasing use of ultrasound for invasive procedures, it seems logical to do so for such a low frequency, high yield procedure. Echo guided pericardiocentesis has been performed since the late 1980s to present day with success, however the majority of events are visualized in a subxiphoid approach with a true minority in a parasternal approach.^{1,2,5} However, an approach via the chest wall has increased in frequency at some institutions.⁶ Ultrasound guidance has generally been accepted to have a lower complication and mortality rate compared to a blind approach⁶. It has been determined to be a helpful technique, though still considered a temporary treatment for acute pericardial tamponade or poorly tolerated effusions.³⁻⁸

Case Report:

A 78-year-old male patient presented to the emergency department by ambulance with an EMS report of “respiratory distress.” The patient had a significant medical history of malignancy – previously diagnosed with squamous cell carcinoma of the lip and nose, large B-Cell lymphoma with a significant mass removed from his chest wall 8 years prior to presentation, and 8 days prior to presentation the patient was diagnosed by CT/biopsy with widely metastatic disease throughout his abdomen with preliminary pathology indicating adenocarcinoma and likely a pancreatic primary.

Upon arrival to the emergency department the patient was oxygenating 100% on a non-rebreather mask and responsive only to painful stimuli. His initial blood pressure on arrival was 62/42 mmHg. The patient received a 2L Normal Saline bolus within 10 minutes and a total of 3 doses of 20mcg push dose epinephrine prior to rapid sequence induction and intubation. The patient was then put on a norepinephrine drip and broad-spectrum antibiotics were ordered. As antibiotics were initiated and the blood pressure improved with norepinephrine, a bedside cardiac ultrasound showed a large pericardial effusion, approximately 1.5cm in diameter (Figure 1) and pericardiocentesis was discussed.

The patient received an abdominal CT 8 days prior to arrival for evaluation of abdominal pain. This abdominal CT showed a “small” pericardial effusion per the report. Upon viewing the CT at the patient bedside, it was determined to be significantly smaller than the comparison bedside ultrasound. Given the patient’s clinical status and vasopressor requirement,

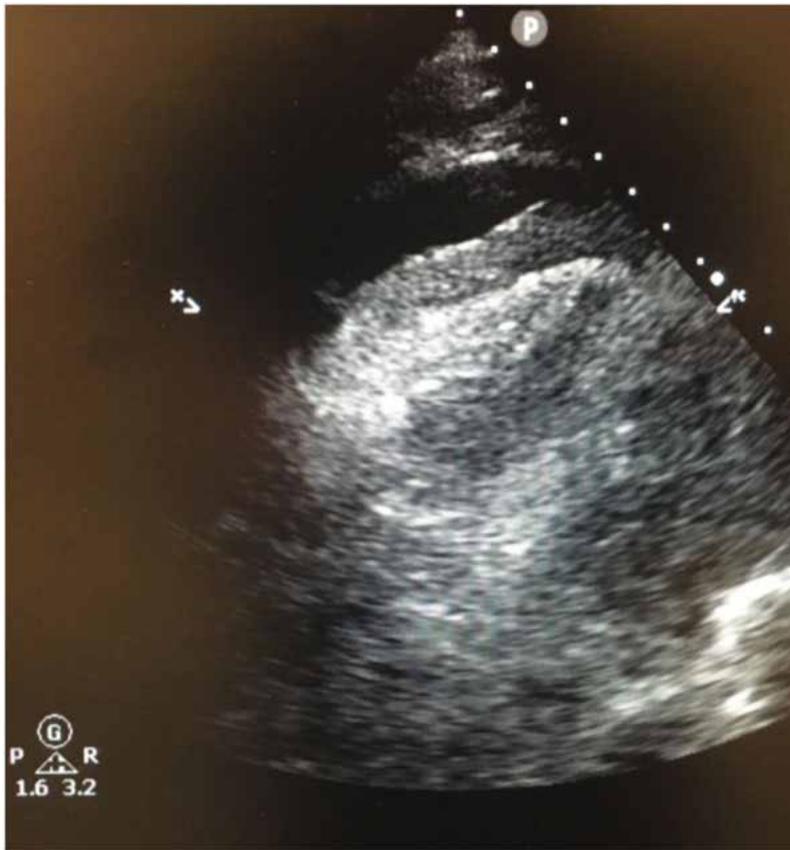


Figure 1: Large pericardial effusion on bedside emergency cardiac ultrasound



Figure 2: Trace residual pericardial effusion on repeat formal echocardiography

it was then decided to perform a bedside pericardiocentesis.

Materials were gathered to perform the pericardiocentesis: sterile barrier materials, an ultrasound with wide linear probe, a 14G 3.5" angiocatheter and needle, 3-way stopcock, 10cc and 60cc syringes. The intercostal margin with the largest viewable strip of pericardial fluid was identified and the needle was advanced at approximately a 35-40° angle from the chest wall and advanced just superior to the inferior rib. As the needle was advanced it was identified in real time via ultrasound and the needle advanced to enter the pericardium. The pericardium was quickly penetrated with return of straw colored fluid and the angiocatheter was advanced and sewn in place. A total of 60cc of pericardial fluid was removed and the 3-way stopcock closed and secured with adhesive dressing for further access if necessary.

Post procedure, the patient had significant improvement in his hemodynamics with near discontinuation of the norepinephrine infusion to maintain adequate perfusion. The patient was then admitted to the medical intensive care unit and underwent evaluation with formal echocardiography, which showed a trace residual pericardial fluid (Figure 2). Ultimately, the patient expired after the decision to withdraw care was made by the medical power of attorney.

Discussion:

Ultrasound guided invasive procedures are becoming increasingly utilized in the emergency department and it follows that bedside pericardiocentesis should be performed, if possible, under ultrasound visualization. Traditionally the subxiphoid approach has been used in the majority of cases, however the left parasternal approach has been successful.^{1,2,5} Compared to the subxiphoid approach, the needle visualization may be significantly increased in the parasternal approach and less tissue may

need to be traversed. The parasternal approach allows for the area of maximal collection to be identified and directly targeted while allowing for avoidance of the liver in cases of hepatomegaly.⁶

Malignancy is a common cause of pericardial effusion, being the majority of many cases studied for this procedure.^{1,2,3,5,6} This patient was previously diagnosed with effusion on CT imaging, however developed hemodynamic instability with a comparably larger effusion. While he did not exhibit the classic jugular venous distension and muffled heart sounds with his associated hypotension, his clinical requirements for vasopressor support drastically reduced, indicating clinical improvement. Unfortunately, shortly after admission the patient expired. This was however not due to hemodynamic compromise but as a result of the care team getting in touch with power of attorney to best determine the pts wishes and care was withdrawn. In the setting of malignant pericardial effusion, prognosis is poor.^{5,6,8}

Most studies of this procedure evaluate cases performed in the intensive care unit or operating room, often where there are prepared kits and prepared protocols. Often resources may be limited in real time in the emergency department as in this case without a prepared pericardiocentesis kit. A simple long, large bore angiocatheter, 3-way stop cock, and common sterile barriers are enough to successfully perform the procedure.

This case demonstrates a successful use of an ultrasound guided technique from the left parasternal approach that can easily be used in the emergency department. The

technique has been increasingly used in the inpatient setting with success. This case demonstrates a safe and easily performed technique performed with common bedside equipment using ultrasound to directly visualize the needle entering the pericardial sac.

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THANK YOU!

The Board-Certified Emergency Nurse Practitioner: Advancing the Profession

Dian Dowling Evans, PhD, FNP-BC, FAANP

In January, 2017 the American Academy of Nurse Practitioners Certification Program (AANPCP) will launch a [Board Certification Examination](#) for emergency nurse practitioners (ENPs) establishing a process for validating the specialized knowledge and competencies of ENPs. Board certification for ENPs differentiates those entering emergency NP practice with specialized knowledge and skills, from those NPs without specialty preparation who may require more extensive, on-the-job training to develop ENP competencies.

Momentum for development of specialty certification of the ENP accelerated with the establishment of the [American Academy of Emergency Nurse Practitioners \(AAENP\)](#) in 2014. Per their mission statement, AAENP “*promotes high quality, evidence based practice for nurse practitioners providing emergency care to patients of all ages and acuities in collaboration with an interdisciplinary team,*” including support for “*training and education in emergency care...to offer patients across the life span the highest quality care at all acuity levels.*” What began as a grassroots organization of 10 founding members, endorsed by ACEP at the 2014 Scientific Assembly, has in two years grown to a nationwide organization of over 500 members, and this growth is expected to continue.

There are an estimated 222,000 NPs within the U.S. with an estimated 13,320 practicing in emergency settings (AANP, 2014; 2016). Although NPs have worked in emergency departments (EDs) since the 1980’s, formalized educational programs for ENPs has remained limited. There are currently six graduate academic, and 10 post-graduate fellowship programs offering ENP specialty education within the U.S. Basic nurse practitioner preparation varies by population focus, e.g., family, adult, or pediatrics, which underlies scope of practice and entry-level competencies. Upon completion of a population-focused program of study, NPs become eligible for certification within the population – required in Georgia for licensure to practice. Specialty certification as an ENP is additional to population-focused certification and recognizes those NPs who have specialized competencies to meet the unique needs of patients who present to urgent and emergency care centers, regardless of age, presenting complaints, or levels of acuity.

Currently, AAENP state and regional chapters are working with regulatory boards to clarify ENP scope of practice. AAENP has also prepared resources for employers and physician colleagues describing the unique qualifications of board certified ENPs. The [ENP Fact Sheet](#) discusses the ENP role and the updated [ENP Scope and Standards of Practice](#) incorporates new information on essential knowledge and skills.

Over the past two years, AAENP has participated with ACEP on national policy initiatives, and with state chapters, including GCEP, to keep members informed about ENP scope of practice and regulatory issues. Individual and group membership in AAENP is open to all emergency providers. [Member benefits](#) include subscription to *Advanced Emergency Nursing Journal*, the organization’s official peer-reviewed publication, along with marketing, sponsorships and other opportunities.

AAENP is committed to “*collaborative practice to improve emergency care*”. GCEP members are welcome to join with us as we continue to advance our profession. For questions about ENP recruitment, practice or education, feel free to contact me directly ddevans@emory.edu.

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Medicine and Freedom

Andrew Ross, MD, FACEP

It is an unfortunate reality of the modern era that within the emergency medicine community we, as an organized group of people practicing a very specific trade with a unique and valuable skill set, must spend vast amounts of treasure and time lobbying our government for the right to establish, in conjunction with our patients (“consumers” to use the common parlance), our own worth. And yet, this is apparently the current state of affairs.

In any other (free) market, it would seem inconceivable that an entire industry would accept the practice of an insurance company only paying a percentage of that which is billed to them for services rendered. Furthermore, it seems especially egregious that those same companies would then lobby the government to make it illegal for workers in that industry to make up the difference by billing the direct beneficiaries of their (sometimes life-saving) services. And yet, this is what is happening. To turn a phrase, please don’t pee on my leg and tell me it’s raining.

Imagine the frustrated auto mechanic in a similar situation. He fixes a fender and bills the customer’s insurance company. The company pays 58% of the bill and considers the matter *a fait accompli*. The mechanic understandably feels a bit jilted. He directly bills the owner of the repaired vehicle for the other 42%. The owner is offended. What does he pay monthly insurance premiums for? He contacts his insurance company. “Yes sir. That is egregious! Sorry about that. Let’s call your duly elected senator about this.” The senator is responsive. Several dinners later, the 42% is deemed illegal. The auto mechanic is working at 58% effectiveness. The government, by virtue of doing more, at considerably less.

With insurance companies pulling out of the Obamacare exchanges in many states, the few remaining have increased clout with the Feds. These plucky few have decided that balanced billing is an insidious plot designed by greedy rich doctors (notwithstanding the average medical student debt of \$180,000 dollars—my brother is pushing \$400,000...\$400 thousand!) to pickpocket their clients.^{1,2} Since when is billing someone for a service rendered greedy, or God forbid, unfair? In the words of Milton Friedman, admittedly not a big fan of the AMA or other “medical unions,” “dishonesty may not always pay but surely it sometimes does.”³ Just ask Aetna CEO Mark Bertolini who made a cool \$17.3 million in 2015. Or Cigna CEO David Cordani who also made \$17.3 million that year. Or UnitedHealth CEO Stephen Hemsley who made \$14.5 million (sucker).⁴ Not that I’m against making as much capital as one can, but I at least ask that you make your millions honestly. When aided and abetted by the boys on the Hill it’s a little more difficult to circle that square. Regardless, what’s a poor rich doctor to do?

I suppose we could all just drink more fine Kentucky bourbon, sigh into our empty glasses and get on with it all. However, it seems that my love for the free market is stronger than my suspicion of big government (just barely). We should beat them at their own game. We should ban the ban of balance billing! We should bill appropriately and humanely. We should reap the harvest of our efforts and sleep well knowing that we’ve done so. I hate that we have to pony up to play ball, but until the system is changed I’d rather play by their rules than take my football and go home. If I’m gonna get my butt kicked I’m gonna go down swinging. Anyone else? Once more into the breach my friends and colleagues! For medicine! For freedom! Working EM doctors, unite!

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Appscriptions: Prescribing mHealth Applications for Our Patients

Jason Lowe and Dave Kiefer

Often one of the first things that we see when we walk in the room to see our next ER patient is the patient on their cell phone. (If they're a true veteran of the ER, they probably have a charger with them too.) Our first instinct as providers can range from annoyance to indifference to joy (because nothing is greater than documenting how well that toddler looks playing on a cell phone in a room.) Outside of child life specialty, we rarely use those cell phones to help our patients and ourselves.

What if we took the time to “prescribe” cell phone apps for patients to use to better understand or manage their health or healthcare experience? The idea of integrating mobile health telecommunication applications (mHealth apps) is already well-publicized. JAMA published a study on projected utility of mHealth apps in 2013 detailing multiple reasons for excitement among the healthcare community for mHealth.¹ According to *Medical Economics*, by fall 2014 up to a third of physicians were prescribing mHealth apps but half of those were only suggesting looking in an app store.² According to a Research News March 2015 study, 16% of physicians (across specialties) were prescribing mobile mHealth apps with a total of 46% that expected to incorporate the concept into their practice in the next 5 years.²

To date, there is no immediate data on the use of mHealth apps specifically related to the practice of EM. There are likely many reasons for this. There are only around 260 published studies of particular mHealth apps in the medical literature at large.² The vast majority of these are more primary care focused. Roadblocks for EM physicians likely include a dearth of EM-specific mHealth apps, lack of familiarity with what apps are available that could positively impact our patient populations, and concern that use of mHealth apps would represent a net loss in the cost/benefit of time spent with patients, whether that be due to a lack of patient compliance or simply a lack of necessary technology and mobile data service.

Still, the potential benefits of integrating mHealth apps into our practice is real. As practicing physicians, we frequently use apps to help us decide what dose of a drug to prescribe or quickly review a particular diagnosis, but “prescribing” or recommending the use of certain mHealth apps to our patients could prove beneficial in a number of ways. Patients could experience a greater sense of involvement in the outpatient or ongoing management of their condition. This could lead to greater compliance with treatment or follow-up. In certain cases, these apps might provide patients with better understanding of their condition through repeated access and review, something that likely goes beyond the standard print discharge papers.

While better medical care and outcomes for our patients are always our primary goals, simply taking the time to help install an app and discuss it might very well lead to a greater patient satisfaction for that visit. The potential for greater understanding and compliance might also lead to a decrease in return ER visits for the same issue.

Any mHealth app that we might potentially prescribe is most likely to be practically helpful for our patients if it is free to download, easy to use, medically accurate, and applicable to EM-specific patient population. So, with over 40,000 mHealth apps available³, how would we as EM physicians even get started should we consider prescribing them for our patients? The websites iprescribeapps.com and imedicalapps.com. are two available resources that provide a great start to answer this question. [Iprescribeapps.com](http://iprescribeapps.com) is a site that uses the vast information on imedicalapps.com to allow physicians to choose specific apps based on a disease process and prescribe them to patients by sending a link to their email address.

Imedicalapps.com was founded in part by a practicing EM physician and is currently accepting beta users with no fee to sign up. While the available mHealth apps on the site are certainly well-vetted according to evidence-based guidelines and practices, they are not specifically tailored to the EM perspective. It seems most likely own experiences as EM providers prescribing mHealth apps will serve as a true vetting process of mHealth apps, and our networking can improve our experience for our fellow providers and our patients.

With that in mind, here is a very brief list of apps that the authors suggest you consider prescribing to your patients.

GoodRx App – GoodRx functions to ensure users can fill prescriptions at the cheapest possible price. Simply installing the app and entering in the prescription drug with or for the patient can give them access to coupons, manufacturer discounts, and information on which local pharmacy can fill the prescription the cheapest.

MyChart App – For any patients seen in a facility using EPIC as their EHR, this app allows patients to have direct access into their results, limited review of notes, and access to communication with their providers. Other EHR platforms have mobile apps with varying degrees of access specifically designed for patients. The MyChart app can be installed with instructions to follow-up a particular lab value with a primary care physician or simply to be used as a reference point for any physician encounter in the future, including the ER down the street for a follow-up visit in 2 days.

Medisafe Medication Reminder App – There are several different available apps that accomplish this same task. This one allows you to add a medication directly or import a full med list from an online account with either Walgreen's, CVS, or Rite Aid. It's among the highest user-rated apps for this purpose. You can also personalize the reminder tone, and the app has a direct link to GoodRx as well.

What about actual disease processes that might educate our patients to better understand and manage their specific condition after they leave the ER? The reality of the current health landscape is that many apps for such purposes fall short of what we as EM physicians might desire for our patients. Here is one example with which we've had good success.

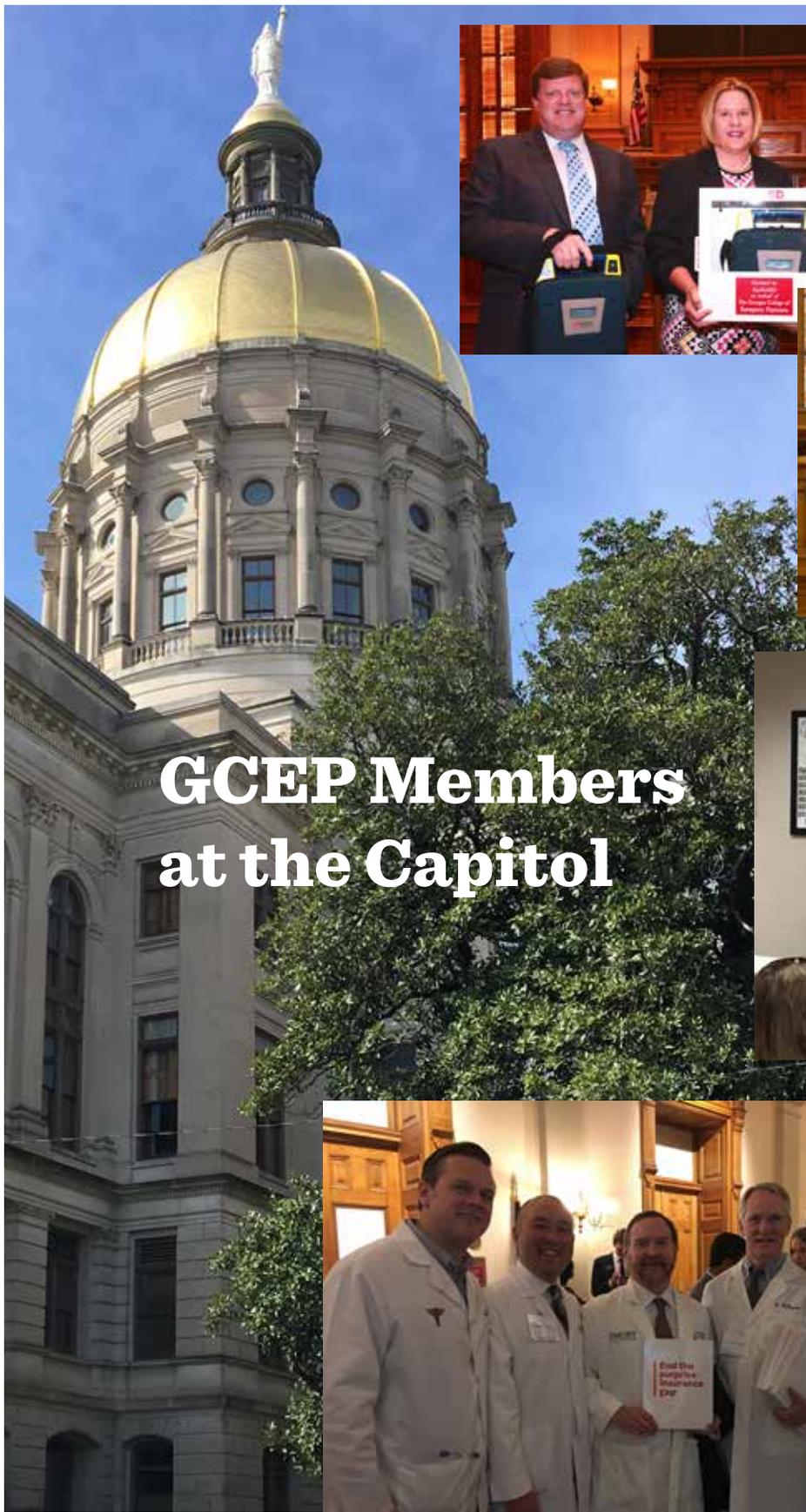
Eczema Doc App – This app helps patients (and parents of patients) understand what treatment options are available for patients with eczema. It has some illustrations and details things like how to properly apply/use moisturizers, wet wraps, and bleach baths.

Our hope is this article fosters a discussion about what mHealth apps we as EM physicians find useful for our patients. Furthermore, we hope that discussion and shared experience prescribing apps allows us all to incorporate a growing number of well-vetted, accessible, and usable apps into our daily practice. Future considerations could include ACEP-sponsored development of apps with more diagnosis and treatment information related to ACEP guidelines and research into any potential relationship among patient satisfaction scores, return visits, or other directed patient outcomes for patients prescribed mHealth apps versus those that were not.

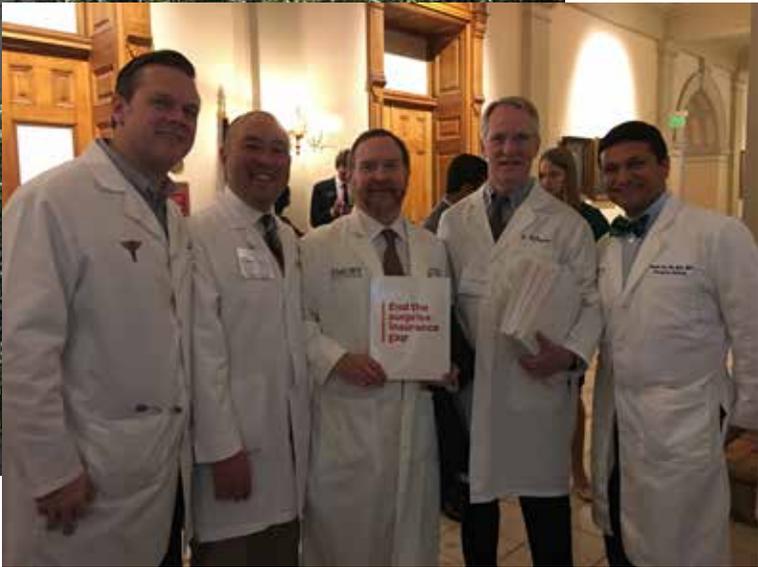
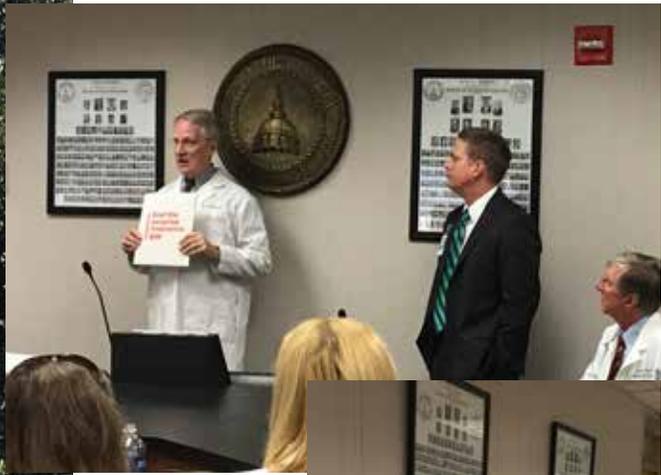
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FDA has only approved about 100 mHealth apps so far.³



GCEP Members at the Capitol



The Presidential Election and Your Portfolio



**Setu Mazumdar, MD, CFP, President and Wealth Manager
Financial Planner For Doctors**

We have inaugurated President Trump. Regardless of what you think about him, you will hear wildly differing views and theories about how Trump—through various economic and tax policies—will impact your investment returns and how you should reposition your retirement portfolio. You will also hear heated debates between Democrats and Republicans about which party’s President has coincided with higher stock market returns.

Let’s take a look at some evidence suggesting that you are better off avoiding the temptation to make any significant changes. The first chart shows the returns of the US stock market as represented by the S&P 500 Index from 1928-2013 during various Presidencies. The second chart shows the growth of one dollar invested in the US stock market over nine decades and 15 presidencies (Coolidge to Obama).

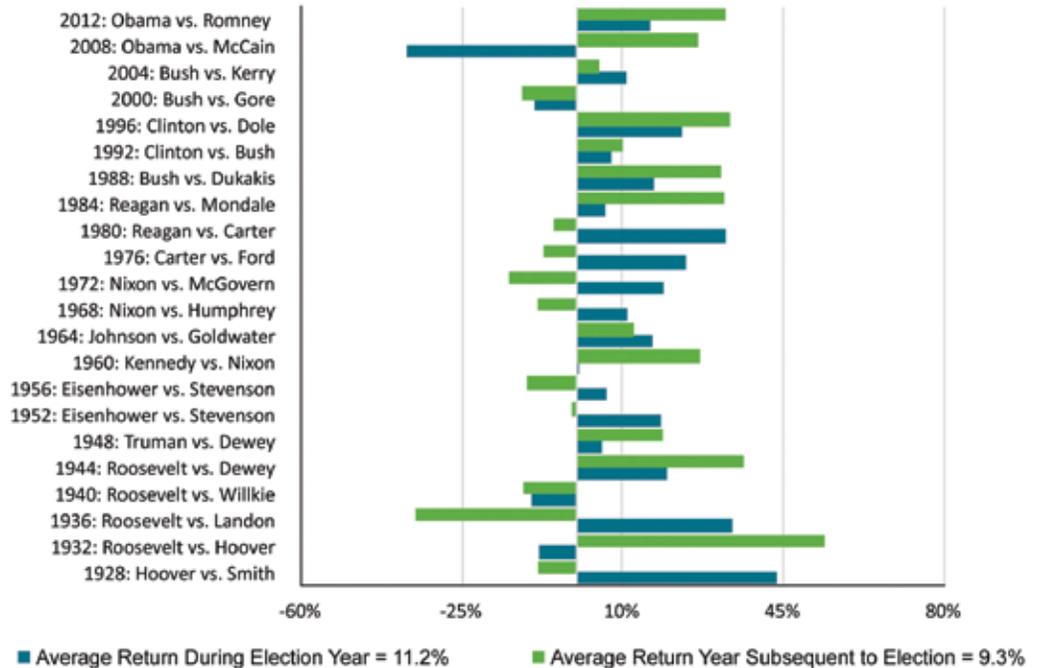
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Returns During and After Election Years 1928-2013

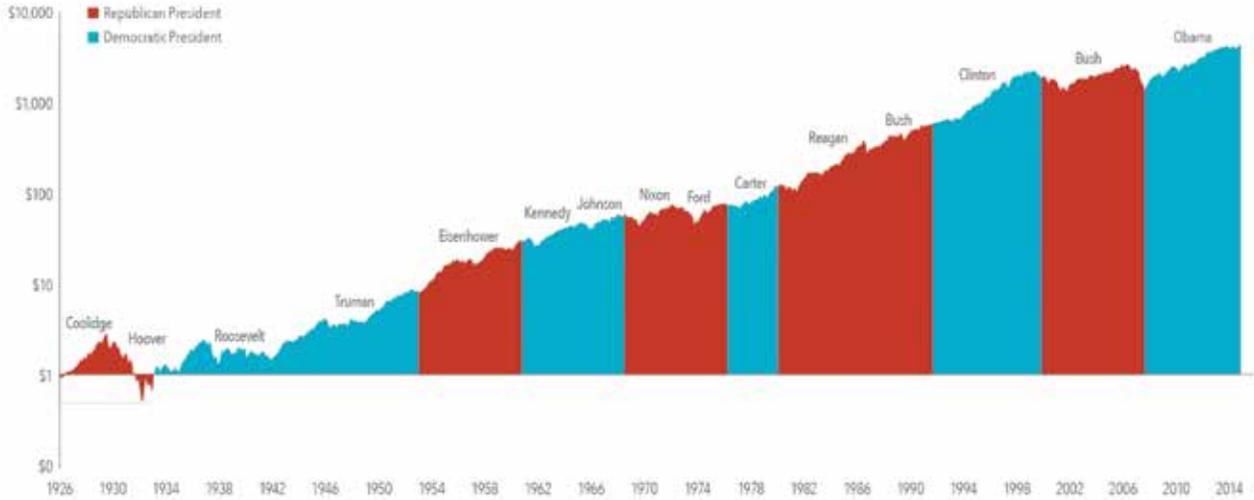


What we find is the following:

1. There is no obvious difference in long term stock market performance based upon which party holds the Presidency.
2. Markets have performed well under both political parties. There has been no statistically significant impact on US stock market returns.
3. On average market returns have been positive in election years and the subsequent year.

What this means is that the election is one of numerous factors that determine securities prices in any given year—or any given day. The US economy and the global economy find ways to grow despite changes in political parties, tax laws, regulations, and economic policies. If you are truly a long term investor, you should not change your portfolio based on Trump—or any other President.

Growth of A Dollar Invested In S&P 500 January 1926-June 2016



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