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COVID-19 Alters Practice Patterns: Physicians and Clinics Adapt

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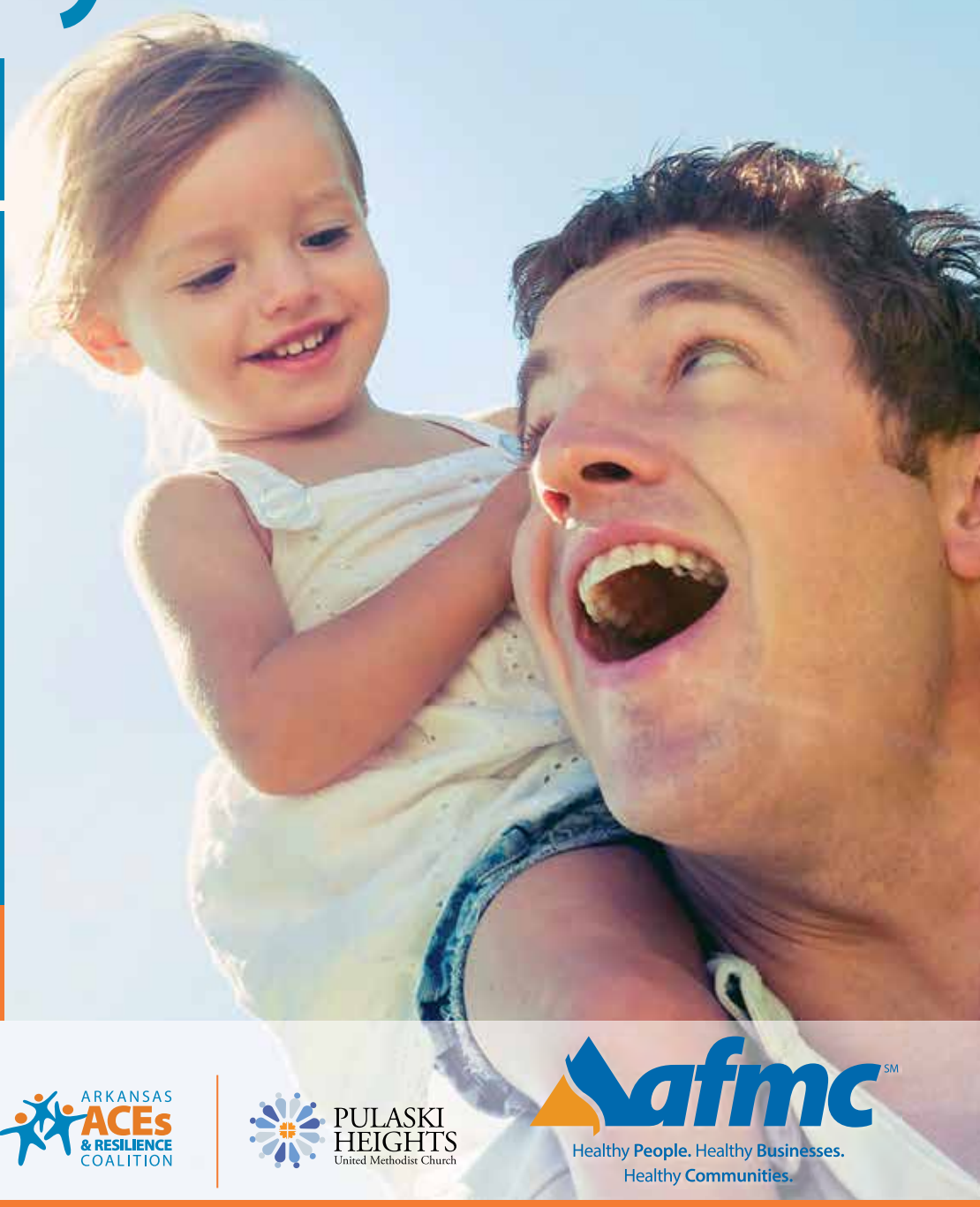

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BY DARRELL R. OVER, MD, MSC, FAAFP

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Your Patient May Be Lying To You – Here is Why

Fans of the medical drama "House, MD" may recall the soliloquy by the title character, Dr. Gregory House, portrayed by actor Hugh Laurie: "It's a basic truth of the human condition that everybody lies. The only variable is about what. I don't ask why patients lie. I just assume they all do. Truth begins in lies. I've found that when you want to know the truth about somebody that someone is probably the last person you should ask. Reality is almost always wrong. Everybody lies."

This view of patients was typical of the cynical, misanthropic, and narcissistic Dr. House personality. Research, however, suggests that this assertion is much closer to the truth than many physicians would like to believe.

A survey[1] of two patient cohorts comprising 4,510 total respondents provides perspective of the scope of this issue. The two cohorts were classified as MTurk (n=2011; mean age 36 years; 84% white; 60% female) and SSI (n=2499; mean age 61 years; 79% white; 51% female). Among both cohorts, more than 40% had completed at least a bachelor's degree. Substantial agreement was discovered in answers to questions for ever having concealed at least one of seven types of clinically relevant information [MTurk vs SSI]: disagreeing with physician's recommendation (46% vs 31.4%); not understanding physician's instructions (32% vs 24%); unhealthy diet (25% vs 20%); prescription medication noncompliance (23% vs 18%); irregular exercise (22% vs 22%); purposefully omitting a medication (16% vs 10%); or taking another's prescription medication (14% vs 9%). Overall, about 81% of the MTurk cohort and 61% of the SSI cohort admitted to concealing at least one type of information. These findings are consistent with a 1994 study revealing that about 84% of patients concealed the truth and approximately one-third of patients lied to their physician.[2]

A survey of over 1200 Medicare Advantage-insured patients revealed that 47% of patients either "sometimes" or "often" lied to their physician. Interestingly, women were 16% ***less likely* to** be truthful with a male physician whereas men were 30% ***more likely*** to be truthful with a female physician.[3] Another insurance company survey of 500 patients demonstrated that 46% lied about tobacco smoking; 43% lied about exercise habits; 38% lied about alcohol consumption, and 28% lied about sexual partners. Men lied more than women about alcohol consumption (50% vs 32%) and women more than men about sex (33% vs 21%). Patients less than 35 years of age lied more about tobacco smoking whereas patients over 35 years age lied more about exercise.[4]

The danger for patients lying to us range from failure for timely diagnosis, a misdiagnosis, or medical error in therapy. Given these risks, why do patients lie to their physician? Most patients do not realize that by lying they may cause us to mistakenly harm them by our action or inaction. In the above studies, recurring reasons given for lying included fear of embarrassment, concern for being negatively judged, and to avoid lectures about unhealthy behaviors.

We are unable to diagnose, treat, or advise our patients effectively unless they share information openly and honestly with us. The reasons for lying noted above suggest that how we communicate in certain situations may cause patients to be hesitant to reveal clinically relevant information. By clearly communicating that we have no other motive than to help and that we have only their best interests at heart – and while comporting a caring, non-judgmental demeanor – we can alleviate the major obstacles preventing patients from dealing with us honestly and improve the care we provide.

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"In the above studies, recurring reasons given for lying included fear of embarrassment, concern for being negatively judged, and to avoid lectures about unhealthy behaviors."

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BY CASEY L. PENN

COVID-19 Alters Practice Patterns: Physicians and Clinics Adapt

In the July *Journal*, we shared what some Arkansas physicians and clinics had experienced since the threat of coronavirus first emerged in our state and nation. As many people went into isolation mode in response to COVID-19, health care workers continued – as much as allowed and possible – working on the front lines.

After a pandemic was declared, some clinics had to close their doors for a time while others worked overtime to keep up with increased demand for patient care. Some struggled to implement telemedicine for the first time while others built on established telehealth systems. Circumstances were as diverse as health care specialties; however, in all cases, concern was high as physicians and staff first faced the new and novel virus and took immediate steps to protect patients and themselves at a time of elevated risk, lack of supplies, and many unknowns.

After an initial period of near shut-down, Arkansas, led by Gov. Asa Hutchinson, began following White House phase guidelines (see https://www.whitehouse.gov/openingamerica). On June 15, 2020, Arkansas entered phase two, and as the state began to lift some restrictions while encouraging others, the state's physicians and clinics were affected by rules and regulations on telemedicine, elective procedures, testing strategies, and more.

As the pandemic continues, so have the experiences of our members. This month, we turned to clinics from around the state for a status check on things like patient response and patient load, personal protective equipment, telemedicine, testing, and other continuing concerns and challenges.

PHOTO COURTESY OF GASTROARKANSAS.

Pandemic-Era Patient Volume

Obstetrician and past AMS President Amy Cahill, MD, summed up what she has experienced in relation to patient load since the pandemic began. "Initially, everything was cut back, but my volume is back up to where it was," she said. "That said, obstetrics is a little different; when orthopedic surgeons had to stop doing total knees, we were still doing most of our 'elective' surgeries like hysterectomies. For the most part, when people need OB care, they can't put it off until a pandemic is over.

"I feel like we're starting to see our referrals pick back up from family doctors – those lagged for a bit. It may be that some of this volume is catching up from what we missed. No mammograms were done from mid-March to the last week of May. All those people are now re-entering the system."

Patients' perspectives are perhaps the biggest change between March and July, she indicated, "It isn't that COVID-19 cases are down, but people are learning to protect themselves and aren't as afraid to enter the system."

AMY CAHILL, MD

PATRICK MCGOWAN, MD

Patrick McGowan, MD, practices along with three physicians at MANA Family Medicine Springdale. In discussing the change from phase to phase and patient load specifically, he said, "As it did for many others, the COVID-19 pandemic brought a lot of uncertainty to our practice. Our goal from the onset has been to continue to provide care to our patients, regardless of their need.

"The phases have not necessarily affected the way we have practiced. As MANA clinics are physician-owned, we have had a lot of autonomy on how our practice has functioned through this time. Luckily, we have run at full capacity throughout the pandemic. I think that speaks to our ability and willingness to adapt as our patients' needs change. We keep our well and sick patients distanced from each other, ensuring their safety. We are also taking measures, as we have since the start of the pandemic, to keep our staff safe through usage of masks, telephone triage, placement of permanent glass barriers, proper use of PPE, and other means."

Most PPE in Better Supply, For Now

From what we're hearing from clinics around the state, PPE is in much better supply after initially being scarce (to put it mildly.)* "PPE has been a bit of a roller coaster from week to week depending on the need," said Jeff Hunnicutt, CEO of Highland Oncology, also in northwest Arkansas. He responded on behalf of the 20 physicians who specialize in hematology, medical oncology, palliative care, radiation oncology, and surgical oncology. "We have finally settled in on masks being a reliable item to obtain, but gowns have become scarce. I am sure that we will be dealing with this for a while."

JEFF HUNNICUTT

As far as mask wearing by patients, Dr. Cahill reported that things are going well in the Pine Bluff area where she practices. Patient education is an important part of that. "I think people are pretty good at wearing their masks," she said. "Sometimes you hear in public, people are like 'This mask is driving me crazy.' Well, physicians have been wearing them 24/7, so we're okay with it. It's a little bit tough sometimes to get patients to understand why it's important and not to wear them under their noses. But at 50 patient encounters a day – and then with contact tracing – if one of us were to become infected, and then we had to list every person we came in contact with who didn't have a mask on? That's exponential.

"Staff exposure is lower thanks to PPE. For instance, our patient zero was in the hospital for six days before we knew he had COVID-19. Now that we have ways to protect ourselves, it's better. If we weren't able to get PPE, things could go bad quickly. We can't open the world back up again, not now. Not sitting around with 500 people without a mask on."

Settling into a New Normal

As much as physicians and patients might like to get back to "normal," the reality is that *normal* will continue to evolve. "Business as usual has changed to include masks, more frequent hand washing, fewer visitors allowed, and regular screening of patients," said Dr. Cahill. "Patients have also adapted quickly to waiting in their cars, calling ahead if they're ill, and similar safeguards."

PHOTO COURTESY OF GASTROARKANSAS.

Some changes may ultimately be for the best, according to patient feedback. "It's hard to imagine silver linings being found among the clouds of COVID-19," commented Hunnicutt, "but we have found several benefits that we would like to keep in place at Highlands going forward, one of which added an element that we were surprised by. Our drive-thru lab draw and injection program was originally intended to relieve the volume in waiting rooms and offer an open-air place for patient interaction with staff, but our patients have raved about the convenience of just driving up, getting what they need, and being on their way."

ALISA PETET

In other instances, getting back to traditional care patterns has been refreshing for patients and providers. Alisa Petet, clinic administrator for GastroArkansas of Little Rock, contrasted where the clinic was at the onset of COVID-19 with where it is now. "When we became aware that COVID-19 was a threat to our patients, we took fairly drastic steps immediately to remain open but in a safe way," Petet explained. "In GI, we have a lot of patients that we're treating for chronic conditions like inflammatory bowel disease and hepatitis. These patients will still get sick, so we needed to make sure that we could continue to care for them. Not knowing the full impact of COVID-19 to our health systems, we also wanted to make sure we weren't forcing patients to seek emergency care in ERs or urgent care where there may be a higher population of COVID-related cases. To do all of this, we consolidated from four into one location so that, should cases arise in one location, we could terminally clean it while working out of another. Unfortunately, we had to furlough staff during that time because we didn't have room for them all.

"Thankfully, we're now back up to 95% of our staff, and we are serving patients once again from all of our surgery centers. That said, we're continuing our diligence with screening and precautions. Patient safety is still first and foremost, and everyone's guard still has to be up just as if we're in phase one."

Telemedicine – Big Star of the New Norm

As we mentioned in July, AMS went to great lengths to keep past telemedicine safeguards in place when the pandemic began, even as restrictions were relaxed on requirements for es-

PHOTO COURTESY OF GASTROARKANSAS.

tablishing professional relationships. And as telephone-only visits were opened with certain restrictions for the good of the patients, AMS was instrumental in ensuring reimbursement for those visits from insurance carriers. With these safeguards in place, the use of telemedicine greatly increased and has now become a much larger component of the new norm in many clinics.

"Telemedicine has been a great tool for us this year," commented Hunnicutt. "We were fortunate to have been implementing telemedicine in January before COVID hit our region, so it put us in a good place to add scale rather than starting a program from scratch. Aside from a few technical glitches here and there, patients, physicians and staff have embraced this alternative to traditional care."


M. BRUCE JOHNSON, MD

M. Bruce Johnson, MD, one of 12 physicians at GastroArkansas, reflected on his experience with increased telemedicine. "Telemedicine has been a positive. I see a continuing role for this going forward provided we don't go back to all the onerous pre-COVID regulations and provided it is adequately reimbursed."

Petet discussed further GastroArkansas's telemedicine experiences. "With all that's happened, we in health care have been able to educate ourselves and implement a system across all specialties within a week to two weeks that, I think, otherwise could have taken us years," she said. "There's so much focus on the negative, but as part of the medical community, it's been good to see so many people come together to quickly flip the switch on something that we all had interest in using. The Medical Society and the insurance payors have been great. They removed barriers, and we were able to find a portal and get access quickly.

"Sometimes, nothing can take the place of an in-person visit; that said, telemedicine has become part of our practice. We're much better at it than we were at the end of March, and for the most part, patients have warmed to the idea."

COVID-19 Testing Challenges Evolve

As clinics proceed through a pandemic that shows no signs of going away, concerns remain over the availability and efficiency of testing.

Dr. Johnson explained, "Ideally, testing everyone before an *elective* procedure is a good idea, but making that happen is problematic. We need more testing sites with guaranteed turnaround times, which seems to be unlikely given limitations of supply. If someone that lives more than an hour away has to make a pre-op trip for testing and then another trip for the procedure, they may choose to delay the procedure. Although some testing like screening colons or endoscopy for lesser indications are not urgent or emergent, they shouldn't be delayed indefinitely as there will be resultant delays in cancer and other diagnoses."


DEBRA MORRISON, MD

Debra Morrison, MD, also of GastroArkansas, added, "We typically advise our patients to take the second dose of their preparation five to six hours prior to their procedure. When an individual must wait several hours longer for a procedure than expected due to delayed result of their coronavirus test, it potentially reduces the efficacy of the preparation and adenoma detection."

Testing has been no easy task, even for clinics with on-site testing capabilities. According to MANA Chief Operating Officer Paula Maxwell, several MANA Clinics, including Dr. McGowan's clinic in Springdale, have provided drive-up COVID-19 testing. "It has been challenging due to the increased demand for testing and testing supply shortages," she explained. "MANA is aligned with the Northwest Arkansas health care community, who released a statement on new testing priorities on July 1. We are reserving tests for symptomatic individuals, health care workers who have been exposed, and individuals who are preparing for a procedure."

Update: As of July 9, 2020, one burden related to some elective testing has been lifted. "We learned today via a call to the Arkansas Department of Health that we no longer have to screen asymptomatic patients for COVID-19," said Petet. "This will significantly reduce the burden to patients scheduled for screening colonoscopy and other preventative yet elective procedures."

James Bledsoe, MD, FACS, is ADH's chief physician specialist and medical director of EMS and Trauma. He leads ADH efforts related to resuming elective surgeries. While he confirmed Petet's statement, he went on to clarify it. "There are no requirements to test asymptomatic patients preoperatively for colonoscopy," he explained. "There is, however, a five-day window of preoperative testing for most other elective surgery, including upper endoscopy. The full directive for elective surgery is posted on the Department of Health website."

Staying the Course Through Challenging Times

As physicians and health care workers continue facing and solving COVID-19 challenges for the benefit of patients, staying positive has been a key to coping personally and professionally. That and being willing to adapt, according to Dr. McGowan.

While the physicians in his practice bring with them many years of shared experience, Dr. McGowan is relatively new to the profession. This hasn't deterred his positivity or drive to help even amid his great concern over COVID-19. "When I chose to become a family medicine doctor, I did not expect a global pandemic to happen within two years of completing residency, but that's the reality of medicine. We can work on preventative measures, but we still have to be adaptable. My biggest concern is for the health of my patients and community. We have heard about this virus for so long now, but it has become a heavy reality for our community over the past month or so. My hope is that we can continue to practice preventative measures to quell the recent uptick. The reality is our relatives, friends, and neighbors' lives depend on it.

"This pandemic has certainly been stressful, but if we continue to put the patient first I believe we can achieve positive outcomes. The selflessness, hard work, adaptability, and compassion that our staff has shown over the past three plus months has been inspiring. Each week seems to present new challenges and obstacles, but with their help we have been able to continue to care for our patients. For that, I am very grateful."

** (See the July Journal, pg. 4, to read about how AMS stepped up to procure and distribute PPE to clinics around the state – members and non-members alike.)*

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Doctor, My Epidural Site is Leaking!

A Diagnostic Dilemma in An Anxious Post-Partum Patient

Abstract

Neuraxial anesthesia blocks are safe and have been in use since the 1970s. Despite their wide-spread use, some stigma still follows regarding the potential harm. We present the case of a 27-year-old female who developed a rare presentation of edema fluid draining out from the epidural site. The report is significant, as this rare clinical presentation is scarcely reported. Also, this unusual and terrifying experience may have changed the perspective of the patient for her future labor analgesics options. This report further highlights the responsibility of physicians to counsel patients and provide them adequate support in case of unexpected outcomes.

Introduction

Obstetrics anesthesia has evolved from a painful experience of childbirth to a pain-free, joyous moment of one's life. It all changed with the placement of the first labor epidural almost 50 years ago. Over the years, the technique and medications have significantly improved the way epidurals are utilized for labor and delivery, making them a much safer and more reliable anesthetic option. Still, the general population continues to have varying opinions regarding risks related to the safety of epidurals. Individual experiences; experiences of friends, family, and co-workers; and information available online and in non-medical literature influence the decision making of patients. Our patient was a young primigravida who was apprehensive about getting an epidural and later decided to have it placed. She ended up having an unusual clinical presentation post-partum that made the patient and her family anxious and led her to doubt her own decision. Timely and effective resolution of complications can play a significant role in patients' perceptions regarding treatment options. Even though it was a relatively harmless complication, this could have led her to perceive neuraxial blocks as more harmful than beneficial. Also, sharing of this incorrect information could have affected multiple other people in their decision-making process for placement of neuraxial anesthetic blocks.

It is the responsibility of a physician to address concerns and counsel patients and their families in case of unusual clinical outcome.

Case Presentation

Our patient was a healthy 27-year-old primigravida female who presented to the labor and delivery unit for a scheduled induction. She had twin intrauterine gestations with no prenatal complications. Spontaneous vaginal delivery was expected due to vertex presentation of both twins. Patient was anxious getting an epidural catheter, as one of her friends had developed chronic back pain postpartum. In her opinion, the back pain resulted from the difficult placement of epidural catheter. After detailed discussion regarding risks and benefits, she decided to have an epidural catheter for labor analgesia. After application of standard American Society of Anesthesiologists (ASA) monitors, an epidural catheter was placed without any immediate complications. Fetal monitoring was continued during the placement using Cardiotocography (CTG). Patient and fetuses tolerated the procedure well and remained hemodynamically stable. A bolus of 0.12.5% plain Bupivacaine was administered via epidural catheter followed by epidural infusion of eight milliliters (mls) per hour of 0.125% Bupivacaine and Fentanyl (at the concentration of 5mcg/ml). Adequate labor analgesia was achieved within 20 minutes of epidural catheter placement. The twins were delivered without any major complications. Per plan, epidural catheter was left in place for postoperative pain control, with the expected discontinuation after 24 hours.

On first post-operative day, patient was evaluated and epidural catheter was discontinued. The patient tolerated the procedure well and remained hemodynamically stable during and after the procedure. Approximately after 16 hours, the on-call resident was called regarding a copious amount of fluid leaking from the epidural puncture site. According to the patient, fluid leakage started one to two hours after the catheter was pulled out and increased slowly over time. The leakage was significant enough to soil her bed and require four-to-five sheet changes per hour. The drainage was continuous, making everyone question the probability of epidural catheter inadvertently puncturing the dura leading to cerebrospinal fluid (CSF) leak. Of note, patient was asymptomatic and did not demonstrate any signs of post-dural-puncture headache. On assessment, patient was hemodynamically stable with no neurological deficits. No signs of inflammation or infection were present at the puncture site. Patient had bilateral lower extremity edema, but it was consistent with preoperative physical findings. The rest of the physical exam was unremarkable. The patient was reassured, and sterile dressing was applied around the puncture site. Within a few minutes, 4-5mls of fluid accumulated within the dressing, creating a fluid-filled pocket (Figure 1). A sample of fluid was collected under sterile technique and was sent for Biochemical analysis. Fluid leak resolved slowly on post-operative day two. The leak stopped completely on post-operative day

three. A detailed analysis report of the sample revealed the composition of fluid as "interstitial" consistent with edema fluid. Results were shared with the patient. She was counseled and was reassured accordingly. Patient was discharged home on post-operative day four.

Discussion

Pregnancy affects almost every organ system. These changes can be attributed to the wide-spread physiological and anatomical adaptations associated with normal pregnancy. These are mainly cardiovascular, metabolic, and endocrinological in nature. Clinical symptoms like nausea, fatigue, constipation, weight gain, mood changes, gastroesophageal reflux, and peripheral edema are common.[1] As gestation advances, these changes can become more significant and may lead to several complications. In the state of normal physiology, capillary hydraulic pressure and intravascular protein are the main factors determining the volume of intra and extravascular compartments. During pregnancy due to an increase in cardiac output, reduction in systemic vascular resistance, increase in blood volume, and variability in protein production, peripheral edema develops in dependent areas of the body.[1] Parturient with twin gestations undergo remarkable pregnancy changes compared to singleton counterparts. Therefore, they are at increased risk of developing severe peripheral edema as well as other complications.[2] Our patient had twin gestation and developed significant edema over the course of the entire pregnancy. She remained otherwise healthy and did not develop any other major issues.

Neuraxial anesthetic techniques have made a remarkable difference in recent years, making labor a "non-laborious" event. Occasionally, however, it can also lead to a diagnostic dilemma like in our case. Leakage of fluid from neuraxial block site has been reported very infrequently in the literature.[3,4,5,6,7,8] Of note, the majority of reports mainly describe the composition of fluid as cerebrospinal fluid (CSF) secondary to a CSF-cutaneous fistula.[3,4,5,6] Although other causes like trauma, surgery, lumbar drains, infection, and tumors can result in the formation of CSF-cutaneous fistula, in anesthesia practice, a dural puncture during placement of neuraxial anesthetic blocks is the most likely cause.[3,4] Considering the recent history of epidural catheter placement, removal, and temporal relationship to the symptoms, similar concerns were raised by the primary team in our case as well. Even though there was a possibility of an epidural catheter puncturing the subarachnoid space resulting in CSF-cutaneous fistula in our patient, the incidence is still rare. On the other hand, combined spinal-epidural anesthesia is associated more commonly with CSF-cutaneous fistula, which our patient did not receive. Only two case reports are published to date discussing the leakage of interstitial fluid through epidural puncture site in, and only one of them was in an obstetric patient similar to our case.[7-8] It is postulated that a fistulous tract is created by epidural catheter, providing the path of least resistance for edema fluid to leak out from an area of high pressure (dependent edema) to the area of low pressure (surface of the skin).[7,8] In previously reported cases, patients had preeclampsia. This was absent in our patient. All cases resolved spontaneously over a few days without requiring skin closure or blood patch. Symptoms were completely resolved in our patient on post-operative day three. It can be difficult to differentiate CSF and interstitial fluid clinically; therefore, biochemical analysis is warranted. It was the most common test performed to assess composition of leaking fluid in all case reports. Testing for the presence of CSF-specific acetyl cholinesterase using protein electrophoresis can also be used to differentiate CSF from interstitial fluid. In the case of insufficient fluid collection for testing, myelography using radioisotope can also lead to the diagnosis of CSF leak.

Expecting the unexpected is not common. Frequent causes always top the list for differential diagnosis. It is not until one faces a rare clinical scenario that things start to change. Patients are in their most vulnerable state when presenting for medical and/or surgical treatments. Anything other than the norm will terrify them and may change their perception for future interactions. Our patient was surprised as well as scared with her clinical course. Prompt diagnosis and management helped us maintain her confidence in her care team and medical system as a whole. It is the responsibility of a physician to address concerns and counsel patients and their families in case of unusual clinical outcome.

Understanding the significance of timely diagnosis and management is essential, especially when unusual clinical experience can change one's view point on medical and/or surgical options. This case in particular provides insight into the physician's responsibility regarding patient counseling, education, and preventing misconceptions.

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Containing Disease Outbreaks in Residential Care Settings

LAURA HOBART-PORTER, DO, FAAPMR

The Centers for Disease Control and Prevention (CDC) estimates that 1.5 million Americans reside in long-term care settings, such as nursing homes or complex care facilities.[1] These institutions are designed to deliver specialized care including therapy, recreation and medical support, to those whose needs are too complex to be met at home. Most residential care settings are structured to accommodate communal living, including shared recreation, dining spaces and group activities.

These arrangements can become a liability if there is an infectious outbreak, as communal care is ideally suited for spreading an infectious pathogen. Unique interventions must be taken to keep residents and staff safe.[2] In the adult long-term care setting, infections tend to be pneumonia, urinary tract infections and wound infections. Children in similar settings are more likely to have upper respiratory or gastrointestinal infections.[1]

As with any infection-management program, prevention is key. Ideally, this should take place in advance of an outbreak, in the form of a disaster preparedness plan. All members of a facility (including medical staff and administration) must work together, using the disaster preparedness plan as a guide, to assess and manage the outbreak. A unified response ensures that staffing, supplies and programming can withstand changes related to outbreak management.

Prevention, though ideal, cannot always be achieved. Vaccines should be utilized when they are available, including enterovirus vaccines in children and pneumococcal vaccines in adults.

All staff, including non-clinical staff, must receive education about pathogen spread, how to prevent it and training on the appropriate use of personal protective equipment (PPE).[3] Simple handwashing, when applied strictly, can significantly decrease the rate of infection within residential settings.

Screening for staff or visitor illness can help prevent outside pathogens from reaching vulnerable residents. Facilities should have policies in place to allow for management of staff and visitors' health screenings.

Common areas such as recreation and dining spaces should be regularly and thoroughly cleaned. Care should be taken to minimize multiple persons touching the same objects (toys, silverware, etc.). Hand sanitizer must be readily available, and staff and residents should be encouraged to wash hands prior to meals.

Early identification of an infectious agent is essential to prevent further spread. Recognition of infection signs including fever, cough, vomiting, diarrhea or rhinorrhea should prompt rapid testing, as clinically indicated. Before the availability of respiratory polymerase chain reaction (PCR), this was often not a consideration, making it impossible to tell the difference between a relatively benign rhinovirus or a potentially life-threatening human metapneumovirus.[4] The availability of these tools has enhanced the ability to recognize and manage infections.

Amid the coronavirus pandemic, the need for rapid testing has been made clear. Once a resident is identified as being ill, he or she should be immediately isolated from others. This can be challenging in a communal setting. If they are in a shared living space, they should be moved to an isolation room while awaiting

test results. Staff interacting with the resident should wear appropriate PPE, including gown, gloves, mask and/or face shield, depending on the suspected pathogen.[3] Many residents have underlying developmental or medical conditions that make it difficult to implement standard isolation precautions, such as masking or quarantining. The resident should not leave their room until the risk of infecting others has passed. They should not participate in shared dining or group activities.

Those who have had close contact with, or may have been potentially exposed to, an infected resident should likewise be isolated. If two or more people develop the same infection from the same organism in the same place, this is concerning for an outbreak within the facility.[1] Those with known diagnosis of pathogen may be cohorted (grouping like persons together). In this case, if two patients have the same influenza on PCR and there are no isolation rooms available, those two patients can be roomed together. Ideally, staff treating infected patients should not also treat patients who are not exhibiting symptoms. PPE should be worn in accordance with CDC recommendations.[1] CDC's website provides guidance on selecting appropriate PPE.

If an outbreak is suspected, immediately notify the Arkansas Department of Health who will assist the facility to help manage it early and if necessary ADH will contact the CDC, etc. When notifying regulatory agencies, have the demographics and diagnostic testing of infected residents available, a timeline of events, contact tracing (if available), and infection control policies and practices. Regulatory agencies can assist facilities in management of an outbreak, provide recommendations on staffing, modification of programming and use of PPE.

Clinical staff must be critically evaluated, as they can be very vulnerable to infection. All staff should be assessed to determine availability and qualifications that may allow them to float outside their traditional role during an outbreak. For example, education or recreation staff can help serve meals.

Disaster preparedness plans should include how to secure qualified personnel to fill essential positions. Include staff responsible for supplies in disaster preparedness discussions to allow for critical purchases, including PPE, emergency funding for possible staff shortages and assessment of financial risks associated with an outbreak. If legal representation is available, it can be helpful when planning to avoid unintentional oversights. Frequent reassessments of plans should occur to adjust areas that are not functioning well.

Communication with staff, residents and families is essential. If public relations personnel are available, they should share information in a clear and accessible manner, including regular emails, video messages or in-service sessions. An outbreak can be frightening for staff and information should be provided about risks and ways to mitigate them. The disaster preparedness plan should include protocol for notifying residents' families about steps being taken to protect their loved ones.

Depending on the scope and severity of the outbreak, it can be helpful to contact local hospitals to alert them to potential admissions so they can prepare their staff and obtain additional resources. Hospitals may also be able to provide guidance on outbreak management.

An outbreak within a vulnerable population can be extremely challenging to manage and keep residents and staff safe. Listening to internal and external input can be invaluable in calculating a response that minimizes morbidity and mortality. ▲

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BY SARAH BETH HARRINGTON, MD FAAHPM; HEATHER MOORE, MD; MASIL GEORGE, MD; DAVID E. SMITH, MD

Arkansas Physician Order for Life Sustaining Treatment (POLST)

Abstract

The Physician Order for Life Sustaining Treatment (POLST) is an advance care planning tool for physicians caring for patients with a life-limiting illness. Physicians in Arkansas now have the ability to document the treatment wishes of a patient or surrogate on a POLST form, after having a goals-of-care conversation. The POLST process emphasizes advance care planning conversations and informed, shared decision-making about treatment wishes near the end of life and ensures that those wishes are honored across care settings.

Arkansas POLST

The POLST form was first introduced in Oregon in 1994, and the POLST Paradigm currently exists at some level in 50 states and Washington, D.C. In the 2017 Arkansas legislative session, Act 504 was signed into law. This established the Arkansas Physician Order for Life Sustaining Treatment (POLST) Act and provided for use of a POLST form in Arkansas.[1] The POLST program encourages advance care planning conversations between patients, loved ones, and physicians; a POLST form helps to document those wishes in a way that will be honored across care settings.

A POLST form is an advance care planning document that is designed for patients for whom the physician ***would not be surprised if the patient died in the next year***. Patients with a serious illness or frailty towards the end of life are encouraged to discuss goals of care with their clinician well before an acute emergency near the end of life. A POLST form is designed to document 1) code status and 2) level of treatment a patient wants and should always accompany a discussion with the patient's physician. There is also a "write-in" portion where patients can document specific wishes related to their care. Many choose to use this portion to document interventions such as feeding tubes or dialysis.

A POLST form can be completed by a patient with capacity or a by a legal surrogate for a patient without capacity. Once the form is complete, it serves as a set of legal orders that are honored across care settings. Research shows that care transitions are common at the end of life, especially for frail elders in long-term care settings.[2-3] Once a POLST form is completed, it stays with the patient and will be honored across settings (nursing home, home, ambulance, hospital, clinic, etc.).

Table 1: Key Differences between Advance Directives and POLST forms

	Advance Directive	Arkansas POLST
Who needs one?	All adults with capacity	Patient with likely prognosis of 12 months or less
What are the components?	Durable Power of Attorney for Healthcare Living Will	Order set describing preferences for: Cardiopulmonary resuscitation (CPR) Medical Interventions
Who completes the documentation?	Patient with capacity (must be witnessed or notarized)	Patient with Capacity or Designated Surrogate + Arkansas-Licensed Physician
Is completion voluntary?	Yes	Yes
When is it active?	Serves as a guideline for future care needs if the patient loses decisional capacity	Dictates preferences for current care
Is it associated with an order?	No	Yes Serves as an active, durable order honored across settings
Can emergency personnel follow?	No Advance directives are not orders	Yes
Can it be changed or rescinded?	Yes, by the patient The most recent, valid documentation is considered active	Yes, by the patient or surrogate Write VOID across the form. Complete a new form with updated preferences

Advance Directives vs. POLST

Both advance directives and POLST forms are advance care plans. They complement each other but work in different ways. All adults with capacity should have an advance directive documenting a Health Care Power of Attorney (HCPOA) and a Living Will. An advance directive serves as a guide for when a patient can no longer make decisions for him or herself. Only patients with a limited life expectancy (<1 year) are eligible for a POLST. Both patients with capacity and surrogates for patients without capacity can complete a POLST, which serves as an actionable order set. Table 1 summarizes the differences between the two documents.

Ethics Surrounding POLST

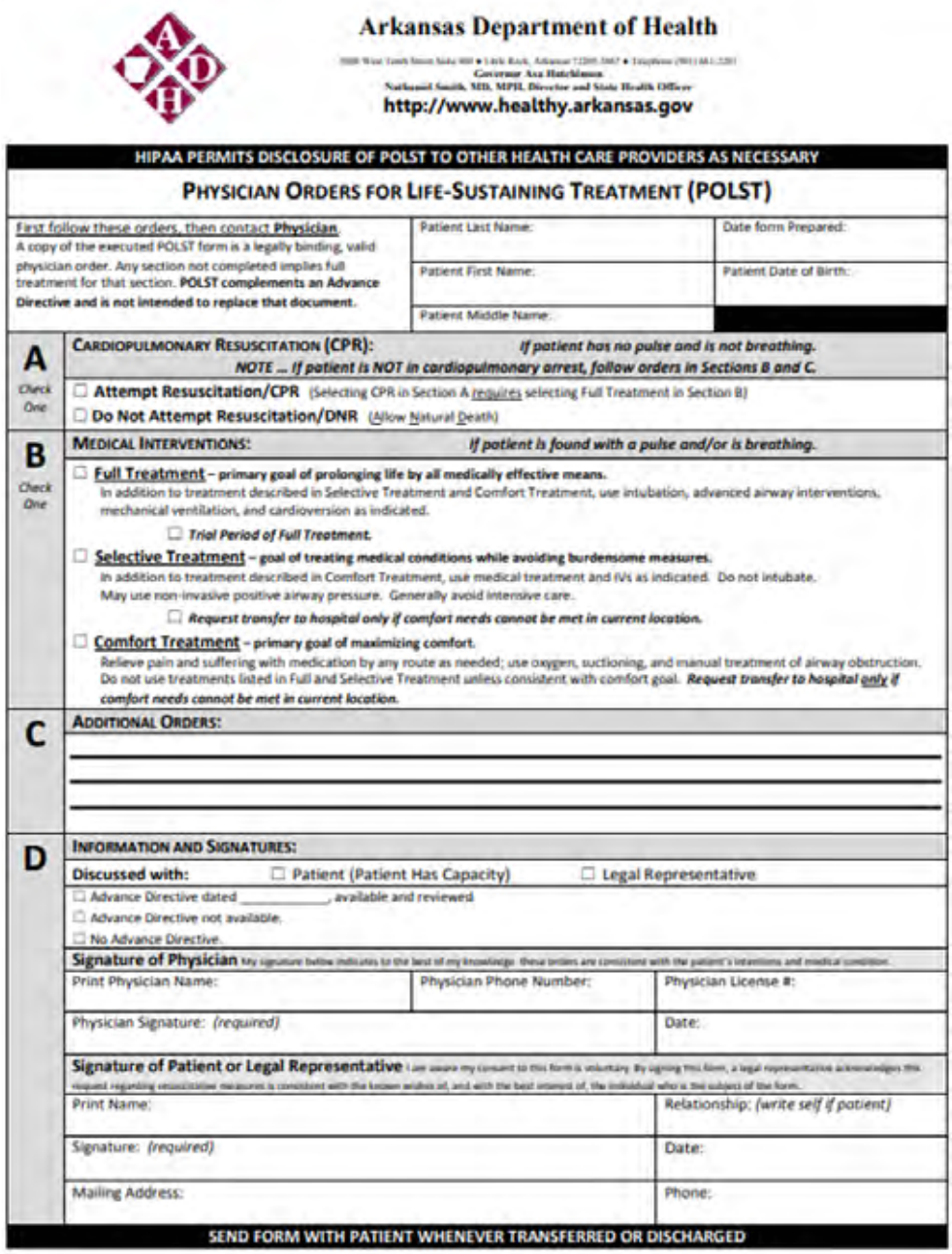
The POLST Act recognizes that allowing natural death to occur is not the same as actively hastening death. POLST forms do not allow for euthanasia or physician-assisted suicide. Completing a POLST form is voluntary and should be done in conjunction with a goals-of-care conversation with a physician. A POLST can be voided or changed at any time, and physicians should review the form and goals of care with a patient or their surrogate periodically to confirm that goals are still the same.

Practical Guide for Arkansas Physicians

POLST is a state-specific form. Hospitals or other institutions may elect to honor out-of-state forms, which should be described in institutional policy. We recommend that physicians encourage completion of an Arkansas POLST if a patient has a POLST form from another state. Physicians are encouraged to have discussions with their patients with a limited life expectancy about diagnosis, prognosis, and goals of treatment in a shared decision-making model. Completing a POLST form with the patient or surrogate can ensure that the patient's wishes will be honored.

The Arkansas POLST form (Figure 1), with directions, can be accessed through the Arkansas Department of Health's webpage (https://www.healthy.arkansas.gov/programs-services/topics/polst). The webpage also contains a webinar about Arkansas POLST and links to informational videos for self-directed learning. The website has an email link for health care providers to reach out to the state's POLST Committee with questions. The National POLST Paradigm is also a valuable resource for clinicians and patients or caregivers (www.POLST.org).

For physicians who are caring for veterans in the VA Healthcare System (Central Arkansas Veterans Healthcare System [CAVHS]), the Veterans Healthcare System of the Ozarks, and all VA-affiliated clinics), it is important to note the VA launched a complementary advance care planning process in January 2018. The Life Sustaining Treatment Decisions Initiative (LSTDI) is a nationwide VA program created to facilitate conversations between health care teams and seriously-ill veterans regarding goals of care and options for life-sustaining treatment. Nationally, the VA standardized the documentation and orders related to a Veteran's preferences for life-sustaining treatments. Like Arkansas POLST, the LSTDI allows health care teams to document the care wishes of veterans as well as their preferences for life-sustaining treatments like mechanical ventilation, artificial nutrition and hydration, hospitalization, and ICU care. However, there are important differences between this process and Arkansas POLST. First, the LSTDI documentation and orders are only active within a VA setting. Veterans require additional documentation for use in the community. We recommend the use of an Arkansas POLST form. Second, advance practice nurses, physician assistants, and



Arkansas Department of Health

Governor Asa Hutchinson
Nathaniel Smith, MD, MPH, Director and State Health Officer
http://www.healthy.arkansas.gov

HIPAA PERMITS DISCLOSURE OF POLST TO OTHER HEALTH CARE PROVIDERS AS NECESSARY

PHYSICIAN ORDERS FOR LIFE-SUSTAINING TREATMENT (POLST)

First follow these orders, then contact **Physician**.
A copy of the executed POLST form is a legally binding, valid physician order. Any section not completed implies full treatment for that section. **POLST complements an Advance Directive and is not intended to replace that document.**

Patient Last Name: | Date form Prepared:
Patient First Name: | Patient Date of Birth:
Patient Middle Name:

A Check One — **CARDIOPULMONARY RESUSCITATION (CPR):** *If patient has no pulse and is not breathing.*
NOTE ... If patient is NOT in cardiopulmonary arrest, follow orders in Sections B and C.
☐ **Attempt Resuscitation/CPR** (Selecting CPR in Section A requires selecting Full Treatment in Section B)
☐ **Do Not Attempt Resuscitation/DNR** (Allow Natural Death)

B Check One — **MEDICAL INTERVENTIONS:** *If patient is found with a pulse and/or is breathing.*
☐ **Full Treatment** – primary goal of prolonging life by all medically effective means.
In addition to treatment described in Selective Treatment and Comfort Treatment, use intubation, advanced airway interventions, mechanical ventilation, and cardioversion as indicated.
☐ *Trial Period of Full Treatment.*
☐ **Selective Treatment** – goal of treating medical conditions while avoiding burdensome measures.
In addition to treatment described in Comfort Treatment, use medical treatment and IVs as indicated. Do not intubate. May use non-invasive positive airway pressure. Generally avoid intensive care.
☐ *Request transfer to hospital only if comfort needs cannot be met in current location.*
☐ **Comfort Treatment** – primary goal of maximizing comfort.
Relieve pain and suffering with medication by any route as needed; use oxygen, suctioning, and manual treatment of airway obstruction. Do not use treatments listed in Full and Selective Treatment unless consistent with comfort goal. *Request transfer to hospital only if comfort needs cannot be met in current location.*

C — **ADDITIONAL ORDERS:**

D — **INFORMATION AND SIGNATURES:**
Discussed with: ☐ Patient (Patient Has Capacity) ☐ Legal Representative
☐ Advance Directive dated _____, available and reviewed
☐ Advance Directive not available.
☐ No Advance Directive.

Signature of Physician My signature below indicates to the best of my knowledge these orders are consistent with the patient's intentions and medical condition.

Print Physician Name: | Physician Phone Number: | Physician License #:
Physician Signature: *(required)* | Date:

Signature of Patient or Legal Representative I am aware my consent to this form is voluntary. By signing this form, a legal representative acknowledges this request regarding resuscitative measures is consistent with the known wishes of, and with the best interest of, the individual who is the subject of the form.

Print Name: | Relationship: *(write self if patient)*
Signature: *(required)* | Date:
Mailing Address: | Phone:

SEND FORM WITH PATIENT WHENEVER TRANSFERRED OR DISCHARGED

FIGURE 1.

resident physicians can complete both the documentation and orders with patients if they fall within their scope of practice, unlike POLST which requires a licensed physician. Third, veterans at high risk for an adverse health event in the next one-to-two years are considered candidates for a goals-of-care conversation with LSTDI rather than the twelve months suggested by POLST.

Research

Twenty years of research has helped many states look at specific outcome measures for POLST implementation. In a landmark study in the *Journal of the American Geriatrics Society*, 18,000 death records of patients with a valid POLST were evaluated, and they found a strong relationship between POLST comfort treatment orders and location of death (only 6% of those patients died in the hospital compared to similar patients without a POLST [34%]).[4] Patients with a POLST were more likely to enroll in hospice at the end of life,[5-6] and there were significant associations between POLST use in the nursing home and the level of treatment received.[6] We also know that POLST completion tends to be close to the end of life, with an average time of 6.4 weeks between form completion and death. A study by Zive et al., found that those patients with cancer had an average of five weeks between POLST completion and death, and for those with dementia, the average time was 14.5 weeks.[7]

Conclusion

Physicians who care for patients with a life-limiting illness are encouraged to talk about care wishes with their patients or surrogate, including goals of care considering current diagnosis, prognosis, and treatment options. The POLST form is a useful tool that can be used to provide treatments aligned with patient preferences, and we encourage all Arkansas physicians to incorporate POLST into their practice.

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Salmonella Osteomyelitis in an Immunocompetent Child: A Question of Penetration

Background

In children, osteomyelitis is usually associated with hematogenous spread; mean age 6.6 years old. Unique pediatric treatment considerations include antimicrobial pharmacokinetic (PK)/pharmacodynamic (PD) differences and bone type/development. Empiric coverage encompasses multiple pathogens including Staphylococcus aureus, Streptococcus pyogenes, and Kingella kingae. One of the most common causes of osteomyelitis in children with hemoglobinopathies is Salmonella spp., which is rare in otherwise healthy children. Generally, gastrointestinal infections caused by Salmonella spp are not treated in immunocompetent children without comorbidities who are over three months of age. Complications such as osteomyelitis require antimicrobials with sufficient bone penetration. We present the case of a healthy, immunocompetent 10-year-old with salmonella osteomyelitis.

Case

A 10-year-old, 30 kg, female gymnast, with no significant past medical history, presents to the emergency department with two days of progressively worsening right hip pain, one week of intermittent fever, and increasing fatigue. The pain worsened with prolonged weight bearing, but she was ambulatory. Temperature varied, with maximum 40.9C (105.6F). Two weeks prior to presentation, she had non-bloody self-resolving diarrhea. One week later, she presented to a local hospital. She was diagnosed with influenza A and prescribed oseltamivir, but due to side effects this was discontinued. On further history, her uncle was diagnosed with Salmonella two weeks prior to presentation, after a family cookout.

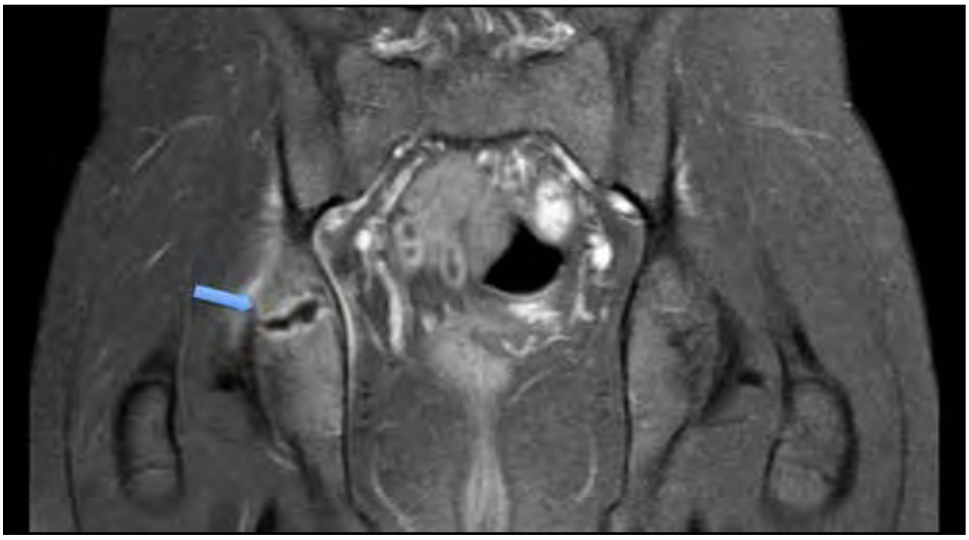


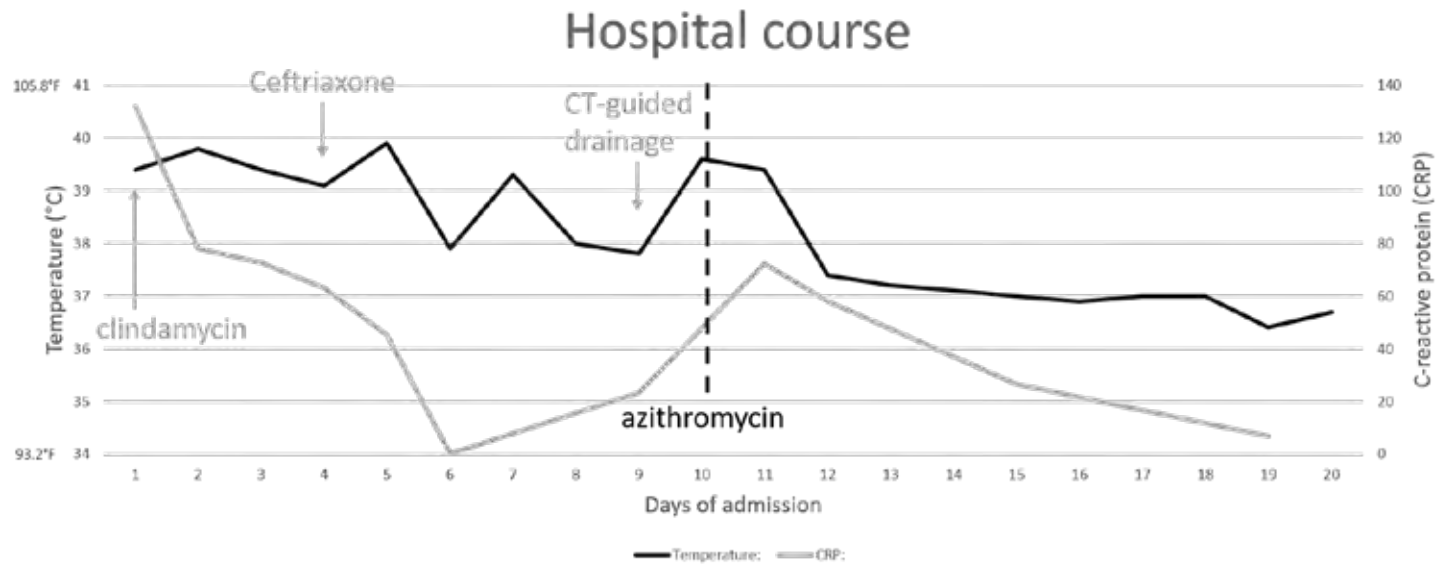
IMAGE 1: MRI IMAGE. ARROW INDICATING AREA OF NECROSIS IN TRIRADIATE CARTILAGE.

In the ER, the patient's temperature was 39.4C (103F); other vitals were stable. Exam revealed a thin, slightly ill-appearing female with mild tenderness to palpation in her lower abdomen and pain with passive and active flexion and internal rotation of her right hip, with limited range of motion. CRP was 132. X-rays of her pelvis and right hip were normal; ultrasound of the hip showed no evidence of effusion. On hospital day one, MRI of her right hip showed subtle signs of early right-hip osteomyelitis of the right-posterior acetabulum, without evidence of abscess or effusion. Orthopedics and infectious disease were consulted. Due to S. aureus being the most likely cause of osteomyelitis, IV clindamycin (40 mg/kg/day divided every eight hours) was started. Orthopedics recommended no surgical intervention at that time. She mildly improved, CRP decreased, but intermittent nightly fevers persisted with severe pain during the febrile episodes. Daily blood cultures remained negative. On day four of admission, due to lack of improvement and the history of diarrhea and salmonella exposure, a stool culture was sent. Ceftriaxone (67 mg/kg/day once daily dosing) was initiated to cover for salmonella.

On day six, she had been afebrile for 24 hours and CRP had normalized. Stool cultures grew Salmonella enteritidis, sensitive to amoxicillin and trimethoprim-sulfamethoxazole. Despite improvement in inflammatory markers, she continued to have extreme pain in her right hip and leg. On day seven, she was febrile again. Blood cultures remained negative. MRI of her right hip was repeated and showed progression of the osteomyelitis with development of a small effusion. Decreased enhancement of the triradiate cartilage was concerning for necrosis, but no abscess was visible. There was stable, persistent soft tissue and muscular edema involving the piriformis muscle that was seen on previous MRI.

Subsequently, clindamycin was stopped, daptomycin was added, and a CT-guided bone biopsy was performed on day 10. This revealed a lytic lesion between the ilium and ischium at the level of the triradiate carti-

Progression of temperature and CRP



lage and a bony break through the posterior aspect of the ischium. The biopsy obtained from the necrotic area (Image) consisted of 2ml of purulent fluid that was aspirated and sent for culture. Culture grew pan-sensitive salmonella. Fevers continued for another 36 hours. Azithromycin (10mg/kg/day) was added, for intra-cellular antimicrobial action. Within 24 hours of starting azithromycin, the fever curve improved and within 48 hours, she was afebrile. Ambulation improved with physical therapy, and she was continued on ceftriaxone and azithromycin throughout admission. She was discharged with azithromycin and amoxicillin (100 mg/kg/day divided three times daily) for a total of seven weeks.

Discussion

S. aureus is the most common cause of osteomyelitis in children. A literature review found, in children with sickle cell disease, Salmonella causes osteomyelitis over twice as often as S. aureus.[2] A recent case series and literature review found that osteomyelitis caused by Salmonella species in immunocompetent children without hemoglobinopathies occurs more commonly in boys, with no identifiable risk factors for the infection, with increased complications (41% of the patients) compared to other organisms.[4] These complications include abscess formation, relapse despite treatment, and development of multifocal osteomyelitis.[4] This was found to be true in our case, where an abscess developed despite appropriate antibiotic therapy.

Optimal antimicrobial therapy goes beyond sensitivities, requiring understanding the PK/PD. Children ages 1 to 12 years have an increased volume of distribution and clearance of antimicrobials compared to adolescents. This usually necessitates higher doses at more frequent intervals, comparing children to adults. Both the age of the patient and the location of the infection may impact the efficacy of the chosen antimicrobial agent. Drug concentrations in the blood are generally similar to the cancellous or spongy bone just adjacent to the vasculature. Based on an adult study, ceftriaxone obtains good concentrations in the more vascularized cancellous bone, but very poor (<15%) in the cortical or compact compartment. One possible reason for initial treatment failure could be that ceftriaxone dose was not maximized to dosing of 100 mg/kg/day and that the acute infection had sequestered long enough to form an abscess where the antimicrobial concentration was not sufficient to treat in the more cortical compartment.

Studies show that drainage of purulent fluid is essential to success of treatment despite appropriate antimicrobial coverage. In a case report, a previously healthy 17-month-old male developed an abscess secondary to salmonella and, despite other surgical drainage attempts, ultimately a CT-guided drainage was required. There was never clear abscess formation seen on MRI in our patient, but purulent fluid was found during the bone biopsy.

Azithromycin was added to the regimen, when her fevers did not improve after the CT guided drainage. Third-generation cephalo-

sporins as well as macrolides have intracellular activity, which is where non-typhoid salmonella species are located. Azithromycin reaches significantly higher concentrations in phagocytes, up to 200-fold higher, when compared to plasma. Macrolides have not been studied extensively to determine concentrations obtained in the bone; however, there are a few studies evaluating azithromycin concentration in alveolar bone. Those studies found that azithromycin, on average, has about a 4.4-fold higher concentration in the alveolar bone compared to plasma 12 hours after the third dose of azithromycin. Ultimately, it is unclear exactly what improved our patient's condition – the CT-guided drainage or the addition of the azithromycin.

This case represents some pertinent points to successful treatment of pediatric osteomyelitis including considerations for less common organisms, the importance of maximizing dosing based on PK/PD for the age of the patient, location of the infection, and understanding bone physiology. This, in addition to understanding the ability of antimicrobials to penetrate the different types of bone, is beneficial in the overall treatment of osteomyelitis.

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PEOPLE + EVENTS

OBITUARY

Robert "Ray" Hull, MD, passed away June 7, 2020.

He is survived by his wife, Kathyrn Hull; two sons, Keith Hull and Wayne Hull (Susan); two daughters, Cheryl Hull (Don) and Pamela Nickel (Jay); and ten grandchildren. He served his country in the United States Armed Forces and received honorable discharge as a major from the Army on Oct. 1, 1979. After high school graduation, Dr. Hull received his license to be a lab and x-ray technician, working seven nights a week on emergency call to put himself through college and earn his college degree. He excelled at many sports – basketball, baseball, football, bowling, billiards – and played collegiate golf. He received a bachelor's degree at Tennessee Tech in business management, and he then completed medical school at the University

of Tennessee in Memphis. His internship was at St. John's Hospital in Tulsa, Oklahoma. After moving to Rogers in 1972, Dr. Hull and his wife raised their children in Rogers, and later, Gentry. Dr. Hull opened his practice in Rogers, Arkansas, in 1972, where he continued to practice until his death from COVID-19.

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Obesity and Covid-19: Synergistic Pandemics

It would not be surprising for obesity to be a risk factor for severe illness related to SARS-Cov-2; experience with H1N1 influenza led to the understanding that the biochemical and physiologic changes associated with obesity were associated with increased risk for severity of infection.[1] Our early experience with critically ill Covid-19 patients involved a disproportionate number of obese patients, and we sought to understand whether this represented increased risk or simply skewed sampling. Early reports of Covid-19 did not include weight in demographic data, but we now see a rapidly emerging trend: obesity seems a significant risk factor for severity of Covid-19 infection.

Obesity is a global pandemic with a slow and seemingly inexorable spread. The U.S. has seen a dramatic increase in obesity in 21st century; the Centers for Disease Control estimated that 42% of Americans over the age of 20 were obese and 9.2% morbidly obese as of 2018. Arkansas has one of the highest obesity prevalences in the nation. We have come to understand that obesity, like chronic obstructive pulmonary disease and congestive heart failure, is a systemic disease. Overabundance of fat tissue has multi-organ implications that extend far beyond its function as an energy storage depot. Some of the impact is "mechanical;" increased weight increases metabolic rate, increases minute ventilation, decreases tidal volume, lowers functional residual volume, and requires increases in cardiac output and total intravascular volume.[2] In addition, fat has autocrine, paracrine, and endocrine functions with wide-ranging implications, including altered glucose metabolism, chronic inflammation, and immunosuppression.[1,2]

Now, as COVID-19 runs rampant, the two pandemics are intersecting. This virus, like H1N1, appears to have a special proclivity for obesity. Rapidly evolving data out of China, France, and the U.S. (some not yet formally in print) suggests obesity as a risk factor for disease severity that needs to be added to age and other comorbidities.[3-6] Cai et al.[3] found that obesity (defined in China as a BMI > 28 kg/m^2, not >30 kg/m^2 as per the World Health Organization) was associated with a 2.42-fold higher risk of developing severe pneumonia than that for the non-obese population. Simonnet et al.[4] found that a BMI > 35 was associated with a significantly ($p<.05$) increased risk for mechanical ventilation, with the odds ratio for those with a BMI >35 of 7.36 (1.6-33.1) when compared with those with a BMI <25. Lighter et al.[5] have shown that for patients <60 years of age, a BMI >35 was associated with a 3.6-fold (2.5-5.3) higher risk of admission to critical care than was a BMI <30. As this viewpoint was being prepared, Richardson et al.[6] have described experience with a large cohort from New York in *JAMA*. The median age of those admitted was 63. The most common comorbidities were hypertension (56.6% of admitted patients), obesity (41.7%), and diabetes (33.8%).

Given the multifactorial impact of obesity upon human physiology and biochemistry, the mechanisms responsible for increased severity of COVID-19 disease in the obese are not yet defined. Immunosuppression, altered lung mechanics, or excess production of reactive oxygen species and cytokines may alone or in concert be responsible.[1] While we await a better understanding of mechanisms, there are clinical applications that are relevant today; these include early intubation and application of high PEEP during mechanical ventilation and aggressive proning strategies. Obesity seems a risk factor for severity of COVID-19 disease, and this needs to be incorporated into triage decisions – specifically, with a low threshold for a) admitting these patients to critical care units and b) step-up during clinical deterioration. The biochemical alterations of obesity may impact the efficacy of treatments and preventive strategies. The immune alterations associated with obesity may lead to a different immune response to vaccination, when a vaccine does become available, in the obese.[7]

"In this shockingly lethal COVID-19 pandemic that is infecting millions of people worldwide and claiming over 200,000 lives, obesity should not be overlooked."

In this shockingly lethal COVID-19 pandemic that is infecting millions of people worldwide and claiming over 200,000 lives, obesity should not be overlooked. High BMI should be considered as fifth vital-sign; it has direct impact on prognosis and management of our patients.

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BY **MICHELLE HUYNH**
UAMS MD CANDIDATE CLASS 2021

Derm Dilemma

This 57-year-old immunocompetent man has had a slowly enlarging, solitary, painless, and indurated dermal nodule with an overlying sanguineous crust on the lower lip for four months. A biopsy was taken and the findings are illustrated in the accompanying photomicrographs :

What is an appropriate intervention?

A. Oral valaciclovir as the patient is most likely experiencing a recurrent episode of herpes labialis.

B. None, because this lesion is an oral mucocele and spontaneous rupture will lead to resolution.

C. A single IM injection of Benzathine penicillin G, as this most likely represents a primary syphilitic chancre of the lip.

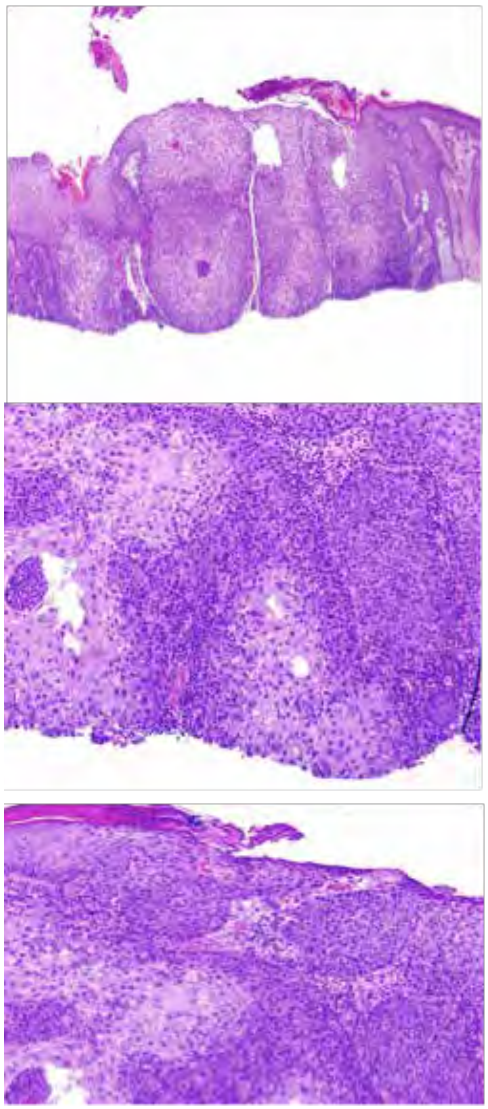
D. Surgical excision utilizing frozen or permanent section control because the biopsy demonstrates invasive squamous cell carcinoma.

E. Cryotherapy or topical fluorouracil as the clinical and histologic findings are consistent with actinic cheilitis.

Answer: D. The clinical and microscopic findings of this patient are consistent with the signs, symptoms and histologic features of invasive squamous cell carcinoma (SCC). Both SCC and actinic cheilitis ("pre-cancer") tend to occur on the lower lip, which receives more sun exposure than the upper lip. Any persistent, enlarging, eroded papule or nodule of the lip should arouse suspicion. Biopsy allows for definitive diagnosis of SCC and differentiation from mimics. SCC of the lip tends to exhibit aggressive local invasion and metastatic potential, like other oropharyngeal SCC. Excision with frozen or permanent section margin control remains the primary therapeutic intervention.

While mucoceles also tend to occur on the lower lip, they involve only the mucosal surface, are transient, and appear as bluish, translucent papules. Recidivant herpes labialis presents as painful vesicles on an erythematous base involving the upper or lower lip for shorter durations. Syphilitic chancres of the upper or lower lip initially also appear as painless papules or nodules that then ulcerate, but unlike SCC, chancres resolve spontaneously in a matter of weeks and exhibit distinct histologic features. Actinic chelitis manifests as stable, non-indurated gray-white scaly patches that can be managed with cryotherapy, topical fluorouracil, or other non-surgical modalities.

Surgical excision with frozen or permanent section margin control remains the principal therapeutic intervention for SCC.



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