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# South Dakota medicine

THE JOURNAL OF THE SOUTH DAKOTA STATE MEDICAL ASSOCIATION

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**Office of Publication**
2600 W. 49th Street, Suite 100
Sioux Falls, SD 57105
605.336.1965
Fax 605.274.3274
www.sdsma.org

**Editor**
Keith Hansen, MD

**SDSMA President**
Jen Tinguely, MD, MPH

**Chief Executive Officer**
Barbara A. Smith

**Staff Editor**
Elizabeth Reiss, MS
–ereiss@sdsma.org, 605.336.1965

**Advertising Representative**
Elizabeth Reiss, MS
–ereiss@sdsma.org, 605.336.1965

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# A Misguided Tobacco Program

Allen Nord, MD

A little noted event happened during a recent very busy legislative session. An appropriation bill revised the distribution of the cigarette tax money by reducing the amount placed in the Tobacco Prevention and Reduction Trust Fund from $5 million to $2 million dollars, at the request of now former Governor Noem. This is a 60% reduction in the investment for prevention to keep our kids free from addiction to nicotine.

The dangers of tobacco have been well known publicly for decades. There is no need to spend a few pages documenting the nature of nicotine addiction, the dozens of toxic chemicals in tobacco smoke, or the millions of South Dakota dollars spent on healthcare costs and the lost productivity. The tobacco product ravenging in the form of premature death and severe suffering is well known to all physicians.

South Dakota has made great strides in reducing tobacco use primarily because of the South Dakota Quitline and all the other educational efforts of the Tobacco Prevention Trust Fund. But still more than 16% of South Dakota high school students use tobacco products regularly, which is well above the national average, and higher than the state's adult average of 14%. If we reduce cessation and education efforts, there is no doubt that both of these numbers will increase.

In 2006 Initiative Measure Number 2 was approved by greater than 60% of South Dakota voters. This increased the tobacco tax and formed the Tobacco Prevention and Reduction Trust Fund. In the past 18 years this tobacco fund has put hundreds of millions of dollars toward the state general fund. Each year, the first $30 million goes to the general fund, and the next $5 million should have gone to tobacco prevention. This is what the legislature raided this past session, dropping it to $2 million. This 60% drop will significantly curtail cessation and prevention efforts.

Excise taxes often have multiple purposes: influence peoples' behavior and raise much needed funds for the state. The wise habit of "Begin with the end in mind" applies here. The end in mind is to encourage smokers to quit or at least move to a nicotine source which is deemed to be somewhat less dangerous. The second goal is to discourage young teens from starting nicotine products. And of course another goal is to raise funds for our state.

Instead of dropping the amount of money spent on tobacco cessation and education, we should significantly increase the cigarette tax. It has not changed for 18 years. Also we need to add a tax on all other firms of recreational nicotine use such as E-cigs, vaping, snuff and nicotine pouches. Twenty eight states already tax all forms of recreational tobacco. This could be a very significant source of tax dollars for our state and clearly by increasing the price of all tobacco products, it has repeatedly been shown to decrease demand, especially in those most vulnerable, our children.

The significant reduction of the Tobacco Trust is nothing short of abandoning our youth when there is still clear and present danger disguised as dozens of fruit flavored nicotine products.

South Dakota physicians have a duty to speak out on issues that clearly impact our children and public health in general.

**About the Authors:**
Retired family medicine physician, Rapid City, South Dakota.

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The South Dakota State Medical Association Foundation, the philanthropic arm of the South Dakota State Medical Association, is a tax-exempt 501(C)(3) non-profit corporation, was established to assist and support medical research, medical teaching and medical education at the Sanford School of Medicine.

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# Joy in Medicine

Jen Tinguely, MD, MPH
President, South Dakota State Medical Association

Anyone else feeling spring fever? With the tulips starting to make their appearance and baseball's opening day upon us, I am starting to feel the excitement of spring and soon, summer. I have always felt that those of us who live in the Midwest are fortunate to experience the joy of new seasons every few months. Sometimes those seasons are a bit too dramatic for my liking, but there is always something exciting about heading into the golden months of the calendar year.

I want to take this editorial space to talk about joy in medicine. Written within the Hippocratic Oath is the following quote, "May I always act so as to preserve the finest traditions of my calling and may I long experience the joy of healing those who seek my help." I hope that every one of you reading this still finds joy in taking care of patients. I've written many times how much I enjoy taking care of our medically underserved patient population at Falls Community Health. While some days are harder than others, on the whole, I still find significant joy in helping my patients feel better and lead healthier lives. I think experiencing this joy on a daily basis has been the reason why I haven't once considered leaving the profession. In the past, there have been really late nights as I finish up notes and inbox items and when these nights start to pile up, my husband would suggest that I find a different job. But I always felt that I'd never find a job that I enjoy more than the one I have now.

A couple of months ago, I wrote about my young male patient with type I diabetes who was terminated from pediatric endocrinology's care because of "noncompliance" and too many missed appointments. I experienced a burst of joy last week when I saw him for a diabetic visit and his A1c dropped from 11.4 to 8.2. Yes, it's not perfect and there is still work to do, but we found a way to motivate him to take better care of himself. This young man loves basketball, and so the school nurse and I talked through a plan to require him to have tighter control of his blood sugars to attend practice and participate in the games. It has worked wonders and he is doing so much better! And for me, there was joy in seeing his shy smile as I flipped through his Dexcom and saw his improved readings.

The American Medical Association (AMA) has talked about joy in medicine for many years as they have heard from too many members who are burnt out by work. Data shows us that among many different professions, physicians have higher rates of depression and suicide. A 2018 study showed that the suicide rate among physicians was twice that of the general population. This is why programs like the SDSMA's Physician Well-Being Program are so important. It is also why the AMA created the Joy in Medicine Health System Recognition Program. This program is working to reduce physician burnout at a systems-level. Systems who are recognized have shown competency in six pillars — assessment (they must be able to measure their physician's well-being and burnout level), commitment to workforce well-being, operational efficiency, teamwork, leadership and support. Sanford Health received gold recognition in 2023 from the AMA which speaks volumes for their commitment and dedication to their care team. And for those of us who don't work for Sanford, we can still push our health system or small clinic to work towards the pillars set forth by the AMA.

For me, the antidote to burnout has been the pleasure I find in taking care of my patients, in getting to know them on a personal level and not just their lab values or medication lists. I love finding out where their summer travels might be taking them, and I love seeing the newest pictures of their pets. I also find joy in working with the staff I am fortunate enough to interact with daily. They make work fun. We share plenty of laughs, have great dress-up/theme days, eat more doughnuts than we should and partake in too many potlucks (but who doesn't love a good potluck?) As David Brooks, an esteemed columnist, wrote, "Happiness involves a victory for self. Joy involves the transcendence of self. Happiness comes from accomplishments. True joy is the present that life gives you as you give away your gifts." I hope that each of you finds joy as you share your gifts with your patients.

# A Case Report of Group B Streptococcus Septic Arthritis in a 37-day-old Male

Nadya Ekhteraee-Sanaee, MS IV; Andrew Nerland, MS IV; Connie Taylor, MD; Casey Swenson, MD; and Peter Paul C. Lim, MD

**Abstract**

Septic arthritis is an unusual clinical presentation of group B *Streptococcus* infection in neonates. The authors report a case of septic arthritis caused by late-onset group B *Streptococcus* infection in a 37 day-old-male who presented to family medicine clinic with a limp right upper extremity.

## Introduction

*Streptococcus agalactiae*, also known as group B *Streptococcus* (GBS), is a Gram-positive, catalase-negative, chained coccus that has been and remains the most common cause of neonatal sepsis since the 1970s.[1] GBS frequently colonizes the gastrointestinal and genitourinary tracts of healthy individuals with colonization rates of up to 35% in adult women.[1] GBS infection in neonates is broken down into early-onset (days 0-6), late-onset (days 7-90), and ultra-late onset disease (90-180 days).[2] Early-onset disease most commonly manifests as bacteremia but can also present as meningitis or pneumonia.[1] Symptoms typically develop within the first 24 hours of life and commonly include respiratory distress, fever, lethargy, poor feeding, tachycardia, or hypotension.[1] Late-onset disease also presents most commonly as bacteremia but tends to have a wider clinical spectrum than early-onset GBS sepsis.[1,2] Ultra-late onset disease typically occurs in premature or term infants with immunocompromise often presenting as bacteremia and/or meningitis.[1] GBS infection is diagnosed via culture from the suspected site of infection, including joint fluid, blood, or cerebrospinal fluid.[3] GBS is most commonly spread to neonates via vertical transmission from ascending infection or passage through the genital tract during vaginal deliveries; however, 1-12% of neonates found to be colonized with GBS are birthed by GBS negative mothers, indicating that maternal GBS status is not an all-encompassing predictor of neonatal infection.[1] The purpose of this case report is to detail the management and course of an infant, born to a GBS-negative mother, who developed septic arthritis as a manifestation of late-onset GBS infection.

## Case Presentation

A 37-day-old male presented to family medicine clinic with his parents for evaluation for a two-day history of right upper extremity (RUE) weakness. Parents denied any known trauma to the area and stated patient was otherwise breastfeeding, sleeping, voiding, and stooling normally. Physical exam revealed a well appearing, alert infant with right elbow held in the extended position. Patient displayed slight resistance to passive right shoulder flexion and abduction. He also had weaker grasp on the right hand compared to the left and absent Moro reflex on the right. Spontaneous movement of the digits remained intact bilaterally. No obvious physical deformities were appreciated. He was hemodynamically stable and afebrile. Chest X-ray, cervical spine X-ray, and right forearm X-ray did not show any acute abnormalities. The patient had been evaluated in the emergency department two days prior following onset of symptoms and X-rays obtained then were also unremarkable.

The patient was born at 41 weeks to a 31-year-old G1P0 mother with negative serologies including GBS screening test. Pregnancy was uneventful, although labor was complicated by vacuum assistance converted to cesarean section for failure of progression. Meconium was present at birth. He was initially limp with APGAR scores of 2, 8, and 9. The patient received transient positive pressure ventilation during a successful resuscitation effort. No further complications were reported during perinatal hospitalization. The patient was discharged home at 3 days of age. No muscle tone asymmetries were noted during hospital stay or on discharge. His newborn screen was normal.

The patient was evaluated by pediatric neurology the following day at which time deep tendon reflexes were 2+; however, Moro reflex remained absent in the RUE. MRI was obtained and revealed asymmetrically increased edema in the muscular

soft tissues surrounding the right glenohumeral joint more so than left, nonspecific fragmented appearance of the right humeral epiphysis, right greater than left glenohumeral joint effusion, and right axillary lymphadenopathy. The patient was subsequently admitted to the hospital for further work-up with concern for septic arthritis of the bilateral shoulders. Initial labs were notable for thrombocytosis, elevated c-reactive protein (CRP) and erythrocyte sedimentation rate (ESR), and normal white blood cell count (WBC). Patient was otherwise stable on admission and afebrile throughout hospitalization.

The patient tested negative for MRSA PCR by nasal swab. Serum tests for HIV, syphilis, West Nile virus, and Lyme disease were negative. Initial blood culture showed growth of Gram-positive cocci in chains at 10 hours incubation eventually speciated to GBS by PCR and culture compatible with late-onset infection. Lumbar puncture showed no evidence of CSF infection. Patient underwent open irrigation and drainage of the bilateral shoulders followed by repeat irrigation and drainage of the R shoulder one week later. Operative joint cultures from the initial irrigation and drainage confirmed septic arthritis of the R shoulder secondary to GBS infection.

The patient was empirically started on vancomycin and ceftazidime but was changed to vancomycin, ampicillin, and gentamicin once the initial blood culture resulted positive for GBS. Per antibiotic susceptibility testing, patient was switched to ampicillin monotherapy. Intravenous gentamicin was added back transiently peri-operatively for synergistic effect with ampicillin until clinical improvement was appreciated. The patient regained movement of his upper extremity during his hospitalization not long after. He was then transitioned to ceftriaxone monotherapy based on susceptibility and convenience via a PICC line for 4 weeks of at-home therapy. In total, the patient underwent approximately 6 weeks of IV antibiotic therapy with favorable clinical course. Subsequent immune work-up at 6 months of age was reassuring.

## Discussion

While incidence of early-onset GBS disease has been reduced significantly by universal screening of pregnant mothers and the introduction of intrapartum antibiotic prophylaxis, incidence of late-onset GBS disease remains unchanged and has surpassed the incidence of early-onset GBS disease since 2008.[4] Late-onset disease is more likely to cause meningitis than early-onset disease.[1] It is also more likely to present as focal infection including osteomyelitis, pyogenic arthritis, or cellulitis adenitis.[1,2] Despite this, involvement of the bone and joints in late-onset GBS disease, as diagnosed in the patient described in this case report, remains uncommon and occurs in approximately only 5% of cases.[5] Complications associated with GBS septic arthritis in the infantile period include destruction of the joint, growth failure, and death.[3]

While development of late-onset GBS disease has been significantly associated with positive maternal GBS screen at time of birth, horizontal transmission from nosocomial, community, and non-maternal caregiver exposures, particularly through the fecal-oral route, have also been identified as important potential sources of late-onset infection.[1,6] Late-onset GBS can also be caused by horizontal transmission from mothers who become newly colonized in the postpartum period or mothers who become recolonized after receiving appropriate intrapartum antibiotic prophylaxis for GBS.[2,7] Intrapartum antibiotic prophylaxis for GBS is not a guaranteed prevention strategy for the development of late-onset GBS disease.[2,4,7] There are no formal strategies to universally prevent the development of late-onset GBS in the U.S.[4]

Empiric treatment for suspected neonatal sepsis of unknown etiology is with ampicillin and an aminoglycoside, such as gentamicin, which demonstrate synergistic effect against GBS.[8] Once GBS is confirmed via culture, penicillin G or ampicillin can be used as monotherapy per susceptibility result with dose and duration dependent on the severity of disease and site(s) of infection.[8] Ceftriaxone was used for our patient based on susceptibility and convenience with home infusion. Treatment duration of 14-21 days for septic arthritis and 21-28 days for osteomyelitis is recommended depending on patient's risk factors and extent of involvement.[8] Intravenous antibiotic is the standard of care in all cases of invasive GBS disease and cannot be replaced by oral alternatives.

Pseudoparalysis is a term used to describe the variety of clinical presentations associated with decreased motor function of a limb.[9] These include decreased active and passive range of motion of the extremity, weakness of abductor and external rotator muscles, and positioning of the limb in relieving postures.[9,10] Limb pseudoparalysis in neonates should raise clinical suspicion for septic arthritis and should be promptly evaluated with imaging, joint aspiration for laboratory analysis, and pediatric orthopedic surgery consult.[10] MRI and ultrasound are preferred imaging modalities in children younger than the age of four.[9,10] Elevated CRP, peripheral WBC count, and ESR are other ancillary diagnostic clues.[10]

Important differential diagnoses in a neonate and/or infant presenting with limb pseudoparalysis in the absence of other symptoms include branchial plexus injury (BPI), acute flaccid myelitis (AFM), and non-accidental trauma (NAT). BPI typically manifests shortly after birth with symptoms ranging from mild weakness to flaccid paralysis. Deep tendon reflexes are typically diminished.[8] Classically, BPI is associated with shoulder dystocia; however, there is moderate association with vacuum-assisted delivery as seen in this patient. AFM is generally thought to occur within days of a viral infection, with enterovirus being the most commonly implicated pathogen.[11] Clinical presentation typically involves rapidly developing asymmetric flaccid weakness with preferential involvement of the arms.[11] Diagnosis is supported by CSF pleocytosis and MRI showing lesions primarily in the grey-matter of the spinal cord[11] NAT is a common etiology of morbidity and mortality in neonates.[12] It often presents with non-specific signs and symptoms and is commonly missed at initial presentation.[13] Social and family history can provide cues for NAT but cannot be used to reliably exclude NAT.[13,14,15]

## Conclusion

GBS infection in neonates and infants can result in significant morbidity and mortality from sepsis, pneumonia, and meningitis. Septic arthritis and osteomyelitis are rare, serious complications of late-onset GBS. Clinicians should consider septic arthritis due to late-onset GBS disease in their differential diagnosis of an infant presenting with limb pseudoparalysis, particularly in the setting of preserved reflexes. Neonates born to GBS-negative mothers may still develop GBS infection through horizontal transmission via community or nosocomial contacts.

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**About the Authors:**

Nadya Ekhteraee-Sanaee, BA, MS IV, University of South Dakota Sanford School of Medicine.

Andrew Nerland, MS IV, University of South Dakota Sanford School of Medicine.

Connie Taylor, MD, Department of Pediatrics, University of South Dakota Sanford School of Medicine; Avera Medical Group Pediatric Specialists, Sioux Falls, South Dakota.

Casey Swenson, MD, Avera Medical Group Radiology, Sioux Falls, South Dakota.

Peter Paul C. Lim, MD, Department of Pediatrics, University of South Dakota Sanford School of Medicine; Division of Infectious Diseases, Department of Pediatrics, Avera McKennan Hospital and University Health Center, Sioux Falls, South Dakota.

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*Content submitted by Children's Nebraska*

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*Children's Nebraska pediatric orthopedic surgeon Vivek Dutt, MD, sees a patient family during a visit to the Osteogenesis Imperfecta Clinic.*

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Children's NEBRASKA

# Hair Matters: Psychosocial Impact of Receding Hairline in College-Aged Men

Alyssa L. Reinschmidt, MS IV; Rachel Van Gorp, MS IV; Oluwafunke Oluwatosin Ogunremi, MS III; John Samuel Vassar, MS IV; Brant Hannahs, MS II; Jazmin Newton, MD; Brianne Haskell Hanisch, MD; and Marcus L. Frohm, MD

**Abstract**

*Introduction*: Androgenetic alopecia, or male pattern baldness, is a common condition that causes progressive hair loss on the scalp. The psychosocial effects of male pattern baldness may be underestimated, especially in younger men. The purpose of this study was to better understand the implications of hair thinning and receding hairlines on the psyche of college-aged men.

*Methods*: A 30-question online survey consisting of closed and open-ended questions was distributed to email addresses and social media accounts affiliated with undergraduate student organizations representing South Dakota universities from October to November 2023. Male university students aged 18-40 were included. Data were anonymously collected and stored in the Qualtrics database. Descriptive statistics were used to analyze quantitative data, while thematic analysis was used for qualitative data.

*Results*: 71 male students completed the survey. 82% of participants reported a full head of hair, 40% reported hair thinning, 44% reported a receding hairline, and 14% reported a bald spot. About one third of participants (32%) reported that the current state of their hair bothers them. More than half of the participants would consider taking treatments for hair loss indefinitely.

*Conclusions*: The psychosocial impact of male pattern hair loss and hair thinning affects young males at South Dakota universities, making it vital for healthcare providers to address treatment options and education among college-aged men. Open discussions regarding hair loss may improve confidence while reducing distress among patients.

## Introduction

Androgenetic alopecia, often referred to as male pattern baldness in men or female pattern hair loss in women, is a common condition that causes progressive hair loss on the scalp in a recognizable pattern. In men, this type of hair loss typically occurs in concentrated areas on the hairline and on the crown of the head.[1] To understand androgenetic alopecia, being familiar with the three phases of normal hair growth is important.[2] The first phase is the anagen phase, when active growth of the hair occurs. Next is the catagen phase, a transitional phase where no hair growth occurs due to follicle shrinkage and loss of blood supply. The final phase is the telogen phase, during which the hair falls out, and the follicle enters a short dormancy period. After this period, the hair growth cycle repeats.[2] In androgenetic alopecia, the interaction of genetics, hormones (especially dihydrotestosterone), and hormone receptor concentration results in a shortened anagen phase and prolonged telogen phase.[3] While the shortened anagen phase and prolonged telogen phase are very important in the pathophysiology of androgenetic alopecia, scarring is not associated with these changes.[4] A characteristic finding is the miniaturization of the hair follicle.[4]

Androgenetic alopecia is exceedingly common, affecting up to 50% of males and females.[3] Despite its prevalence, the psychosocial implications of receding hairlines on men have received limited research attention.[5] This condition can cause psychological and social distress,[6] ranging from low self-esteem and body image concerns to social anxiety and stigmatization.[7] A full head of hair may be associated with youthfulness, attractiveness, and, by implication, desirability.[8] It is crucial that clinicians remain mindful of the potential adverse impact of hair loss on the human psyche when evaluating patients.[9]

## Methods

The present study aims to better understand the psychosocial impact of hair thinning and male pattern baldness among male college-aged students in South Dakota. Survey development included qualitative interviews of dermatologists and public health professionals affiliated with the University of South Dakota (USD) regarding survey items that would best capture information regarding the impact of hair loss in the target population. The online 30-question survey was composed of closed and open-ended questions. Medical students, physicians, and professors affiliated with USD reviewed the survey for content and face validity. The survey was granted exemption from the USD Institutional Review Board. Study participants were recruited through survey distribution to email addresses affiliated with undergraduate student organizations and social media accounts of undergraduate student organizations. Inclusion criteria consisted of male university students aged 18-40. Data collection occurred from October to November 2023. The Qualtrics database was used for both anonymous data collection and storage. Quantitative data was analyzed using descriptive statistics, while thematic analysis of qualitative data was performed.

## Results

*Demographic Data*

71 male participants completed the survey (Table 1).

*Hair Perception*

Most (82%) participants consider themselves to have a full head of hair. However, 40% of respondents said that they think their hair is thinning; on average, participants noticed thinning hair at 19.4 years of age. 44% of participants think their hairline is receding; which on average was noted at 19.8 years of age. 14% of young male participants say they have a bald spot on top of their head and, on average, were 18.1 years of age when they noticed a bald spot (Figure 1).

32% of male students reported being bothered by the current state of their hair. When asked to elaborate on why they felt this way, participants said, "My hair seems to be thinning and receding. I feel I have a high hairline as well, which I feel I have had for a while but its started to bother me starting about a year ago. I just think it looks bad and makes me look old," "I feel weird for having hair loss so young," and "I wish the corners of my hairline didn't go back as far as they do." Additional free responses about participants' concerns

**Table 1. Demographic data about survey respondents.**

| Demographic categories | Number of male participants (n = 71) |
|---|---|
| **Background (all that apply)** | |
| White | 58 |
| Asian | 7 |
| American Indian or Native American | 2 |
| Black or African American | 1 |
| Native Hawaiian or Pacific Islander | 1 |
| Other | 5 |
| **Do you identify as Hispanic or Latino?** | 7 |
| Yes | 7 |
| No | 66 |
| **Age** | |
| 18-20 | 49 |
| 21-25 | 17 |
| 26+ | 5 |

Figure 1. Type of hair loss noted by survey respondents.

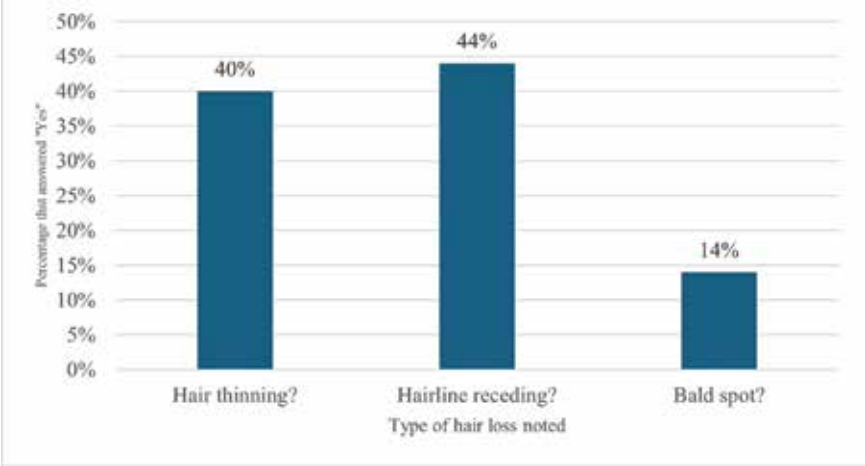



Table 2. Free responses to the question, "What is your greatest concern regarding the current state of your hair?"

| The greatest concern participants have regarding the current state of their hair: |
|---|
| "In 10 years, I don't want to lose my hair." |
| "I am concerned that my hair will continue thinning as years go by and that it will affect my appearance." |
| "Self-esteem." |
| "That I will not be able to look young when I lose hair." |

regarding the current state of their hair can be found in Table 2.

When assessing self-confidence, 37.3% of respondents agreed with the statement, "I am self-conscious about my hairline," while 62.7% reported they are "satisfied with the current state of their hair." Another 34.3% agreed with the statement, "I would be more confident if I had a full head of hair," while 28.4% agreed with the statement, "I think I am less attractive than I once was because my hair is thinning" (Figure 2).

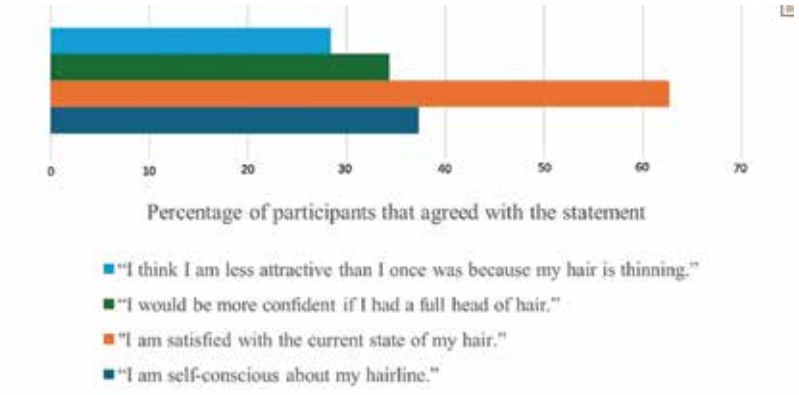
### Medical Treatment

Over two-thirds (69%) of participants reported a family history of male pattern hair loss. Only one participant reported scheduling an appointment with a physician specifically for hair loss. From a treatment perspective, 10% of participants have tried over-the-counter medicated (i.e. Minoxidil) topicals, while an additional 10% have tried over-the-counter oral supplements of some kind. Only 3% of participants have tried a prescription medication from a physician for hair loss. When asked about potential treatments, 73% of respondents said they would consider being on medicated topical, such as a foam or shampoo, indefinitely. In comparison, another 61% would consider being on oral medications indefinitely. 36% of participants would consider spending more than $50 to improve the state of their hair.

### Discussion

Though hair thinning and loss are common, the psychosocial

Figure 2. Participants were asked to agree or disagree with statements about how their hair impacts their quality of life.




impact may be underestimated. In the present study, 40% of participants agreed that their hair was thinning, while 44% agreed that their hairline was receding. Notably, one-third of male respondents reported that the current state of their hair bothers them, and approximately one-third agreed that they would be more confident with a full head of hair. These findings suggest that hair loss decreases self-esteem in young males and that having a full head of hair would improve confidence.

Previous literature has discussed the negative socioemotional effects men with significant hair loss experience, including fear of others noticing, fear of looking older, feeling less physically attractive due to hair loss, and being teased.[8] Males under the age of 26 and single males reported more significant psycho-emotional impact than their counterparts.[8] Individuals with greater hair loss may also turn to various behavioral coping mechanisms, such as: improving physique, dressing nicer, wearing hats, and seeking reassurance about their appearance.[8]

This study specifically focused on college-aged men in South Dakota. Previous studies suggest that younger age is a risk factor for greater psychosocial distress in men with male pattern baldness. A study done in Saudi Arabia found that being younger with a recent diagnosis of androgenetic alopecia was a significant predictor for impaired quality of life, while a study in Finland with middle-aged men found no association between the presence of androgenetic alopecia and psychosocial well-being.[6,10] Understanding this predictor can be useful for clinicians who care for young men. As many study participants reported they are bothered by their hair, discussions surrounding male pattern baldness should be a vital component of both primary and dermatologic care.

In the present study, only 3% of participants had tried a prescription medication for hair loss, while 61% reported they would consider being on oral medications. Because androgenetic alopecia is a chronic, complex condition influenced by genetic and environmental factors, it can be challenging to treat.[11] Deciding which of the many treatment routes to pursue should be individualized for each patient through shared decision-making between the patient and provider. Treatment options for androgenetic alopecia range from topical and oral medications to more invasive therapies like hair transplants. The use of an appropriate treatment regimen can slow or partially reverse hair loss in mild to moderate androgenetic alopecia.[12] No existing treatment can completely reverse hair loss due to this condition.[12]

Two medications are currently FDA-approved for androgenetic alopecia: topical minoxidil and oral finasteride.[11] Topical minoxidil 5% foam or solution is used once or twice daily, and side effects include excess hair growth, initial loss of telogen hairs, and skin irritation. Oral finasteride is taken once daily, and significant side effects include sexual dysfunction, gynecomastia, depression, prostate or breast cancer, and reduction in sperm count. An additional option is ketoconazole 2% shampoo, used two or three times weekly and has antiandrogen properties that slow hair loss. Finally, spironolactone can be considered for female pattern hair loss but may cause menstrual irregularities, dizziness, and increased urination, among other side effects.

Having multiple treatments available can be overwhelming; therefore, it is important to consider affordability, convenience, adverse effects, and personal preferences when discussing interventions. Engaging in such discussions and providing education in primary care and dermatology offices is an essential first step in addressing the psychosocial impacts

of male pattern baldness. Limitations of our study include a small sample size and use of an online survey which could introduce response bias or sampling bias.

### Conclusion

This study aimed to understand the psychosocial impact of hair thinning and male pattern baldness among college-aged students in South Dakota. With 32% of male respondents bothered by the current state of their hair, education surrounding male pattern hair loss must be implemented in the care of college-aged men. Providing men with options to target hair loss could improve confidence and decrease emotional distress. While there are many treatment options, it is important to first consult with a primary care provider or a dermatologist to determine the treatment that best suits the patient's immediate- and long-term goals. In conclusion, proactive education and knowledge of available treatment options may be beneficial solutions to decrease the psychosocial impacts of male pattern hair loss in college-aged men in South Dakota.

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**About the Authors:**

Alyssa L. Reinschmidt, MS IV, University of South Dakota Sanford School of Medicine.

Rachel Van Gorp, MS IV, University of South Dakota Sanford School of Medicine.

Oluwafunke Oluwatosin Ogunremi, MS III, University of South Dakota Sanford School of Medicine.

John Samuel Vassar, MS IV, University of South Dakota Sanford School of Medicine.

Brant Hannahs, MS II, University of South Dakota Sanford School of Medicine.

Jazmin Newton, MD, Dermatology Residency Program, University of Iowa Carver College of Medicine.

Brianne Haskell Hanisch, MD, Transitional Year Residency Program, University of South Dakota Sanford School of Medicine.

Marcus L. Frohm, MD, Department of Internal Medicine, University of South Dakota Sanford School of Medicine; Sanford Dermatology Clinic, Sioux Falls, South Dakota.

# Case Report: *Salmonella* Infection of a Prosthetic Shoulder Joint Requiring Long-term Antibiotic Suppression

Becky Davies, MD; Andrew Nerland, MS IV; and Chester Samuelson, MS IV

**Abstract**

*Salmonella* infection most frequently presents as gastroenteritis in developed countries, while septic arthritis represents a much rarer occurrence. *Salmonella* septic arthritis most commonly occurs in the hip joint, while existing reports of Salmonella infection of the shoulder joint are limited to the pediatric population. Here we report a case of an immunocompetent elderly male presenting with *Salmonella* septic arthritis to the left shoulder joint status post total shoulder arthroplasty three years prior. The definitive source of infection remains unclear, though potential etiologies include preceding gastroenteritis and iatrogenic inoculation. Treatment was complicated by an inability to completely remove and replace the prosthetic hardware and therefore consisted of left shoulder incision and drainage with debridement, antibiotic bead placement, surgical revision, and long-term oral antibiotics. This paper explores the incidence and diagnosis of *Salmonella* joint infections and demonstrates a treatment plan when curative surgery is not available.

## Introduction

*Salmonella* is a bacterial disease capable of causing a broad range of symptoms during human infection. In the developed world, infections typically manifest as gastroenteritis. In rare cases, these infections can lead to bacteremia and focal infections.[1] A rare manifestation of *Salmonella* infection is septic arthritis, with few cases identified in the literature. Data suggests the hip is the most affected joint in *Salmonella* septic arthritis and literature review revealed the only records of septic arthritis in the shoulder joint secondary to *Salmonella* are pediatric cases.[2-6] This case presents a rare occurrence of *Salmonella* infection of the shoulder joint in an immunocompetent elderly patient with multiple risk factors including previous prosthetic joint placement. Treatment courses for these infections typically involve surgical debridement and a four–six-week course of antibiotics.[7] However, complications from prosthetic joint involvement resulted in this patient requiring long-term antibiotic treatment.

## Case presentation

An 82-year-old male presented to the clinic with a two-week history of acute left shoulder pain that began after experiencing a "pop" when pushing himself out of bed. His pain developed into a severe and constant discomfort. The patient also noted warmth and redness. Over-the-counter analgesic therapy provided minimal relief. Vitals were within normal limits. Physical examination revealed pain with palpation over the anterior lateral deltoid and decreased range of motion with mild warmth and erythema. He had a notable surgical history of a left reverse total shoulder arthroplasty without subscapularis repair three years prior, and a right shoulder hemiarthroplasty with revision arthroplasty two years prior. He also had hemiarthroplasty in both knees and a previous cholecystectomy. Medical history consisted of coronary artery disease with four stent placements and lifelong dual-antiplatelet therapy, dyslipidemia, hypertension, and aortic stenosis.

An ultrasound of the left shoulder joint revealed fluid in the subcutaneous space and arthrocentesis was performed. The following day a culture from the aspirated material grew *Salmonella group B* species. The patient noted experiencing a day of diarrhea the week prior. He also mentioned receiving vaccines in the left upper arm one month prior to symptom onset. Laboratory measurements revealed abnormalities in WBC count 10.5, ESR 106, and CRP 225. The patient was hospitalized. During hospitalization, he had a temperature of 99.6 F but otherwise normal vitals. Blood cultures were negative. After consulting the infectious disease team, the patient began IV ciprofloxacin. An echocardiogram was performed prior to surgical intervention due to a history of congestive heart failure, revealing sufficient heart function.

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The patient underwent a left shoulder incision, drainage with debridement, and revision reverse total shoulder arthroplasty with placement of antibiotic cement beads. The days following the surgery, the patient reported a significant reduction in pain. Six days later, the patient underwent repeat surgery with antibiotic cement bead removal and arthroplasty revision. The prosthetic humoral tray and glenosphere were successfully removed and replaced, however complete joint removal and replacement was unsuccessful. The original glenoid baseplate and humoral stem were left due to removal difficulty but were meticulously debrided and cleaned. The patient has since followed up with the orthopedic and infectious disease teams and his condition continues to improve. Laboratory values have normalized, and he began physical therapy of the shoulder joint. After a six-week course of oral ciprofloxacin twice daily, he was switched to once daily. Discussion with the orthopedic team revealed curative surgery is not feasible due to remaining prosthetic material likely harboring *Salmonella* bacteria. Long-term antibiotic suppression was advised without an exact known duration, however estimations by the infectious disease team projected treatment duration of at least one year before considering discontinuing suppression.

## Discussion

*Salmonella* belongs to the family Enterobacteriaceae, and there are multiple species and subspecies of *Salmonella*.[1] *Salmonella* is commonly grouped into two strains, typhoidal and nontyphoidal. Manifestations of *Salmonella* can fall into four clinical syndromes: enteric fever, gastroenteritis, bacteremia with or without focal involvement, and carrier state.[4] Gastroenteritis is the most common cause of infection and the probable cause of bacteremia in most cases in the developed world.[1] Septic arthritis secondary to *Salmonella* is an exceedingly rare phenomenon, occurring in only 0.27% of *Salmonella* infections.[8] It is thought to be caused by hematogenous spread to the joint.[4,9] The chances of bone and joint infection increase with risk factors and are most seen among children. Additional recorded risk factors are extremes of age, immunocompromised state, malignancy, diabetes, and systemic lupus erythematosus.[7,8] There is an established association between periprosthetic joints and *Salmonella* septic arthritis in the literature,[2,5] predisposing the patient in this case to infection. The hip is unquestionably the most common joint infected in these cases, followed by the knees and ankles.[2-4] A literature review looking at twelve cases of *Salmonella* infection of a periprosthetic joint found that 10 cases occurred in hip implants with the other two being in other lower extremity joints. Another study reported six cases of prosthetic joint infections with *Salmonella* over a 44-year span, five of which were hip infections with the other being in the knee.[6] Few cases of *Salmonella* infections of the shoulder have been reported, all being pediatric cases.[10-12] However, to the author's knowledge, there have been no reports of septic arthritis in the shoulder with *Salmonella* in adult patients, making this case exceedingly rare.

Early diagnosis is essential but difficult as symptoms of *Salmonella* septic arthritis are more subtle when compared to *Staphylococcus* septic arthritis.[2,8] A longer time between symptom onset and surgical intervention is associated with increased complications,[13] so early recognition is vital. In this case, there was question over the etiology of infection. The patient reported a single day of diarrhea one week prior to his septic arthritis diagnosis; however, his onset of shoulder pain began before his GI symptoms. Though there may be discrepancy with the timeline, in reviewing the literature, gastroenteritis with hematogenous spread is the most prevalent cause of *Salmonella* septic arthritis making it the probable mechanism in this case.[2,9,14,15] Blood cultures for *Salmonella* were negative; however, blood cultures are positive in only 10-15% of *Salmonella* septic arthritis cases.[15] There was also question that vaccine injection could have been the cause, as the patient received vaccinations in his left arm one month prior to symptom onset. Cases of shoulder joint septic arthritis due to vaccination have been reported;[16-20] however, there are no published findings of a *Salmonella* infection following vaccination and *Salmonella* infections are typically transmitted by poor sanitation or eating undercooked products.[1]

Treatment of *Salmonella* septic arthritis typically consists of aspiration of the joint, antibiotic therapy, and surgical debridement.[8] Often cases may require multiple surgeries and a four-six-week course of antibiotics.[2,7] The patient in this case will require long-term antibiotic therapy of unknown duration, but likely requiring at least one year of suppressive therapy. Removal and replacement of all infected material during surgery was difficult given his prosthetic joint involvement. Because hardware that was placed prior to the infection remains, the infection is likely to recur without suppressive antibiotics. The literature has little to say regarding treatment plans in complicated cases of *Salmonella* septic arthritis. Guidelines are unclear when encountering unusual cases of *Salmonella* bacteremia, but long-term antibiotic suppression may be warranted in specific cases.[8]

This case illustrates the need for a high index of suspicion for septic arthritis in patients with a subtle presentation but

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**87%** of these sleep-related deaths were potentially preventable.

*Sleep surfaces - couch, chair, bed, floor, mattress

Cases reviewed by ICDR only include infant deaths that occurred post-hospital discharge in South Dakota.

### Several factors increase risk when bed or surface-sharing:

## Very high risk

**More than 10X the baseline risk**

- Using a soft sleep surface such as a waterbed, old adult mattress, couch, or armchair
- Adult is overly tired, taking medication that makes them drowsy, using substances like alcohol, or otherwise under-responsive
- Adult smokes cigarettes or uses tobacco products (even if they do not smoke in bed)

## High risk

**5-10X the baseline risk**

- Baby is younger than 4 months old
- Adult is not the baby's parent but is another caregiver, such as a grandparent or sibling

## Higher than average risk

**2-5X the baseline risk**

- Baby was born preterm (before 37 weeks) or at a low birth weight
- Sleep area includes unsafe items like pillow or blankets

Source - *Child Death Review, South Dakota 2019-2023.*

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multiple risk factors. Though it is rare to have a shoulder infection with *Salmonella*, it is important to establish an early diagnosis and treat accordingly. Treatment is variable depending on the complications encountered, seen in this study where curative surgical intervention was complicated by infected prosthetic material that could not be removed. To the author's knowledge, there are no published cases of long-term antibiotic treatment for complicated *Salmonella* septic arthritis. Given the association between *Salmonella* infection and periprosthetic joints, this case provides a useful treatment plan that can be considered in future cases of *Salmonella* septic arthritis complicated by difficult to treat prosthetic joints.

## Conclusion

In conclusion, *Salmonella* septic arthritis of the shoulder joint is an exceedingly rare case with a more subtle presentation. However, depending on risk factors, a high index of suspicion for septic arthritis can lead to quicker treatment and better outcomes. Previous prosthetic joint implantation is an important risk factor for *Salmonella* septic arthritis and can be a complicating factor during treatment. In cases where surgical intervention is not curative, long-term antibiotic treatment may be required.

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**About the Authors:**

Becky Davies, MD, Monument Health Spearfish Hospital, Spearfish, South Dakota.

Andrew Nerland, MS IV, University of South Dakota Sanford School of Medicine.

Chester Samuelson, MS IV, University of South Dakota Sanford School of Medicine.

# Osler-Weber-Rendu Syndrome: A Case Report and Brief Literature Review

Lauren Schild, MS III; and Emily Boden, MD

**Abstract**

A previously healthy 17-year-old female presented for preoperative clearance for an orthopedic repair and was found to have moderate-to-severe asymptomatic hypoxia. Subsequent chest X-ray and CT revealed a large pulmonary arteriovenous fistula (AVF) in the left lower lobe. Further questioning about family history revealed a history of Osler-Weber-Rendu syndrome, also called hereditary hemorrhagic telangiectasia (HHT), on the maternal side. HHT is classically associated with epistaxis, gastrointestinal bleeding, iron-deficient anemia, and mucocutaneous telangiectasias. An estimated 50% of patients with HHT will also have pulmonary arteriovenous malformations (AVM), which increase the risk of stroke and cerebral abscesses, and hepatic AVMs. Specific therapy is site-dependent but may include laser therapy and therapeutic embolization along with iron supplementation and transfusions for anemia.

## Introduction

Osler-Weber-Rendu syndrome, also called hereditary hemorrhagic telangiectasia (HHT), is a rare genetic disorder affecting an estimated 1 in every 5,000 to 8,000 people. HHT is caused by an autosomal dominant mutation in one of 600+ enzymes causing loss-of-function mutations in the bone morphogenetic protein (BMP) signaling pathway; the three most common mutations include *endoglin (ENG, HHT1), activin receptor-like kinase 1 (ACVRL1, HHT2),* and *SMAD4 (JPHT).*[1,2] *ENG* and *ACVRL1* represent about 98% of mutations and cause the classical symptoms of HHT, including epistaxis, gastrointestinal bleeding, mucocutaneous telangiectasias, and iron deficiency anemia though presentation is variable.[3] Diagnosis is made via genetic analysis or clinically with the Curaçao Criteria which state a definite diagnosis is made with 3 out of 4 of the following:

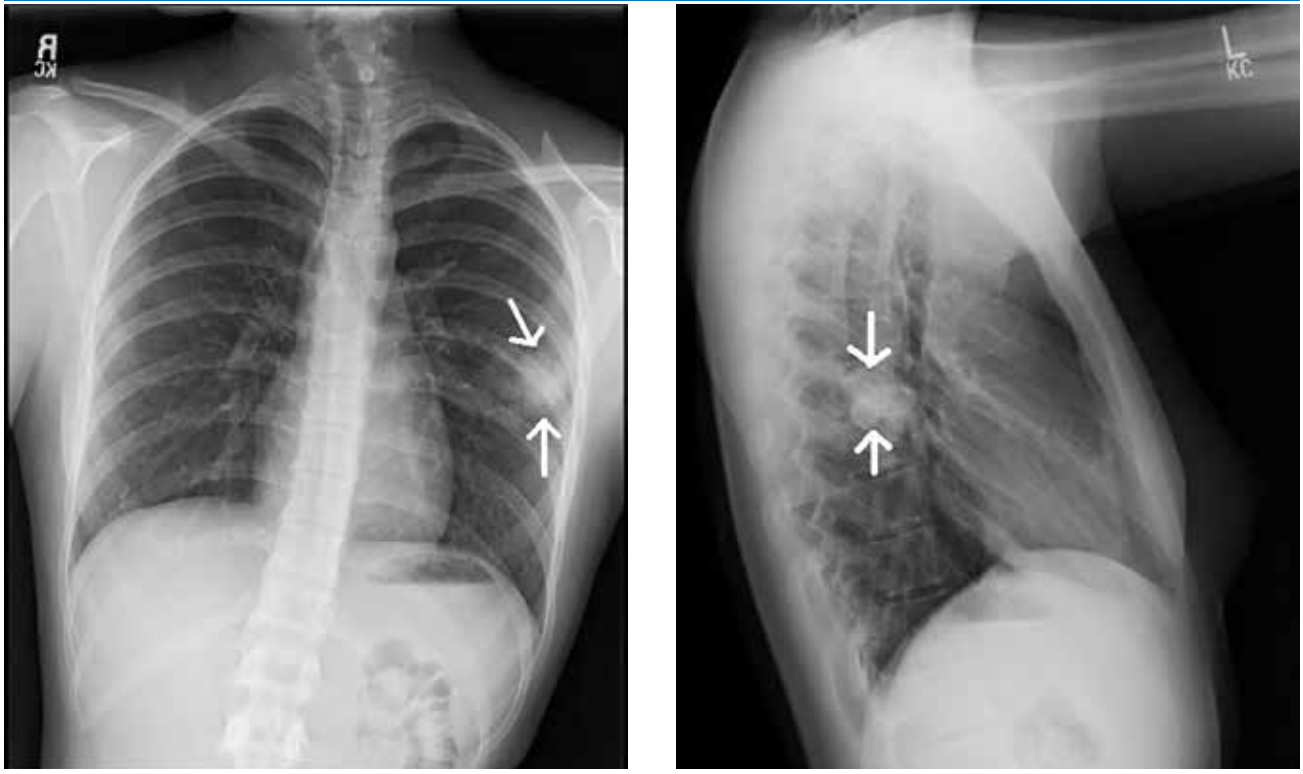
1. Recurrent or spontaneous epistaxis
2. Telangiectasias on the lips, fingers, nose, or oral cavity
3. Visceral lesions
4. Family history of HHT [5]

Although the classical symptoms are typically mild, there is risk for complications including severe GI bleeding, paradoxical embolism with pulmonary AVMs, and high-output cardiac failure with hepatic AVMs, and intracranial hemorrhage especially with cerebral arteriovenous fistulas. Here we present the case of a 17-year-old female with moderate-severe asymptomatic hypoxia found to have a pulmonary AVF.

## Case

A 17-year-old white female with no significant past medical history presented to the clinic for pre-operative clearance for an orthopedic surgery. Upon admission, nursing staff noted they were unable to obtain a SpO2 reading above 83% which did not improve with removal of her fingernail polish. The SpO2 was repeated with an ear sensor which again read in the 77-85% range. The patient denied any recent respiratory illnesses, fevers, cough, headaches, dizziness, chronic lung conditions, or smoking of any sort. She also denied any dyspnea or changes in activity level other than that caused by her orthopedic injury. On physical exam, mild tachycardia at 108 beats per minute was noted with capillary refill at 3 seconds; heart and lung sounds were normal. Minimal cyanosis was noted in the fingernail beds. An arterial blood gas and chest X-ray were initially obtained for evaluation, revealing an arterial pO2 of 40.0 and HCO3 of 20.0 as well as a focal area of nodularity with surrounding airspace disease in the mid left lung (Figure 1 A,B). An EKG revealed only sinus tachycardia. Differential diagnoses at this time included pneumonia, pulmonary embolism, and a soft-tissue mass. These findings were discussed with the patient and her mother who agreed to further evaluation in the emergency department. Supplemental oxygen via nasal cannula at 2L

Figure 1. 2-view chest X-ray. (A) The white arrows point to a round mass in the lateral left lung, mid-chest on AP view. (B) Shows a lateral view with arrows pointing to the same nodule in the posterior-central chest.

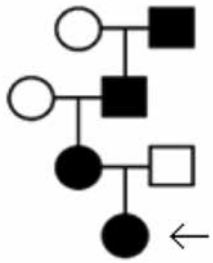


per minute improved SpO2 to 91% with no changes noticed by the patient, and subsequent CT PE scan with contrast revealed a large pulmonary artery to pulmonary vein AV fistula within the left lower lobe. Upon further questioning, the patient's mother revealed a confirmed diagnosis of HHT in the patient's great-grandfather and suspicion for HHT in the mother and maternal grandfather. Repeated physical exam showed several small telangiectasias in the patient's oral mucosa. Pediatric cardiology was consulted and did not feel this case required urgent or emergent transfer. This was discussed with the patient and her mother who agreed to discharge home and follow up with pediatric cardiology. Three weeks following this discovery, she completed a coil embolization procedure of the AVF and was subsequently cleared by cardiology. Upon follow-up, she reports noticing a mild increase in energy and is able to speak for longer periods of time without needing to pause. She stated that the cardiologist mentioned several other small pulmonary AVMs but thought those were likely to resolve on their own. Genetic testing was not performed at this time due to the patient meeting the Curaçao Criteria for diagnosis though may be offered in the future based on patient preference. Her original orthopedic surgery was rescheduled to a later date and she is currently doing well.

## Discussion and Conclusion

Patients with HHT may present to a variety of specialists dependent on the symptom of concern. Typically, patients will first experience recurrent epistaxis during childhood or early adulthood which may be mild and delay diagnosis until more severe bleeding or symptoms occur.[1] Though many cases of HHT may appear mild, there are situations in which the disorder can become more harmful including pregnancy,

Figure 2. A three-generation pedigree showing known affected individuals in solid black. The black arrow points to the patient discussed in this case. This pedigree fits the autosomal dominant inheritance pattern expected of HHT.



pulmonary hypertension in the setting of pulmonary AVMs, venous thromboembolisms, and heart failure in the setting of large hepatic AVMs. Patients with the HHT1 mutation are more likely than those with HHT2 to develop pulmonary and cerebral AVMs while those with HHT2 are more likely to develop pulmonary hypertension related to hepatic AVMs or pulmonary arterial hypertension.[1] Lab results typically reveal normal platelet count, normal coagulation studies, and iron-deficient anemia. Often patients with HHT will have a family history of the disorder however it is not uncommon for family members to have gone undiagnosed due to the variability in presentation and severity. About 70% of patients with HHT will develop evidence of AVMs on radiologic imaging by age 16, and 90% show evidence by age 40.[1] Pulmonary AVMs typically develop after puberty, and the likelihood of developing telangiectasias increases with age.[1]

In our case, the patient did not present to the clinic for symptoms related to HHT. Instead, the discovery was made following workup for asymptomatic moderate-to-severe hypoxia found to be caused by a large pulmonary AV fistula, after which the patient's mother mentioned a family history of HHT that had not been noted in the EMR. The patient denied history of nosebleeds and repeat examination confirmed the presence of small telangiectasias on the oral mucosa, meeting the Curaçao Criteria for diagnosis of HHT. With proper medical follow-up, life expectancy is similar to the general population.[4] Of note, anticoagulation is not contraindicated in patient with HHT due to the increased risk of venous thromboembolisms and should be used when indicated.[1]

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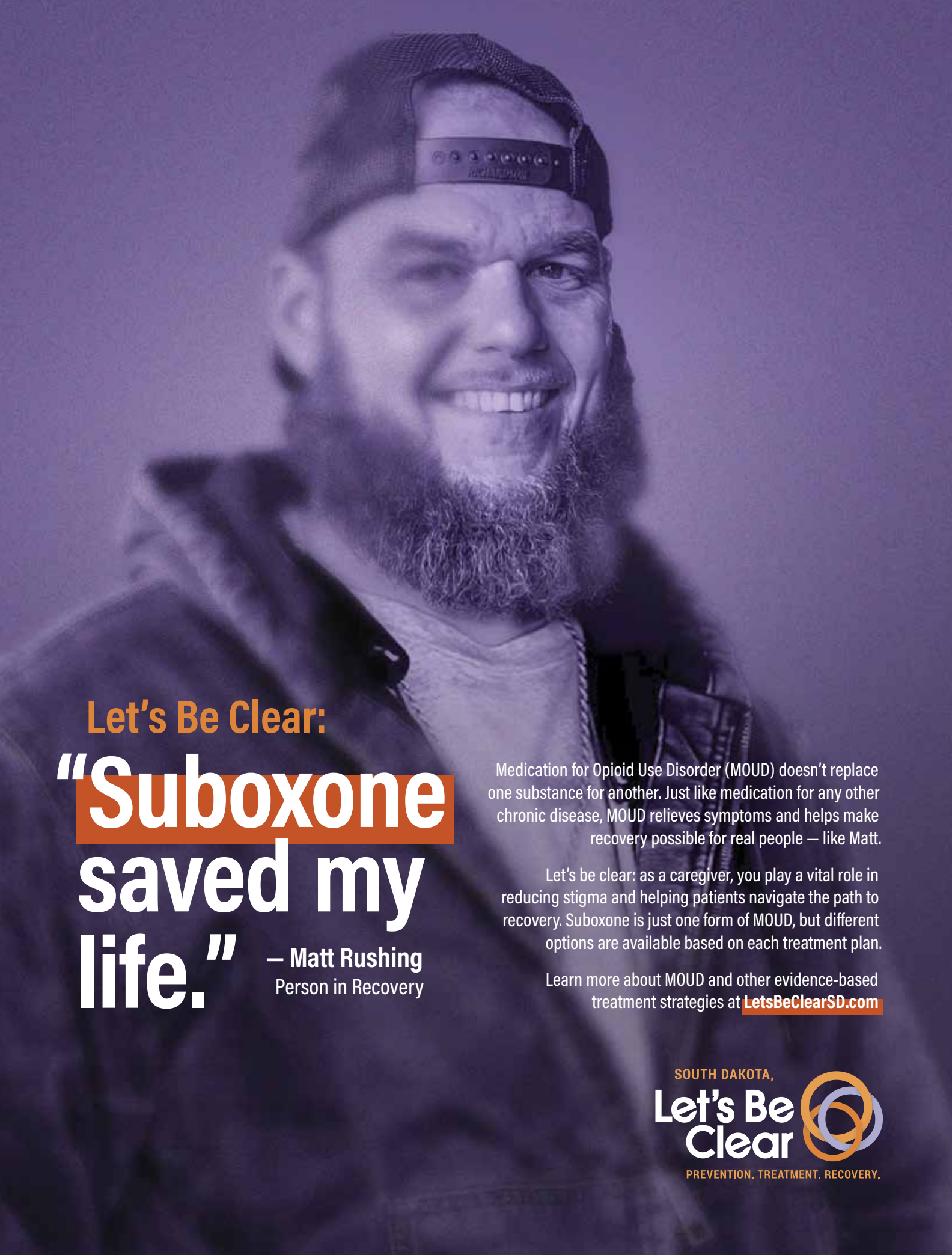
**About the Authors:**

Lauren Schild, MS III, University of South Dakota Sanford School of Medicine.

Emily Boden, MD, Mobridge Regional Hospital and Clinics, Mobridge, South Dakota.



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# Methylene Blue-Guided Debridement in Preparation for Cardiac Device Reimplantation: A Retrospective Cohort Pilot Study

Joel C. Stroman, MS IV; Alyssa Reinschmidt, MS IV; and Heather Karu, MD

**Abstract**

*Introduction*: Debridement of infected wounds is an essential component of wound healing. Surgical debridement is one option and is typically performed under direct visualization of the wound. It is carried out until healthy tissue is felt to be encountered by the surgeon. Methylene blue has been described as a visual aid in the debridement process, including in the setting of infected prostheses. This study aimed to compare wound healing and device reimplantation times between patients who underwent methylene blue-guided debridement or routine wound care of their infected cardiac device implant pockets. Evaluating differences in rates of recurrent infection following reimplantation was a secondary goal of the study.

*Methods*: Patients were identified for inclusion using a CPT code-based data pull and manual chart review. They were separated into groups dependent upon whether they received routine wound care or methylene blue-guided debridement. Chart review was conducted to estimate the number of days from explantation to wound healing and device reimplantation, and any documentation of reinfection was also recorded. Mann-Whitney U, Student's t, and Chi-square tests were performed using *jamovi*.

*Results*: To date, 13 patients have been included in the analysis. Methylene blue-guided debridement is associated with significantly faster time to wound healing ($p = 0.011$). A significant difference in the interval between explantation and reimplantation was noted, with those in the methylene blue group having shorter intervals ($p = 0.036$). Differences in reinfection rates were nonsignificant.

*Conclusion*: Methylene blue-guided debridement appears to significantly improve time to wound healing and time to device reimplantation in patients who have undergone device explantation secondary to infection.

## Introduction

In infected wounds, adequate wound debridement is the foundation for re-epithelialization and ultimately, wound healing.[1] The debridement process requires completely removing non-viable tissue and leaving behind the remaining viable tissue.[2] Many methods exist to achieve proper debridement including enzymatic debridement, wound irrigation, or curettage.[1] Among these, methylene blue has previously been cited as a surgical tool to assist in wound debridement techniques. During the procedure, methylene blue is applied to the surface of the wound. The surgeon wipes the dye, and it is removed from the normal epithelium while staining eschar, non-viable epithelium, and granulation tissue. The stained portion of the tissue is then removed, and viable tissue remains.[2,3]

The use of methylene blue as an adjunctive agent for wound debridement has several benefits and very few drawbacks. The color of the dye ensures that the surgeon performs complete debridement to the entirety of the wound's surfaces without missing an area of non-viable tissue.[4] If tissue is left behind, incomplete debridement leads to suboptimal outcomes including risk of infection and wound nonhealing.[2] Another advantage to methylene blue use is its ability to stain crevasses, fistulas, and sinus tracts in complex wounds, aiding the surgeon's ability to reach areas with difficult visualization.[4] The safety profile for methylene blue used topically on wound surfaces is impressive. In a study that performed over 200 cases utilizing methylene blue to guide wound debridement, no adverse effects were noted.[2]

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Methylene blue-guided debridement has been applied to various procedures, including acute surgical or traumatic wounds, acute and subacute burn wounds, chronic granulating wounds, partially epithelialized wounds, sinus tracts, and fistulas.[2] It has also been used in the debridement of periprosthetic joint infections.[4] To our knowledge, no studies have evaluated the use of methylene blue as an adjunct to cardiac device reimplantation. This study aims to compare different surgical techniques for wound debridement in preparation for cardiac device reimplantation, with and without methylene blue. The primary goal is to determine whether there is a difference in days to wound closure and device reimplantation between methylene blue-guided debridement and routine wound care. The secondary goal is to evaluate differences in the rate of infection.

## Methods

A SlicerDicer data pull using CPT codes S21.10X and TX2.7XXA was used to identify potential study participants, and chart review was utilized to include appropriate patients. Patients with implanted cardiac devices (i.e., pacemakers, ICDs) who required explantation and wound care due to pocket infection were selected for inclusion. Medical records were reviewed by medical students and data were recorded in a standardized fashion on a secure file. Patients with missing data were excluded from the analysis. Comparisons of days to wound healing and days to reimplantation were made between patients who underwent methylene blue-guided debridement and those who received routine wound care, which included standard debridement and frequent dressing changes. In patients who underwent methylene blue-guided debridement, the wound was closed over a drain that was subsequently removed one week later. Drain tips were cultured and those with negative results were cleared for cardiac device replacement. The time to wound healing was calculated as the total number of days from the initial debridement to the first note in which a closed wound was documented on physical exam. The number of days to reimplantation was calculated from the time of explantation to the reimplantation of a new device. A power analysis performed using data from previously published research concluded 18 total participants would be necessary to achieve an effect size of 1.48. All study activities were performed in concordance with and approved by the local Institutional Review Board.

## Results

Thirteen patients have been included in the analysis to date, with seven of those patients representing the methylene blue-guided debridement group. The median age of study participants was 71 years, with a standard deviation of 10.5 years. Sixty-one percent of patients were male, and all patients were white. Only four patients in the entire cohort were noted to have comorbidities that may have affected wound healing. Of note, four patients did not undergo reimplantation of their devices for various reasons and were thus excluded from time to reimplantation analysis. The mean time to wound healing in the methylene blue guided-debridement group and routine wound care groups was 22.6 days and 71.0 days, respectively. A Shapiro-Wilk test showed a non-normal distribution of the data in the time to wound healing analysis ($p$ = 0.027). A separate Shapiro-Wilk test was performed for the reimplantation data and was found to be nonsignificant (Table 1). A one-tailed Mann-Whitney U test revealed patients in the methylene blue group had significantly shorter wound healing times ($p$ = 0.011). A Student's t-test demonstrated a significant difference in the interval between explantation and reimplantation in the methylene blue group compared to those who received routine wound care ($p$ = 0.036) (Table 2). A Chi-square analysis to detect differences in rates of

**Table 1. Group descriptives.**

| Analysis | # Days to heal | | # Days to reimplantation | |
|---|---|---|---|---|
| Group | MB | RWC | MB | RWC |
| N | 7 | 6 | 4 | 5 |
| Mean (d) | 22.6 | 71.0 | 35.3 | 99.0 |
| Median (d) | 15.0 | 83.0 | 32.0 | 124.0 |
| Standard deviation (d) | 25.0 | 36.1 | 29.0 | 54.0 |
| Shapiro-Wilk p | .027* | | .406 | |

MB = Methylene blue, RWC = Routine wound care

**Table 2. Results of Mann-Whitney U and Student's t-test.**

| | Test | Statistic | df | p |
|---|---|---|---|---|
| # Days to heal | Mann-Whitney U | 4.50 | - | .011* |
| # Days to reimplantation | Student's t | -2.11 | 7.00 | .036* |

Table 3. Contingency table and Chi-square results.

| | Secondary infection | | |
|---|---|---|---|
| Group | N | Y | Total |
| MB | 4 | 0 | 4 |
| RWC | 4 | 1 | 5 |
| Total | 8 | 1 | 9 |

MB = Methylene blue, RWC = Routine wound care
$\chi^2 = 0.90$, df = 1, p = 0.343

secondary infection after reimplantation of a cardiac device revealed a nonsignificant difference between the two groups (Table 3).

## Discussion

This retrospective cohort study aimed to evaluate differences in methylene blue-guided debridement and routine wound care. Specifically, we aimed to evaluate differences in time to wound healing and time to device reimplantation in patients who developed infections at their initial implant site. After analyzing preliminary data, we found patients who underwent methylene blue-guided debridement had a significantly faster time to wound healing. In patients who had devices reimplanted after methylene blue-guided debridement, the time to reimplantation was significantly faster than in those who underwent routine wound care. Additionally, there were fewer secondary infections in the methylene blue group, though this was nonsignificant. This data suggests methylene blue-guided debridement may enhance debridement efforts and improve timeliness in achieving clinically desired outcomes.

Wound healing is classically described as having three phases: inflammation, proliferation, and remodeling.[5] In normal wound healing, the first phase begins immediately following violation of tissues exposing the sub-endothelium. This, along with tissue factor, activates platelet aggregation and, eventually, platelet degranulation. Released chemotactic factors recruit neutrophils and later macrophages that remove bacteria and debris from the tissue, creating a clean site for wound healing. As inflammation gives way to proliferation, fibroblasts, keratinocytes, and endothelial cells engulf the site. Granulation tissue soon covers the original clot. Finally, remodeling occurs when the extracellular matrix is degraded, and type III collagen is replaced by type I collagen to strengthen the wound site.[5]

While the process of wound healing is generally highly effective, it is not infallible. Infection, diabetes, steroid use, and vascular disease are just a few factors that may negatively impact wound healing.[6] Infection was the primary reason for failure in the present study. Bacterial infection of wounds impairs each phase of the healing process through the depletion or inhibition of necessary proteins and cytokines, as well as production of toxins, among several other mechanisms.[7] Debridement has been described for the treatment of wounds since at least the 1700s, and techniques in chronic wound management have been slow to evolve over time.[8,9] The authors believe that utilizing methylene blue as a technique for wound management enhances debridement as infected tissue that may have previously impaired wound healing is highlighted with the bright dye and easily removed.

This study has several limitations. The most obvious limitation is the small sample size. Recruitment of participants is ongoing, though it has been remarkably difficult to recruit due to a lack of patients faced with infection of their device implant pockets. However, despite not having reached the sample size recommended by the power analysis, the study has achieved significant results and shows promise for the future. It is the authors' hope that sharing these results will aid in the recruitment process while also delineating a potentially efficacious debridement technique. An additional limitation is the retrospective nature of the study, which prevents standardized documentation of clinical data. Finally, limitations in statistical analysis and small sample size prevented meaningful exploration of the previously mentioned factors that may impact wound healing and act as potential confounders to the findings of this study.

Methylene blue has been shown to be a useful adjunct in wound debridement in different settings, though there appear to be relatively few publications exploring its utility and efficacy. This study aimed to evaluate its effectiveness in reducing time to wound healing and device reimplantation, as well as recurrent infection rates in cardiac device wound beds. By contributing to the small body of literature describing methylene blue as a tool to guide debridement, the authors hope to assist in advancing the management of wound care to the benefit of patients suffering from infected wounds.

## Conclusion

Though data is currently limited, methylene blue-guided debridement appears to significantly reduce the time to wound healing and time to device reimplantation in patients requiring explantation of infected cardiac devices. The secondary goal of comparing reinfection rates was unable to be accomplished as a result of the sample size. Due to the small sample size, further data collection and analysis is necessary to strengthen the conclusions drawn from this study.

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**About the Authors:**

Joel C. Stroman, MS IV, University of South Dakota Sanford School of Medicine.

Alyssa Reinschmidt, MS IV, University of South Dakota Sanford School of Medicine.

Heather Karu, MD, Department of Surgery, University of South Dakota Sanford School of Medicine; Sanford Plastic and Reconstructive Surgery Clinic, Sioux Falls, South Dakota.

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# Pseudogout in Primary Care Practice: An Approach to Diagnosis and Treatment

Tinotenda ME Sekeramayi, MD; Thabuna Sivaprakasam, MD; and Joseph Fanciullo, MD

**Abstract**

Pseudogout refers to an autoinflammatory arthritis associated with the appearance of calcium pyrophosphate dihydrate crystals in the joint fluid. In acute pseudogout attacks patients typically endorse rapid onset of pain and swelling, at times following mechanical trauma to the joint. Physical exam reveals warmth, swelling with effusion, tenderness, and limited range of motion of the involved joint(s) which can mimic gout flares and an overlying soft tissue infection so maintaining a broad differential is important in the workup of pseudogout attacks. Risk factors for pseudogout include advancing age, osteoarthritis, mechanical joint trauma or history of meniscectomy, and primary hyperparathyroidism. Diagnosis requires synovial fluid analysis with direct visualization of rhomboid shaped calcium pyrophosphate crystals. Acute attacks are managed with low-dose colchicine, non-steroidal anti-inflammatory drugs, or corticosteroids (either intra-articular injection or systemic therapy). The ideal approach combines pharmacologic and supportive measures such as application of ice or cooling packs and temporary joint rest with weight restriction along with analgesic medications. Currently there are no long-term therapies that prevent calcium pyrophosphate crystal formation; however, research is underway for agents such as probenecid, phosphocitrate, methotrexate, and interleukin-1 antagonists.

## Introduction

Pseudogout, also known as calcium pyrophosphate deposition disease (CPPD), represents an autoinflammatory joint disease triggered by CPP crystal deposition in the joint. Pseudogout can have variable presentations including intermittent attacks, asymptomatic or symptomatic arthritis with radiographic features, of cartilage calcification (Figure 1). This review will highlight the pseudogout presentations, risk factors, and diagnosis and shed light on the optimal acute and chronic management of pseudogout.

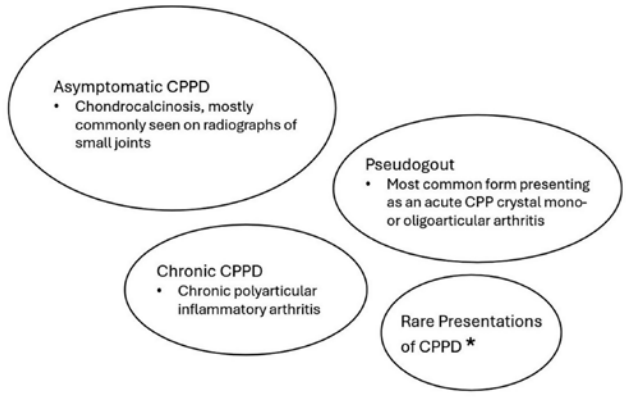
## Risk Factors

Pseudogout commonly presents with increasing frequency in patients aged 50 years and older. The greatest risk factors for idiopathic CPPD development are advancing age, osteoarthritis (OA), mechanical joint trauma, primary hyperparathyroidism, chronic hypomagnesemia, and hemochromatosis.[1,2] Interestingly, with advancing age the odds ratio is 2.25 for each decade over age 40.[2] Often patients presenting with pseudogout have a history of joint trauma to and/or osteoarthritis of the affected joint. Patients with familial predisposition to CPPD development present in their 20s and 30s with spinal involvement.[2] Less common risk factors include hypercalcemia, acromegaly, Wilson's disease, and ochronosis.[3] There are no known dietary sources that increase the risk of having an acute pseudogout attack.[4]

## Acute CPPD

Acute CPPD crystal arthritis is the most common form of CPPD and presents as an acute self-limited mono- or oligoarticular arthritis. In acute pseudogout attacks, patients

**Figure 1. Clinical presentations associated with CPPD.**




*CPP crystal deposition in periarticular and bony structures
*Tendon deposits seen in the Achilles, gastrocnemius, or quadriceps
*Cervical stenosis
*Crowned dens: CPPD above the odontoid process
*Intervertebral disc and sacroiliac joint calcifications

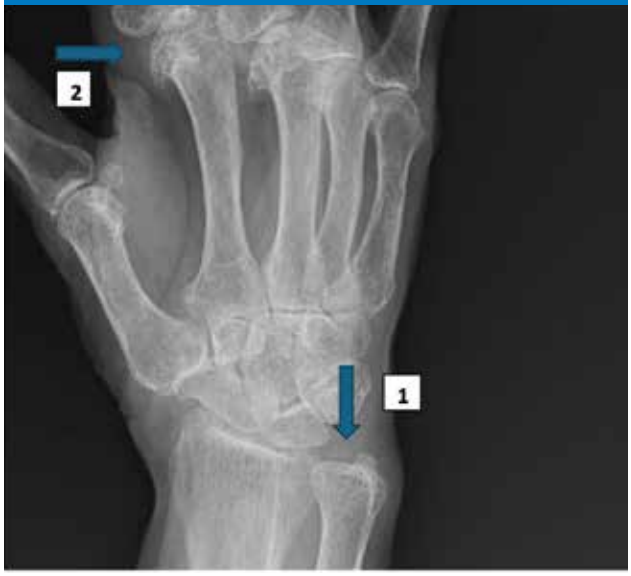
typically endorse rapid onset of pain and swelling, with effusion, and limited range of motion of the involved joint(s). Occasionally systemic symptoms such as fever raise suspicion for infection so joint aspiration with fluid analysis helps to rule out concomitant septic arthritis.[5] Usually, only a single joint is affected, and large joints are affected more commonly than small joints, most frequently knee and wrist (Figure 2).

When a patient presents with an acute mono- or oligoarthritis, attempt to aspirate the joint(s). The fluid obtained may appear yellow and cloudy or even opaque because of suspended crystals. Synovial fluid analysis usually reveals leukocytosis with a predominance of polymorphonuclear leukocytes. Analysis by polarized light microscopy will reveal rhomboid crystals in the synovial fluid aspirate, typically presenting with positive birefringence.[2,5,6] The CPP crystals will appear blue when they are parallel to the axis of the polarizer and yellow when perpendicular.[4] In addition, all patients presenting with suspected pseudogout can be screened for chondrocalcinosis via wrist or knee radiographs.[7]

CPPD management varies by symptom acuity, and patient co-morbidities.[8] Owing to lack of specific evidence-based therapies, care often mirrors gout flare management, with the primary objectives being symptom relief and frequency reduction.[9] Untreated pseudogout is self-limited, resolving usually between 7-10 days and often asymptomatic between attacks.[2]

Immediate symptom management is paramount, to establish pain relief before peak intensity (later than in gout flares). The ideal approach is to combine pharmacologic with supportive measures such as cooling pack application and temporary joint rest with weight restriction.[8] Pharmacologic options as elaborated below are best started earlier and medication choice depends on factors such as co-morbidities, side effects, and joints involved.[10]

Figure 2. (1) Chondrocalcinosis (2) Degenerative change with osteophyte.




Colchicine is commonly used in CPPD based on efficacy in gout flares. Lower doses of 1.5–1.8 mg on day 1, followed by 0.5-0.6 mg twice daily until the attack subsides, are preferred for lower side effects.[10,11] Studies for treatment and prevention show promise, but small sample sizes limit reliability.[12] Colchicine is favored over glucocorticoids for suspected septic arthritis but has a narrow therapeutic index and potential toxicity, especially in certain drug interactions with liver or kidney failure (manifesting as gastrointestinal symptoms, cytopenias, myopathies).[9] Low-dose colchicine maybe prophylactic against recurrent acute episodes, but more studies are necessary.[8,13]

NSAIDs are another anti-inflammatory option, but pose risks for the elderly due to gastrointestinal, renal, and cardiovascular complications.[8,9] Non-selective or selective NSAIDs can be used, but increased tolerability to the selective high-dose celecoxib compared to indomethacin has been described.[14] An early full-strength regimen is recommended while considering dose-related adverse effects. Prophylactic low-dose NSAIDs for CPPD are proposed but need further investigation.[8]

Glucocorticosteroids (GCS) are used routinely for CPPD arthritis, but evidence is again limited. Joint aspiration and intra-articular GCS are preferred in mono or oligoarticular episodes especially in older patients due to faster relief and fewer systemic risks.[8,10,15,16] Systemic routes are options for polyarticular cases or inaccessible joints.[8] Low-dose oral prednisone or prednisolone tapered over 5-10 days, like gout flare treatment, is preferred with IV or IM routes reserved when oral intake is difficult.[16] IM triamcinolone 60 mg can be given as a single outpatient dose.[17] The COLCHICORT trial establishes equivalent short-term efficacy between colchicine and prednisone for acute CPPD, but differing safety profiles in older patients.[18] Another alternative when conventional options are contraindicated is synthetic adrenocorticotropic hormone (ACTH) or tetracosactide, as supported by small-group studies.[9]

Subcutaneous Anakinra, an IL-1R antagonist, shows promise for refractory acute cases or when standard treatments are contraindicated.[9] There are several studies demonstrating

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better symptom relief with Anakinra, but disadvantages include possible skin reactions, respiratory infections, and cost limitations.[10] Another interesting oral option under study are NLRP3 inflammasome inhibitors like Dapansutrile for crystalline arthropathy flares.[9]

Other options with limited evidence for refractory CPPD are methotrexate, hydroxychloroquine, anakinra, and tocilizumab. Methotrexate use has conflicting results in studies but is recommended by EULAR alone or with conventional options for long-term management, pending further detailed studies.[8,9] Hydroxychloroquine, another similar option is yet to be fully studied in crystalline arthropathies.[8] Tocilizumab, an IL-6 receptor inhibitor is also garnering interest due to the crystal-induced IL-6 expression in CPPD inflammation.[9,19]

Moving forward, biologics are a promising class, anticipated to provide significant benefits targeting the cytokines involved in CPPD inflammation. Examples include canakinumab (IL-1b inhibitor) or anakinra (IL-1R antagonist) which warrant further trials.[19] Anti-crystal therapies like probenecid and phosphocitrate have shown promise in animal studies.[7] Other interesting therapies with small-scale evidence include glycosaminoglycan polysulfate, hyaluronic acid, magnesium supplementation, and radiation synovectomy (destruction of the synovial membrane).[10]

Finally, it is crucial to manage co-morbidities such as primary hypoparathyroidism, hemochromatosis, hypomagnesemia, or hypophosphatasia to avoid the hypocalcemia and hypomagnesemia that can precipitate an acute pseudogout attack. Though resolution is not proven, guideline-directed treatment will decrease the overall disease burden for the patient.[8,9,10]

### Chronic CPPD

Chronic CPP crystal inflammatory arthritis presents as chronic polyarticular arthritis. If possible, evaluation begins with joint aspiration with synovial fluid analysis with polarized light microscopy looking for rhomboid crystals.[5,6,9] Chronic polyarticular CPPD management typically utilizes medications used in the management of rheumatoid arthritis based upon limited evidence.[8] Ultimately, the primary objectives in managing acute and chronic CPPD include symptom relief and reduction in flare frequency.

### Asymptomatic and Rare Presentations of CPPD

Patients with asymptomatic CPPD have radiographic chondrocalcinosis without other findings. Radiographs of the wrist or knee display chondrocalcinosis in these patients.[7] A clinician should pursue further testing if a patient aged less than 50 years old presents with acute CPPD. The differential diagnosis for a patient younger than 50 to 55 years old presenting with acute inflammatory arthritis includes hyperparathyroidism, hemochromatosis, hypomagnesemia, and end-stage renal disease on hemodialysis.[2] In addition to joint aspiration and synovial fluid analysis, current literature recommends obtaining the following laboratory studies: calcium, phosphorus, magnesium, alkaline phosphatase, ferritin, iron, total iron-binding capacity, and renal function.[2,5] Other presentations of CPPD include tendon deposits in the Achilles, gastrocnemius, and quadriceps, crowned dens with CPPD above the odontoid process, and intervertebral disc calcification and within the sacroiliac joint.[2]

### Conclusion

Pseudogout is a common inflammatory arthritis characterized by the deposition of calcium pyrophosphate crystals. The disorder may mimic other common forms of arthritis such as gout and rheumatoid arthritis. Initially diagnosis required CPP crystal demonstration following joint aspiration and analysis in the setting of joint pain, swelling, or tenderness. Now, even without these symptoms, clinicians can follow the 2023 ACR/EULAR CPPD classification criteria, comprising clinical features, associated metabolic disorders, and laboratory and imaging results to diagnose pseudogout. Pseudogout attacks are managed with low-dose colchicine, non-steroidal anti-inflammatory drugs, or corticosteroids and there is current investigation for anti-crystal therapies.

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*Please note: Due to limited space, we are unable to list all references. You may contact South Dakota Medicine at ereiss@sdsma.org for a complete listing.*


**About the Authors:**

Tinotenda ME Sekeramayi, MD, Internal Medicine Residency Program, University of South Dakota Sanford School of Medicine.

Thabuna Sivaprakasam, MD, Internal Medicine Residency Program, University of South Dakota School of Medicine.

Joseph Fanciullo, MD, Internal Medicine Residency Program, University of South Dakota Sanford School of Medicine; Avera Medical Group Rheumatology, Sioux Falls, South Dakota.

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# 2025 Residency Match List – Congratulations, USD SSOM Class of 2025!

Suzanne Reuter, MD, MPH, DIMPH

Congratulations to the Class of 2025 on a very successful match! Match Day is recognized each year as that momentous day when aspiring doctors learn where they will complete their post-medical school training. Students have spent countless hours applying to and interviewing with residency programs. There was a record high 52,498 applicants in the 2025 residency Match.

The 2025 Match offered 20,300 primary care positions, which totaled 47 percent of all residency positions offered in the Match. Forty-six percent of students from the University of South Dakota Sanford School of Medicine (USD SSOM) matched into a primary care specialty. SSOM graduates will be training at programs across the U.S. in a wide range of specialties and eighteen percent will be training in South Dakota for their residency in family medicine, internal medicine, pathology, psychiatry, and transitional year.

Match Day celebrations were held at SSOM clinical campuses in Rapid City, Sioux Falls, and Yankton. We are so very proud of the hard work and dedication of our students and wish them well in their educational journey. We look forward to them remaining in South Dakota following residency, or their return to South Dakota to practice medicine in the future.

**About the Author:**
Suzanne Reuter, MD, MPH, DIMPH, Interim Associate Dean, Medical Student Affairs; Professor, Department of Pediatrics, Section of Neonatology.

# University of South Dakota Sanford School of Medicine 2025 Residency Match Listing

| Last Name | First Name | PGY-1 Institution Name | PGY-1 Program Name | PGY-2 Institution Name | PGY-2 Program Name |
|---|---|---|---|---|---|
| Alvine | Owen | HCA Healthcare East FL - Fort Pierce | Transitional Year | | |
| Barwari | Helean | Indiana University School of Medicine | Neurology | | |
| Beckman | Kyra | Greenwich Hospital - CT | Internal Medicine | | |
| Bender | Tiffany | University of Minnesota Medical School | Plastic Surgery (Integrated) | | |
| Billion | Matthew | University of Nebraska Medical Center | Internal Medicine | | |
| Bowman | Gaven | Center for Family Medicine - SD | Family Medicine | | |
| DePaola | Gabriella | Atlantic Health System - NJ | Pediatrics | | |
| Derby | Michaela | Mayo Clinic School of Graduate Medical Education - MN | Anesthesiology | | |
| Drazick | Anthony | Ochsner Health System Research Fellow | Orthopedics and Sports Medicine | | |
| Ekhteraee-Sanaee | Nadya | University of Arizona College of Medicine - Tucson | Emergency Medicine | | |
| Feldhaus | Kevin | Creighton University - NE | General Surgery | | |
| Foerster | Claire | Inova Fairfax Hospital - VA | General Surgery | | |
| Franzen | Avery | University of Iowa Hospitals and Clinics | Psychiatry | | |
| Gates | Jesse | Center for Family Medicine - SD | Family Medicine | | |
| Goeden | Brock | University of Iowa Hospitals and Clinics | Urology | | |
| Guymon | Andrew | St Joseph Hospital SCL Health - CO | Medicine-Preliminary | University of Colorado School of Medicine-Denver | Anesthesiology |
| Hardie | Kyler | University of North Dakota School of Medicine | Orthopedic Surgery | | |
| Hueser | Jared | University of Kansas School of Medicine - Kansas City | Anesthesiology | | |
| James | Andee | University of Kansas School of Medicine - Wichita | Family Medicine | | |
| Keyser | Christopher | Center for Family Medicine - SD | Family Medicine | | |
| Koshiol | Rachel | University of South Dakota Sanford School of Medicine | Internal Medicine | | |
| Kowitz | Robert | University of South Dakota Sanford School of Medicine | Internal Medicine | | |
| Kracht | Alexandra | University of Utah | Pediatrics | | |
| Kroboth | Lindsey | University of Minnesota Medical School | Internal Medicine | | |
| Lichter | Bailee | University of South Dakota Sanford School of Medicine | Transitional Year | Emory University School of Medicine-GA | Diagnostic Radiology |
| Looby | Nicholas | Central Iowa Health System | Internal Medicine | | |
| Mills | Travis | Kootenai Health - Idaho | Family Medicine | | |
| Mohs | Joshua | University of Nebraska Medical Center | Anesthesiology | | |
| Moore | Madigan | Mayo Clinic School of Graduate Medical Education - MN | Psychiatry | | |
| Morisette | Kayla | University of Vermont Medical Center | Neurology | | |
| Muzik | Jerica | Creighton University - NE | Obstetrics-Gynecology | | |
| Nelson | Laura | University of Iowa Hospitals and Clinics | Internal Medicine | | |
| Nerland | Andrew | University of Arizona College of Medicine - Tucson | Psychiatry | | |
| Nicolet | Narysse | University of Minnesota Medical School | Psychiatry | | |

# University of South Dakota Sanford School of Medicine 2025 Residency Match Listing

| Last Name | First Name | PGY-1 Institution Name | PGY-1 Program Name | PGY-2 Institution Name | PGY-2 Program Name |
|---|---|---|---|---|---|
| Nielsen | Tayler | University of Nebraska Medical Center | Family Medicine | | |
| Norton | Austin | University of North Dakota School of Medicine | General Surgery | | |
| Olson | Trae | University of Nebraska Medical Center | Neurology | | |
| Paauw | Hannah | University of Iowa Hospitals and Clinics | Internal Medicine-Psychiatry | | |
| Paulsen | Riley | University of Iowa Hospitals and Clinics | Obstetrics-Gynecology | | |
| Petersen | Emily | University of Iowa Hospitals and Clinics | Pediatrics | | |
| Peterson | Jacob | Center for Family Medicine - SD | Family Medicine | | |
| Reinschmidt | Alyssa | University of South Dakota Sanford School of Medicine | Transitional Year | University of Kansas School of Medicine - Kansas City | Dermatology |
| Restaino | Anthony | University of Pittsburgh Medical Center Medical Education - PA | Peds/Scientist Development | | |
| Reuter | Andrew | Mayo Clinic School of Graduate Medical Education - AZ | Diagnostic Radiology | | |
| Reynhout | Julia | University of Missouri - Kansas City | Ophthalmology | | |
| Richter | John | University of Iowa Hospitals and Clinics | Emergency Medicine | | |
| Roberts | Angela | University of Nebraska Medical Center | Physical Medicine & Rehab | | |
| Samuelson | Chester | North Colorado Medical Center | Family Medicine | | |
| Scheer | Jessica | Idaho State University | Family Medicine | | |
| Smith | Kaihlen | University of Nebraska Medical Center | Anesthesiology | | |
| Stadem | Nathan | University of Illinois Chicago | Surgery-Preliminary | Indiana University School of Medicine | Anesthesiology |
| Stroman | Joel | Methodist Health System Dallas - TX | General Surgery | | |
| Tessendorf | Cole | University of Nebraska Medical Center | Orthopedic Surgery | | |
| Thooft | Bailey | Center for Family Medicine - SD | Family Medicine | | |
| Uzunlar | Sena | Univeristy of Miami Miller School of Medicine Holy Cross - FL | General Surgery | | |
| Vaca | Jacob | Mayo Clinic School of Graduate Medical Education - MN | Anesthesiology | | |
| Van Gorp | Rachel | Baylor Scott & White -Baylor College of Medicine Temple - TX | Obstetrics-Gynecology | | |
| Vassar | Sam | University of Southern California | Internal Medicine-Pediatrics | | |
| Walker | Keely | University of South Dakota Sanford School of Medicine | Psychiatry | | |
| Wilson | Rebecca | University of Minnesota Medical School | Pediatrics | | |
| Wixon | Christopher | University of South Dakota Sanford School of Medicine | Pathology | | |

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# Eight ways to GET INVOLVED in the SDSMA RIGHT NOW!

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- Participate in the **Doctor of the Day Program**
- Attend the **Annual Conference**
- Follow SDSMA on **Twitter**, **Facebook & Instagram**
- **Submit an article** to *South Dakota Medicine*
- **Submit a policy issue** at a membership open forum
- **Meet with your state legislators** to discuss the most pressing issues in medicine

For more information, contact SDSMA staff

**membership@SDSMA.org**

**www.sdsma.org**

**605-336-1965**

# Member News

Visit www.sdsma.org for the latest news and information.

## For Your Benefit:

### Get Involved in the SDSMA

Thank you for your membership in the South Dakota State Medical Association. As a member, you have several direct opportunities to become more involved in the important work of the SDSMA:

- Doctor of the Day – serve as the physician for the South Dakota State Legislature for one day during session;
- Physician lobbyist – serve as a volunteer lobbyist during the legislative session;
- SDSMA PAC – help friends of medicine become elected officials and lawmakers;
- SDSMA committees and task forces – serve the organization and yourself;
- SDSMA appointments to state boards, committees and commissions – the SDSMA is asked to nominate and recommend physicians to fill positions to numerous vacancies every year;
- Districts and specialty societies – for local involvement.

If you'd like to get involved, give us a call at 605.336.1965 or visit www.sdsma.org for more information.

***"For Your Benefit" is the Association's monthly update on programs and services available to physicians through their affiliation with the SDSMA.***

## 2025 SDSMA Annual Leadership Conference – Register Now!

Get ready for the 2025 SDSMA Annual Leadership Conference on Friday, May 30 at the Hilton Garden Inn Downtown Sioux Falls. This conference is a benefit of your SDSMA membership – there is no registration fee for members (ticket purchase required for some events and meals). Registration, details and the schedule are posted sdsma.org.

### *Presentations Will Focus on AI*

Join us for a day of learning and engagement as we talk about AI's transformative role in healthcare!

### *Events and Activities*

**Thursday, May 29**

- 6-8 pm – Welcome Reception – R Wine Bar, 322 E 8th St – Hosted by District 7 Medical Society

**Friday, May 30**

- 8:30 am – American Medical Association Update on Physician Advocacy – Michael Suk, MD, AMA Board of Trustees Chair
- 9 am-4:30 pm
  - Presentations on AI in Medicine (more information and the schedule will be posted at sdsma.org as details continue to be confirmed)
  - SDSMA PAC Lunch
  - Update from USD SSOM – Tim Ridgway, MD, SSOM Dean/USD Vice President for Health Affairs
  - Policy Council Meeting
  - Medical Student Poster Session
  - Membership Open Forum
- 5 pm – SDSMA Board of Directors Meeting
- 6 pm – Social
- 7 pm – SDSMA Awards Dinner, Scholarship Recognition & Presidential Inauguration

### *Medical Student Poster Session*

Be sure to join us for the Medical Student Poster Session at 1:00 pm followed by a presentation given by the author of the #1 abstract. This opportunity helps USD SSOM students improve their CVs and their competitiveness for medical residencies.

### *Submit a Policy Issue & Participate in the Open Forum*

Do you have a policy issue you'd like to bring to the SDSMA's attention? Make plans to address the SDSMA Policy Council. A policy issue submission form is available at sdsma.org. Submissions are being accepted until May 16. The open forum will be held at the Holiday Inn Downtown Rapid City during the conference.

# Member News

## 2025 Annual Leadership Conference – Sponsorship & Advertising Opportunities!

Sponsoring or advertising during the SDSMA Annual Leadership Conference shows your support for the association's physicians, residents and medical students, helping the association defray costs incurred to bring educational sessions and activities throughout the day for physicians and medical students. In addition, the evening banquet is a time when the leadership and achievements of outstanding physicians are celebrated and recognized, and medical student scholarships are awarded by the SDSMA Foundation. To sponsor or advertise and help support the conference, please sign up at sdsma.org.

## AMA National Advocacy Conference


Physicians from across the nation are taking a stand against the broken Medicare payment system that threatens practices and patient care. SDSMA representatives were part of a Fix Medicare Now rally at the U.S. Capitol on February 11 to make the case for Medicare payment reform. 400 physicians were in attendance representing almost every state and specialty. The rally was held in conjunction with the American Medical Association National Advocacy Conference. Pictured left to right: Robert Summerer, DO; Rob Allison, MD; Keith Hansen, MD; and Mary Carpenter, MD.

While in Washington D.C., the SDSMA met with Senator Mike Rounds, Representative Dusty Johnson, and Senator John Thune's staff. Pictured left to right with Senator Rounds are Barb Smith, Rob Allison, MD; Mary Carpenter, MD; and Robert Summerer, DO.

## Medical Student Advocacy Conference

USD SSOM students attended the American Medical Association Medical Student Advocacy Conference (AMA MAC) March 6-8. Pictured left to right: Riley Hellmann, MS I (AMA Class of 2028 delegate); Whitney Twitero, MS I; Sara Alhasnawi, MS I, Olivia Heinecke, MS I (AMA Class of 2028 delegate); Theron Liggons, MS I.

## Legal Brief Highlight: HIV Testing

In certain criminal or juvenile delinquency cases involving a possible exchange of bodily fluids, the victim or any involved law enforcement officer may request a court order requiring the issuance of a search warrant to draw blood from the defendant or alleged juvenile delinquent to be tested for blood-borne pathogens, including hepatitis B and HIV.

Upon the issuance of a search warrant, the South Dakota Department of Health is required to conduct the testing and report the results to a licensed physician designated by the victim or law enforcement officer with whom the bodily fluids were or may have been exchanged. Any other person who may have had sexual relations or otherwise exchanged bodily fluids with the person being tested may also petition the court to be provided with the test results. Emergency medical service personnel who provide medical services to the alleged defendant or juvenile delinquent may also request to be tested.

The results of such testing are to be kept confidential, except that the Department of Health is required to report the results of the test of the defendant or juvenile and to the victim, law enforcement officer, or emergency medical service provider.

For more information, download the SDSMA legal brief at sdsma.org. The SDSMA provides legal briefs for member physicians on a variety of rules and regulations that apply to the medical profession. For nonmembers, legal briefs are available for purchase.

## Retired Physicians Group: Stay Connected With Your Colleagues after Retirement

A retired physicians group is provided for Sioux Falls-area physicians through the South Dakota Physician Well-Being Program.

*Sioux Falls-area retired physicians – peer-to-peer support group*

**8:00-9:30 a.m., All Day Cafe, 2101 W 41st St, Sioux Falls**

- Second Monday of each month. June through August.
  The group does not meet June through August.

All retired or soon-to-be retired physicians are welcome to join in this informal gathering. RSVP appreciated but not required. Email Dan Heinemann, MD at djheineman@aol.com or Tad Jacobs, DO at doctalkconsulting@gmail.com.

South Dakota Physician Well-Being Program

## Copic Tips: 8 Techniques for Navigating the Difficult Patient Encounter

Physicians indicate that they would describe 15% of their patient encounters as difficult. There are many factors that contribute to this, including patient-based issues and physician perceptions, but wherever you fall on the scale of rating difficulty, there are techniques for managing these types of patient encounters.

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For useful techniques and considerations for navigating difficult interactions with patients, go to copic.com/resource-center and click "Tools and Resources."

*South Dakota Medicine*, the monthly peer-reviewed medical journal published by the South Dakota State Medical Association, is read by physicians, residents, medical students, hospital and clinic administrators, and other health care leaders. SDSMA members receive the journal through a mailed subscription as a member benefit and have access to full issues at sdsma.org.

With a 100-year history as the state's leading provider of medical information, *South Dakota Medicine*'s original research, educational articles and association news combine to offer you a comprehensive information support system that can help with the decisions you make every day. Additionally, the journal is indexed in PubMed and has unmatched reach and unsurpassed readership within its field, making it unique in meeting the needs of all physicians in state – from retired doctors and primary care physicians to specialists, medical students and residents. Articles published by students and residents in a PubMed-indexed journal strengthen residency and fellowship applications.

## Submit a Manuscript

Are you interested in having your work published? *South Dakota Medicine* editors review many manuscripts each year, and we encourage article submissions. Please confirm that your manuscript meets the guidelines at www.sdsma.org/SDMed before submitting for review.

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*South Dakota Medicine* brings important medical information to South Dakota's physicians, and advertising in the journal generates revenue that helps support the SDSMA's ability to publish this high-quality, peer-reviewed journal. Help support *South Dakota Medicine* by advertising your practice while gaining excellent exposure – find more information at www.sdsma.org.

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*Board News is a monthly feature sponsored by the South Dakota Board of Medical and Osteopathic Examiners. For more information, contact the Board at SDBMOE@state.sd.us or write to SDBMOE, 101 N. Main Avenue, Suite 301, Sioux Falls, SD 57104.*

# Help Shape the Future of Medicine in South Dakota

The South Dakota State Medical Association Foundation, the philanthropic arm of the South Dakota State Medical Association, is a tax-exempt 501(C)(3) non-profit corporation, was established to assist and support medical research, medical teaching and medical education at the Sanford School of Medicine.

On average, medical students graduate with $130,000 in debt. Contributions to the South Dakota State Medical Association Foundation provide financial assistance to students at the Sanford School of Medicine and are all designated for scholarships, grants and low-interest loans for students.

Any amount can be donated at any time throughout the year. If you have questions or want more information, please call 605.336.1965.

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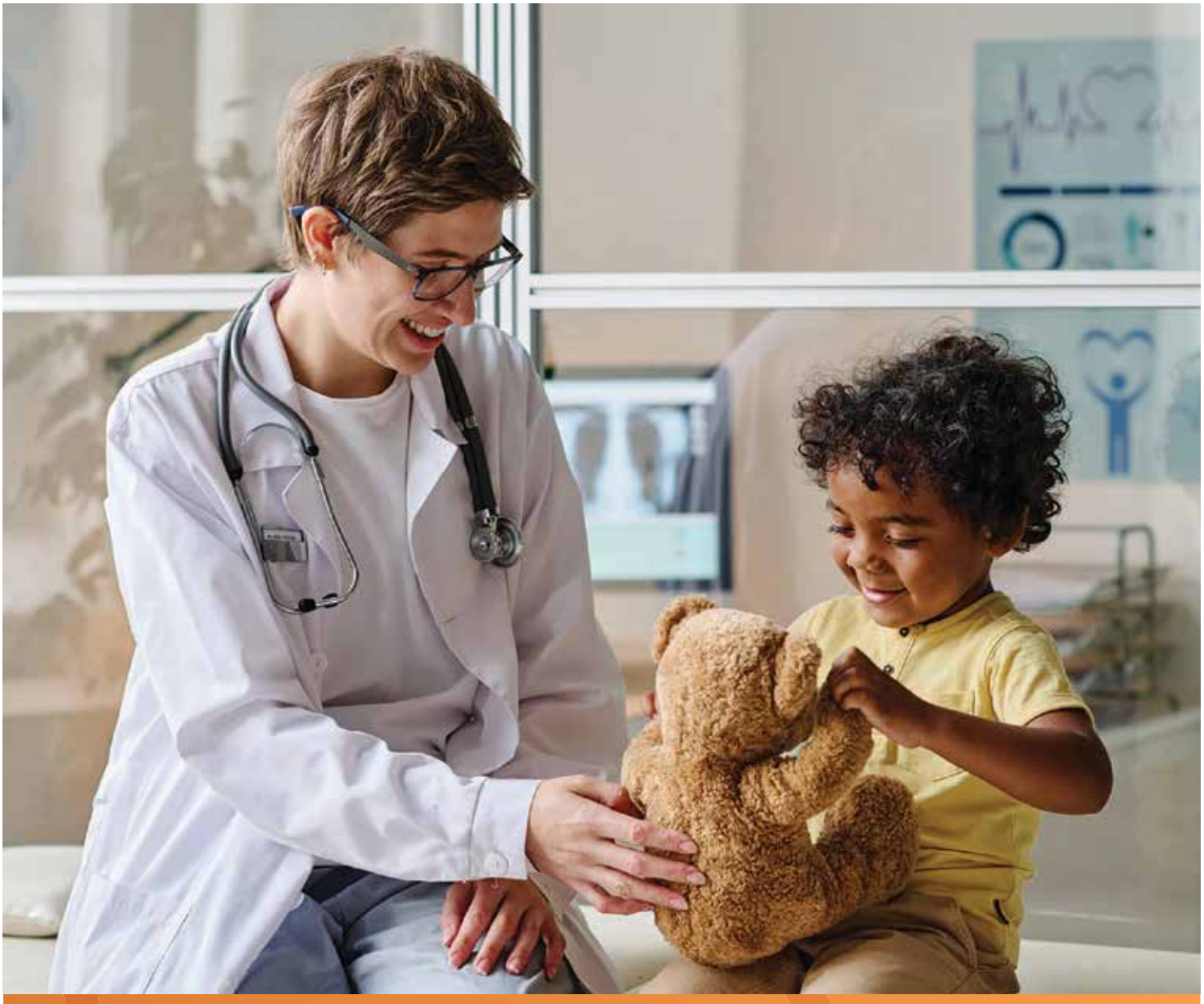

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