The ultimate goal of Avera@Home is providing every Avera patient the best care, every time, in their home.

Hospice Care
Hospice care is compassionate, end-of-life care provided by a team of physicians, nurses, social workers, spiritual counselors, volunteers and more. Care can take place in the home, long-term care facility or a hospice residence.

Patients who qualify for hospice care have:
- A life-threatening illness for which medical therapy does not offer a reasonable possibility for a cure
- A life expectancy that is estimated to be less than six months
- A physician consent for hospice care
- A full understanding and acceptance of hospice’s philosophy of care, which is to neither hasten nor postpone death

Home Health Care
Home health care helps patients recover and return to daily activities. Services are provided right in patients’ homes by registered nurses and physical, speech and occupational therapists.

Patients dealing with these conditions may benefit from home care:
- COPD, congestive heart failure, diabetes or depression
- Multiple medications
- Physical, occupational and speech therapies
- Wound care
- Limited activity
- Living alone
- Multiple hospitalizations or emergency room visits
- Managing chronic conditions

We can help
Avera@Home
Just call us • 605-322-HOME (4663)
ALTERNATIVES TO AMPUTATION.

The experts at Sanford Limb Preservation Center are here to consult with you regarding patients with diabetes, those at risk for peripheral arterial disease and other factors that place them at risk for amputation. This is the only comprehensive center of its kind in the region.

JOIN US IN REDUCING AMPUTATIONS.

Call (605) 312-7300 or (800) 618-3186 to schedule a consult with a vascular expert.

Our board-certified team of vascular surgeons

Patrick Kelly, MD
Chad Laurich, MD
Angelo Santos, MD
Greg Schultz, MD

SANFORD HEALTH
Contents

President’s Comments
143 SGR, Regulatory Issues and GME Among Topics at National Advocacy Conference – Mary J. Milroy, MD

Alliance News
145 Making a Difference Through a Collective Voice – Mary Lou Pierce

Editorial
147 PUL – Keith A. Hansen, MD

The Journal
149 Analysis of Blood Donor Motivations – Nathaniel Paulson, MSIV; Henry Travers, MD, FACP

Primers in Medicine
163 Pregnancy of Unknown Location – Margaret Schuneman, MSIV; Tiffany Von Wald, MD, MPH; Keith Hansen, MD

Pharmacology Focus
169 Emerging Inhalers in the Management of COPD – Jennifer Ball, PharmD

Special Features
175 SDBMOE Board News: Interstate Medical Licensure Compact Bill Passes the South Dakota Legislature – Margaret B. Hansen, PA-C, MPAS
176 Patient Education: How to Prevent Early Aging – Richard P. Holm, MD
177 Quality Focus: SDFMC Announces Launch of Great Plains QIN Website – Stephan D. Schroeder, MD
179 2015 SDSMA PAC Membership
180 University of South Dakota Sanford School of Medicine Residency Match Listing – Class of 2015

Member News
183 Registration Now Open for the 2015 SDSMA Annual Meeting For Your Benefit: Membership Services
184 The Issue Is…Facts on the Interstate Medical Licensure Compact SGR and GME Among Topics at AMA National Advocacy Conference Legal Brief Highlight: Anatomical Gifts
185 185 SDSMA 2015 Legislative Accomplishments

For the Record
186 CME Events

Advertisers In This Issue
187 Physician Directory
188 Classified Ads
President’s Comments

SGR, Regulatory Issues and GME Among Topics at National Advocacy Conference

By Mary J. Milroy, MD
SDSMA President

This past month, Herb Salom, MD, and I attended the American Medical Association (AMA) National Advocacy Conference (NAC) in Washington, D.C. Three busy days opened with the president’s lecture given by Dr. Patrick Soon-Shiong. He is a surgeon, researcher, philanthropist, professor, CEO and chairman of Nantworks. His challenging talk, “A Fundamental Transformation in Healthcare in the Era of Genomics and Proteomics” introduced the new concept of oncotherapeutics. He proposed understanding patients at the proteomic (study of proteins particularly their structures and function) level and integrating with clinical operating systems with real time connectivity and actionable knowledge to provide the highest quality care. Some of what he talked about sounded like science fiction but he presented impressive, published case reports and referenced his recent appearance on 60 Minutes. His company has also created some powerful partnerships and has donated large sums of money to make this system of care a reality and not just science fiction. It will be fascinating to see what develops from here. Visit www.nantworks.com for more.

After his talk, the NAC got into the real meat of why we were all there with presentations designed to prepare us for our upcoming Hill visits. Topics included a Capitol Hill briefing, AMA leadership on advocacy issues, 21st century health care, health systems reform and regulatory issues. We heard an entertaining and informative talk by Haley Barbour followed by a presentation by Secretary Sylvia Mathews Burwell of the U.S. Department of Health and Human Services.

The main issue at NAC again this year was the sustainable growth rate (SGR) formula. At our print deadline, the 17th patch is due to expire on April 1; either an 18th patch will be passed, the SGR will finally be repealed or a devastating cut in Medicare reimbursement will take place which threatens physician practices and health care availability for our nation’s senior citizens. Last year the SGR Repeal and Medicare Provider Payment Modernization Act of 2014 received support from more than 600 national and state medical societies and specialty organizations, other stakeholder groups, including patient and provider organizations, policy think tanks and advocacy groups. This legislation not only would have eliminated the SGR but also included meaningful physician payment and health care delivery reforms. The bill was defeated by a voice vote in the U.S. House of Representatives last year but should not be lost. The AMA is urging Congress to revisit the SGR, reach agreement on budget offsets, and support the bill this year. We all need to make sure that our representatives hear our voices loudly – the time to repeal the flawed SGR is now!

The regulatory tsunami which threatens physician practices was another important issue addressed. The AMA is advocating for greater flexibility in the Meaningful Use program, reducing duplicative work by allowing quality measure submissions for PQRS to satisfy requirements under Meaningful Use and vice versa, maintaining PQRS measures for a least three years unless new evidence warrants a change, providing feedback reports within the first quarter following the end of the reporting year, and providing a transparent appeals process for physicians.

The Independent Payment Advisory Board (IPAB) is a 15-member board of unelected officials created under the Affordable Care Act. They have a mandate to reduce Medicare spending by indiscriminate cuts to providers and will subject physicians to double jeopardy as long as the SGR is in place. The lessons from the SGR should have taught us that arbitrary physician payment cuts to rein in costs are not the solution and once in use are extremely difficult to repeal. Sen. John Cornyn (R-TX) has introduced the bill, Protecting Seniors’ Access to Medicare Act of 2015 to repeal the IPAB. It is vital that we ask our senators and representative to cosponsor this bill.

Medical schools have increased in number and in class size. This has greatly increased the number of medical students graduating and entering into the residency match. Unfortunately, graduate medical education has been capped by the federal government since 1997 and has created a situation where an increasing number of medical students remain unmatched and unable to find a graduate medical training program. This is a serious and growing problem and one that we need to bring to the attention of both state and federal representatives.

While in Washington, D.C., Dr. Salom and I were able to meet with Sens. John Thune and Mike Rounds and a legislative assistant from Rep. Kristi Noem’s office. We appreciated the time they took to hear our concerns. I strongly encourage all SDSMA members during these critical, challenging times to be active, join the AMA, join the SDSMA’s and AMA’s PACs, and contact your representatives and let them know how important these issues are to the practice of medicine in South Dakota.
Celebrating Excellence
Outstanding Teaching

2013-2014 Golden Apple Award Recipients

The Golden Apple Award is given in recognition of and with gratitude for continuing dedication, sacrifice and passion for excellence to the faculty member at each campus who most helped and inspired the third and fourth year medical students.

Alla O. Zamulko, MD, PhD
Sioux Falls Campus

Dr. Zamulko was a wonderful attending physician. • She allowed me to be a very active part in patient care. • I felt like I was allowed to be an important part in treating the patient. • I appreciate her willingness to teach. • There was a lot of hands on learning, which was appreciated.

Beth A. Mikkelsen, MD
Yankton Campus

Dr. Mikkelsen is a very thorough and thoughtful physician and teacher. • Her feedback was constructive and helped me to improve my skills. • She challenges me to think critically in order to provide our patients with the best possible care. • I learned as much about professionalism and ethics as I did clinical skills.

James D. Bowman, MD
Rapid City Campus

Dr. Bowman was a great attending who really went above and beyond. • He puts a lot of effort into teaching. • He gives the students responsibilities and often engages us in decision making. • He challenges us. • The highest compliment I could give would be that a professor/attending is interested and concerned about learning and Dr. Bowman is without a doubt.
Making a Difference Through a Collective Voice

By Mary Lou Pierce

Alliance membership allows us to have a collective voice and make a difference at the district, state, and National Alliance levels. The American Medical Association Alliance (AMAA) assists in these efforts by providing valuable leadership training yearly for new and upcoming Alliance leaders. For this article, I interviewed AMA Alliance President Sarah Sanders.

Sarah Sanders was born and raised in Chicago. She received her doctor of pharmacy from Purdue University. She is married to Charles E. Sanders, Jr., MD, who practices in rheumatology.

What has been your challenge this year as AMAA president? There is a lot going on so it is very challenging to stay on top of everything; it’s a 24/7 kind of job. Fortunately, I have a solid, dedicated team of volunteer leaders in the officers, board of directors and committee members as well as the excellent services of Pat Troy and the Next Wave Group association management company which provides our staff support.

What have you enjoyed? I have really enjoyed traveling to the different states and meeting our members. The visits are often like family reunions. I see old friends that I have met over the years at annual meetings. I see many seasoned members that led the alliances in the past that come to be together because of their love for the Alliance and friendships formed. I see the up and coming members and leaders and their enthusiasm. It is great to see the history and the future.

Why is it important to join the AMAA? No one understands what it’s like to be part of a physician family better than others experiencing that same thing. I know being a member at the local level gives you that face-to-face connection. And being a member at the state level helps you pull together and make an impact on issues that are common to you all. What being a member of the National Alliance really helps to do is pull our resources together, our ideas together; it helps us see the bigger picture. We are here to support you and develop the resilient core you need as you support your physician spouse during these trying times. National can provide and develop resources and materials that local and state alliances may not have the talent or skill set to develop or the financial resources to pay for. As an AMA Alliance member you are not only helping yourself, but you are also helping support members of the family of medicine you may not ever personally meet. This is especially true for the young families in the training years and early practice years. We all remember the challenges.

What does the $50 national membership dues provide? It provides access to a network of fellow individuals from across the country who are a part of a physician couple. It provides access to ideas and resources. It provides access to various communication pieces that can help you grow individually and as a leader of an organization. You may say, “I am not an Alliance leader,” but we are all leaders in some way, shape or form.

What do you feel is the cause that some of the alliances are not surviving? “I think there are many reasons. I think many external factors play a role – time poverty, many dual career couples, loss of staff support, etc. – besides internal ones in the structure of many alliances; a lack of flexibility or a structure that hinders survival. But I also think many states lost their focus or perhaps didn’t have one. I believe one of the biggest roles states can play is in the area of advocacy. Pulling local alliances together to support legislation supportive to the family of medicine and supportive to patients and health care in your state, and also advocating for healthier communities. I know it’s not an area a lot of people are interested in.

How is the AMAA helping alliances that are having difficulty surviving? We can provide administrative support. We are developing tools to help states develop alternative structures and to support systems for those wanting to lead those changes in their states.

Where do you see the AMAA headed in the future? I definitely see the continued growth as the “go-to resource” for physician families. With the ever developing digital communications and tools, I believe we can be more connected and more supportive of each other as members of the physician family than ever before.

Discuss the importance of attending the AMAA meeting in June. It is a great opportunity to see you are not alone in this journey by meeting other members of the “family” and networking. We are planning great speakers and topics. This year is the 20th anniversary of Stop America’s Violence Everywhere (SAVE) which has focused on anti-bullying and domestic violence, and my hometown of Chicago is a great city to visit.
Thank You!
for adding quality to the ‘CARE’ in DAKOTACARE

In 1986, the physicians of our state created DAKOTACARE because they believed a health care plan should be locally owned and directed. Today, DAKOTACARE continues to improve on making healthcare coverage and services provided by South Dakota physicians a seamless process.

Your involvement is critical to making DAKOTACARE a success. Many South Dakota physicians are currently participating through various committees, work groups or in other capacities, helping to guide the business decisions of our organization. DAKOTACARE’s Medical Management Department, staffed with knowledgeable physicians, pharmacists and nurses work with you to provide quality health care to your patients.

Your ownership and insight puts the “care” into DAKOTACARE.

Paul Amundson, MD Chief Medical Officer
Mike Pekas, MD Associate Medical Director
James Engelbrecht, MD Associate Medical Director

DAKOTACARE
THE HEALTHCARE PLAN OF THE SOUTH DAKOTA MEDICAL ASSOCIATION
2600 West 49th Street • Sioux Falls, SD
(605) 334-4000
WWW.DAKOTACARE.COM
In this issue of South Dakota Medicine, the concept of pregnancy of unknown location (PUL) is discussed in the article by Schuneman, Von Wald and Hansen. PUL has become an issue because of sensitive human chorionic gonadotropin assays which allow for earlier diagnosis of pregnancy, sometimes even before the menstrual cycle is missed. The development of high resolution trans-vaginal ultrasound has also allowed for earlier determination of pregnancy location (whether intrauterine or extra-uterine) as well as viability. One must be aware of the nuances of these sensitive diagnostic tests to allow for appropriate decision making in the care of the pregnant patient.

In 1936, Dr. Georgeanna Seegar Jones while a resident in obstetrics and gynecology at Johns Hopkins University, discovered that human chorionic gonadotropin (hCG) was made by the placenta and not the pituitary gland. This allowed the development of specific assays for hCG to determine if a woman is pregnant. Initially pregnancy tests were performed as biological assays either in rabbits, mice or frogs. In contrast to the modern euphemism “the rabbit died,” the rabbit always died, because it had to be sacrificed with inspection of the ovaries a few days after urine from the test subject was injected into the rabbit to determine if there was significant change consistent with pregnancy. The next advance in pregnancy testing came from the development of the Hogben or frog test. In this assay an African clawed frog or Xenopus laevis was injected with test urine and the next morning the frog’s tanks would be inspected for evidence of ovulation. If eggs were discovered in the tank’s water this was consistent with pregnancy. In the 1930s to 1950s the Hogben test was the primary pregnancy test and thousands of these frogs were sent to hospital laboratories. In the late 1950s Rosalyn Sussman Yalow and Solomon A. Berson published their classic manuscript on “Immunoassay of endogenous plasma insulin in man” which introduced the world to immunoassays. Since their publication rapid advances in immunoassay technology has allowed for the development of more sensitive and specific assays for hormones, including hCG. The knowledge that hCG is selectively made by the placenta and our ability to detect it in minute quantities now allows us to determine if a woman is pregnant prior to being able to detect it on physical examination or with imaging.

The article on PUL in the Primers series of this issue of South Dakota Medicine on page 163 is a review of this condition and its management. The combination of highly sensitive, accurate hCG assays and trans-vaginal ultrasound allows for the early diagnosis of an abnormal pregnancy, either an ectopic or miscarriage, and appropriate management which can reduce morbidity and mortality for our patients. However, one must be sure of the diagnosis of an abnormal pregnancy before treating with surgery or methotrexate, as these therapies could be devastating to a normal intrauterine pregnancy. In those patients who are clinically stable with a questionable diagnosis, expectant management with serial hCG levels and repeat ultrasound can assist the clinician in managing high risk patients.
Banking on your level.
Providing elevated financial services for elevated financial needs.

BRENT REILLY
VICE PRESIDENT | PRIVATE BANKING

LOFT ADVISORS
A DIVISION OF FIRST DAKOTA NATIONAL BANK
605.333.8258 | loftadvisors.com
101 N. Main Ave. Suite 201
Sioux Falls, SD 57104
Analysis of Blood Donor Motivations

By Nathaniel Paulson, MSIV; and Henry Travers, MD, FACP

Abstract

Introduction
Blood and blood products are essential medical treatments for all age groups. The primary source for blood products in the U.S. is volunteer donors. Thus, donor recruitment and donor retention are vital factors for a blood bank to maintain its supply. We proposed that developing a better understanding of donors’ motivations to donate would improve a blood bank’s ability to secure a more robust supply of blood.

Methods
Individuals ages 18-36 were approached to participate in the study during their blood donation appointment by completing a questionnaire. SAS software was used to statistically analyze the responses. Univariate analysis was done using Fisher’s exact test. A multivariate model was constructed controlling for age and marital status, including the variables that were significant in univariate analysis.

Results
No individual motivating or inhibiting factor reached statistical significance. The odds ratio for subsequent donation for donors with 10-plus donations versus those with one to three donations was 4.296 (p-value 0.004). The odds ratio regarding donors’ likelihood of returning to donate for those donating within three to six months versus 1-plus year was 4.806 (p-value < 0.001). No employer was found to discourage blood donations.

Conclusions
Although no individual factors were found to be statistically significant, the identification of optimal time intervals and total number of donations at which donors are more likely to return may allow for more strategic scheduling of blood drives, increasing the likelihood of a donor returning while also increasing the total number of donations for that individual.

Introduction
Approximately 30 million blood components are transfused each year in the U.S. to 5 million patients. To keep up with this demand 44,000 donations are needed each day,1 all of which must come, in the U.S., from volunteer donors. A higher than average volume of trauma patients or the rare individual patient who requires extensive blood therapy can significantly strain the blood supply leading to acute shortages. In order to maintain an adequate blood supply, blood banks have a significant interest in donor recruitment and donor retention. For blood banks, developing a better understanding of a donor’s motivations to donate allows for more targeted marketing initiatives as well as more desirable incentives to recruit and retain donors.

Roughly 38 percent of the U.S. population is eligible to donate; however only 10 percent do so annually.2 First-time donors comprise around 29 percent of the donations
in a given year. Published literature contains studies investigating blood donors’ motivations and satisfaction with the blood donation process, the psychology of donors’ attitudes toward donation incentives, factors influencing donor returns, ways to encourage current donors to recruit others, younger generations’ perception of donation, gender differences, and the consequences of temporary deferral. Information developed from these studies to find effective ways to reach donors and encourage blood donation has not consistently changed volunteer donation patterns.

Research reported here investigates the motivations and inhibitions of current blood donors of the Community Blood Bank of Sioux Falls. Identification of significant motivating and inhibiting factors may facilitate more effective strategies to recruit new donors and to retain current donors, resulting in a more robust supply of blood products.

Methods

Community Blood Bank of Sioux Falls

The Community Blood Bank is a non-profit cooperative service of Avera McKennan Hospital and University Health Center and the University of South Dakota (USD) Sanford Medical Center in Sioux Falls. They supply blood products to hospitals and healthcare organizations in South Dakota, Minnesota and Iowa. Volunteers are able to donate in two different settings – donor rooms located in various hospitals and clinics or one of the blood bank’s mobile units that travels throughout the area year-round.

Data Collection

After submission and approval by the USD Institutional Review Board with exempt status, data collection was done using a 13-question multiple-choice survey (Table 1). The questions covered demographic data, the individual’s donation history, and any potential factors that may motivate or inhibit their decision to donate. The multiple-choice format was chosen for several reasons. Multiple-choice allowed for better categorization of motivations and inhibitions compared to a short-answer format. For example, individuals have many different reasons why they donate and these responses may all fall under the category of “charity.” It could be difficult to establish from a short-answer response whether an individual’s motivation was derived from charity or another motivation. Nonetheless, in order not limit the responses to specific categories, an “other” option with a blank for writing in their response was also available if an individual did not feel their motivation or inhibition was listed. Additionally, the quick and simple multiple-choice format would yield a higher response rate. Question 13 of the survey regarding likelihood to return was used to sub-classify donors’ responses.

Surveys were distributed through the Community Blood Bank of Sioux Falls’ two bloodmobiles from July 2011 to October 2011. All eligible donors between ages 18-64 presenting to the two mobile units during that time period were approached about participation in this research project. Those who agreed were informed of the risks and benefits of participation and, if still agreeable to participation, signed a consent form. They were then given a survey to be filled out during their blood donation appointment or after their donation was complete. A total of 897 surveys were collected and identifying information was removed from the raw data and entered into an Excel spreadsheet for further analysis.

Data Analysis

Regarding the likelihood to return to donate, responses indicating “neutral” or “unlikely” were combined, since only 14 individuals indicated that they were unlikely to return. Two participants indicated they were both “highly

<table>
<thead>
<tr>
<th>Question #</th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>What is your gender?</td>
</tr>
<tr>
<td>2</td>
<td>What is your age?</td>
</tr>
<tr>
<td>3</td>
<td>What is your marital status?</td>
</tr>
<tr>
<td>4</td>
<td>How many times have you previously donated blood in the last 10 years?</td>
</tr>
<tr>
<td>5</td>
<td>When was the last time (previous to this) that you donated?</td>
</tr>
<tr>
<td>6</td>
<td>If you have previously donated, what was the setting of your donation?</td>
</tr>
<tr>
<td>7</td>
<td>Would you like to be recognized as a blood donor and how often would you like to receive that recognition?</td>
</tr>
<tr>
<td>8</td>
<td>Have you ever done an apheresis (plasma) donation? Would you like special recognitions for this type of donation?</td>
</tr>
<tr>
<td>9</td>
<td>What percentage of individuals do you think will require blood products (platelets, plasma, transfusions, etc.) in their lifetime?</td>
</tr>
<tr>
<td>10</td>
<td>What factors influence your decision to donate blood?</td>
</tr>
<tr>
<td>11</td>
<td>What are factors that prevent you from donating?</td>
</tr>
<tr>
<td>12</td>
<td>Would you like to be reminded when you are able to donate again and if so how would you like to be reminded?</td>
</tr>
<tr>
<td>13</td>
<td>How likely are you to return and donate blood again in the next 2-3 months?</td>
</tr>
</tbody>
</table>
likely” and “neutral” to return to donate again, these two were classified in the neutral/unlikely category. Three participants did not answer the question about likelihood of return and were excluded from the analysis. One participant selected both married with children and married without children, this person was classified as being married with children. Eight participants had multiple answers for the recognition category and these individuals were classified as shown below using the lowest level of recognition.

Data analysis was performed using SAS statistical software. Descriptive statistics were derived from the raw data. Univariate analysis was performed using Fisher’s exact test. Fisher’s exact test was used instead of a

<table>
<thead>
<tr>
<th>Variable</th>
<th>Neutral/Unlikely N (%)</th>
<th>Highly Likely N (%)</th>
<th>Fisher’s Exact p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Recognition</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Every Time Donating</td>
<td>33 (13.9)</td>
<td>99 (15.2)</td>
<td></td>
</tr>
<tr>
<td>Every 3-5 times or milestones</td>
<td>12 (5.0)</td>
<td>17 (7.1)</td>
<td>67 (10.28)</td>
</tr>
<tr>
<td>Yearly Basis</td>
<td>131 (55.0)</td>
<td>393 (60.3)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Indifferent</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Don’t Wish to be recognized</td>
<td>45 (18.9)</td>
<td>54 (8.28)</td>
<td></td>
</tr>
<tr>
<td><strong>Times Donating</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>First time</td>
<td>75 (31.5)</td>
<td>68 (10.4)</td>
<td></td>
</tr>
<tr>
<td>1-3 times</td>
<td>88 (37.0)</td>
<td>178 (27.3)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>4-10 times</td>
<td>67 (28.2)</td>
<td>266 (40.7)</td>
<td></td>
</tr>
<tr>
<td>10+ times</td>
<td>8 (3.4)</td>
<td>141 (21.6)</td>
<td></td>
</tr>
<tr>
<td><strong>Last Time Donating</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 to 6 months</td>
<td>36 (21.3)</td>
<td>391 (65.3)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>1 year</td>
<td>69 (40.8)</td>
<td>134 (22.4)</td>
<td></td>
</tr>
<tr>
<td>2+ years</td>
<td>64 (37.9)</td>
<td>74 (12.4)</td>
<td></td>
</tr>
<tr>
<td><strong>Factors that influence decision to donate blood</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rewards Program</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>2 (0.8)</td>
<td>14 (2.1)</td>
<td>0.26</td>
</tr>
<tr>
<td>No</td>
<td>236 (99.2)</td>
<td>641 (97.9)</td>
<td></td>
</tr>
<tr>
<td><strong>Factors that prevent decision to donate blood</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Needle Poke</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>29 (12.2)</td>
<td>109 (16.6)</td>
<td>0.12</td>
</tr>
<tr>
<td>No</td>
<td>209 (87.8)</td>
<td>546 (83.4)</td>
<td></td>
</tr>
<tr>
<td>Forget to schedule appt</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>63 (26.5)</td>
<td>137 (20.9)</td>
<td>0.08</td>
</tr>
<tr>
<td>No</td>
<td>175 (73.5)</td>
<td>518 (79.1)</td>
<td></td>
</tr>
<tr>
<td>Employer Discouragement</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
<td>NA</td>
</tr>
<tr>
<td>No</td>
<td>238 (100.0)</td>
<td>655 (100.0)</td>
<td></td>
</tr>
</tbody>
</table>
Chi-square test since some of the comparisons involved small numbers. A multivariate model was constructed controlling for age and marital status and including the variables that were significant in univariate analysis.

Results

Overall Donor Pool Results

Variables that were significantly different based on likelihood of return included recognition frequency, number of previous donations, and length of time since previous donation (Table 2). Donors who were neutral or unlikely to donate again were more likely to indicate that they did not want recognition compared to those donors who were highly likely to return. Donors indicating they were highly likely to return had more total donations (more likely to have four to 10, or 10 or more) and had less time elapsed since their previous donation (more likely to have donated three to six months ago). No specific positive or negative influences were identified as being different between the two groups.

<table>
<thead>
<tr>
<th>Effect</th>
<th>Odds Ratio</th>
<th>Lower 95% CL</th>
<th>Upper 95% CL</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Times Donating – First time vs. 1-3 times</td>
<td>1.283</td>
<td>0.455</td>
<td>3.620</td>
<td>0.53</td>
</tr>
<tr>
<td>Times Donating – 4-10 times vs. 1-3 times</td>
<td>1.360</td>
<td>0.892</td>
<td>2.074</td>
<td>0.33</td>
</tr>
<tr>
<td>Times Donating – 10+ times vs. 1-3 times</td>
<td>4.295</td>
<td>1.854</td>
<td>9.951</td>
<td>0.004</td>
</tr>
<tr>
<td>Last Time Donating – 3 to 6 months vs. 1 year</td>
<td>4.806</td>
<td>3.030</td>
<td>7.622</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Last Time Donating – 2+ years vs. 1 year</td>
<td>0.657</td>
<td>0.399</td>
<td>1.079</td>
<td>&lt; .001</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Effect</th>
<th>Odds Ratio</th>
<th>Lower 95% CL</th>
<th>Upper 95% CL</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recognition Every Time Donating</td>
<td>1 (1.3)</td>
<td>0 (0.0)</td>
<td>2 (2.9)</td>
<td>0.22</td>
</tr>
<tr>
<td>Recognition Every 3-5 times or milestones</td>
<td>74 (98.7)</td>
<td>75 (100.0)</td>
<td>66 (97.1)</td>
<td>NA</td>
</tr>
<tr>
<td>Recognition Yearly Basis</td>
<td>10 (13.3)</td>
<td>10 (13.3)</td>
<td>65 (86.7)</td>
<td>0.28</td>
</tr>
<tr>
<td>Recognition Don’t Wish to be Recognized</td>
<td>65 (86.7)</td>
<td>65 (86.7)</td>
<td>63 (92.7)</td>
<td>0.28</td>
</tr>
</tbody>
</table>
Table 3 includes the results of the multivariate analysis for the overall sample. Multivariate analysis results were similar to the univariate analysis although recognition no longer reached statistical significance. Controlling for marital status and age did not make a difference since neither was associated with the likelihood of return for future donations. Table 4 presents odds ratios and p-values for sub-category comparisons within the times donating and last time donating variables.

First-Time Donor Results

Within the subgroup of first-time donors there were no significant differences between those highly likely to return and those neutral or unlikely to return. However, the same trend in desired recognition frequency was observed in this subgroup with a higher proportion of those neutral or unlikely to return indicating that they did not want recognition for donating (Table 5).

Previous Donors results

Variables that were significantly different based on likelihood of return included recognition frequency, number of previous donations, and length of time since previous donation (Table 6). Donors who were neutral or unlikely to donate again were more likely to indicate that they did not want recognition compared to those donors who were highly likely to return. Donors indicating they were highly likely to return had more total donations (more likely to have four to 10, or 10 or more) and had less time elapse since their previous donation (more likely to have donated three to six months ago). No specific positive or negative influences were identified as being different between the two groups.

In multivariate analysis results were similar, though recognition no longer reached statistical significance (Table 7). Controlling for marital status and age did not

---

### Table 6. Frequency Data for Previous Donors

<table>
<thead>
<tr>
<th>Variable</th>
<th>Neutral/Unlikely N (%)</th>
<th>Highly Likely N (%)</th>
<th>Fisher’s Exact p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Recognition</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Every Time Donating</td>
<td>18 (11.0)</td>
<td>78 (13.3)</td>
<td>0.02</td>
</tr>
<tr>
<td>Every 3-5 Times or Milestones</td>
<td>15 (9.2)</td>
<td>62 (10.6)</td>
<td></td>
</tr>
<tr>
<td>Yearly Basis</td>
<td>8 (4.9)</td>
<td>35 (6.0)</td>
<td></td>
</tr>
<tr>
<td>Indifferent</td>
<td>92 (56.4)</td>
<td>360 (61.5)</td>
<td></td>
</tr>
<tr>
<td>Don’t Wish to be Recognized</td>
<td>30 (18.4)</td>
<td>50 (8.6)</td>
<td></td>
</tr>
<tr>
<td><strong>Times Donating</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-3 times</td>
<td>88 (54.0)</td>
<td>178 (30.4)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>4-10 times</td>
<td>67 (41.1)</td>
<td>266 (45.5)</td>
<td></td>
</tr>
<tr>
<td>10+ times</td>
<td>8 (4.9)</td>
<td>141 (24.1)</td>
<td></td>
</tr>
<tr>
<td><strong>Last Time Donating</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 to 6 months</td>
<td>33 (20.4)</td>
<td>391 (66.6)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>1 year</td>
<td>68 (42.0)</td>
<td>134 (22.8)</td>
<td></td>
</tr>
<tr>
<td>2+ years</td>
<td>61 (37.7)</td>
<td>62 (10.6)</td>
<td></td>
</tr>
<tr>
<td><strong>Factors that Influence Decision to Donate Blood</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Rewards Program</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>1 (0.6)</td>
<td>13 (2.2)</td>
<td>0.32</td>
</tr>
<tr>
<td>No</td>
<td>162 (99.4)</td>
<td>574 (97.8)</td>
<td></td>
</tr>
<tr>
<td><strong>Factors that Prevent Decision to Donate Blood</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Needle Poke</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>16 (9.8)</td>
<td>94 (16.0)</td>
<td>0.06</td>
</tr>
<tr>
<td>No</td>
<td>147 (90.2)</td>
<td>493 (84.0)</td>
<td></td>
</tr>
<tr>
<td><strong>Forget to Schedule Tppt</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>42 (25.8)</td>
<td>121 (20.6)</td>
<td>0.16</td>
</tr>
<tr>
<td>No</td>
<td>121 (74.2)</td>
<td>466 (79.4)</td>
<td></td>
</tr>
<tr>
<td><strong>Employer Discouragement</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
<td>NA</td>
</tr>
<tr>
<td>No</td>
<td>163 (100.0)</td>
<td>587 (100.0)</td>
<td></td>
</tr>
</tbody>
</table>
make a difference since neither was associated with the likelihood of return for future donations. Table 8 presents odds ratios and p-values for sub-category comparisons within the times donating and last time donating variables.

**Discussion**

While none of the investigated factors reached statistical significance for motivating or inhibiting donors, we found certain factors that may be useful to blood banks in managing their donors. When considering the likelihood of a donor to return and donate again, the time of their last donation was a major factor. The timespan between an individual's donations and the likelihood of that individual returning to donate are negatively correlated. Within these time-spans, the one-year anniversary from a donation appears to be a significant point at which the likelihood of a donor returning markedly decreases. However, after the one-year time-point has lapsed, recruitment efforts encouraging repeat donation may be effective and would also serve to renew their donation anniversary.

Similarly, the total number of times an individual donates also influences their likelihood to return. We found the odds ratio for an individual who has donated 10-plus times versus an individual who has donated one to three times was 4.295 (CI 1.854-9.951, p-value 0.004) making an individual who has donated more than 10 times more likely to return to donate. The relationship between the timespan between donations and the total number of donations to a donor’s likelihood to return has also been noted in a study similar to ours.

Considering these trends, the goal of the blood bank should be to strongly encourage donors to return at regular intervals, especially when they are beginning to donate (i.e., their first 10 times donating). Scheduling regular events at strategic intervals throughout the year encourages regular donations, offsets significant time lapses between individual donations and increases the total number of repeat donations.

Our data also suggest that the donor population is heterogeneous in their recognition preferences. Subgroup analysis of previous donors looking into recognition’s effect on whether they were highly-likely versus neutral or unlikely to return to donate in the next two to three months gave a p-value of 0.17 (table 7). When the same analysis was done on the data for all donors (i.e., first-time and previous donors), the p-value dropped to 0.09 (Table 3). While this p-value did not quite reach statistical significance, it suggests that first-time donors may be more motivated by recognition than those that have previously donated. This trend has been found to be true in other published literature.5

We did not study incentives to donate other than recognition. A study by Glynn investigating attitudes towards donation incentives found several trends, including that first-time donors are more motivated by incentives and recognition. Additionally, they noted that individuals were most likely to be encouraged to donate if offered blood credits (a form of payment for blood products if a donor needs them in the future), cholesterol screening, or PSA screening (men only). Overall the incentive least likely to encourage return was a token or award of appreciation. Further, Glynn found that young donors (under 25 years old) were much more likely to donate if offered compensatory incentives such as tickets to events, discounts, or other tokens of appreciation. A similar study of donors from a university campus also found incentives to be a significant factor in motivation.13 Thus, a unique approach to a rewards program with a wide variety of incentives is necessary.

<table>
<thead>
<tr>
<th>Table 7. Multivariate Analysis of Participants Who Previously Donated Being Neutral/Unlikely or Highly Likely to Donate Again</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effect</td>
</tr>
<tr>
<td>Recognition</td>
</tr>
<tr>
<td>Times Donating</td>
</tr>
<tr>
<td>Last Time Donating</td>
</tr>
<tr>
<td>Age</td>
</tr>
<tr>
<td>Marital Status</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 8. Odds Ratios of Previous Donors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effect</td>
</tr>
<tr>
<td>Times Donating – 4-10 times vs. 1-3 times</td>
</tr>
<tr>
<td>Times Donating – 10+ times vs. 1-3 times</td>
</tr>
<tr>
<td>Last Time Donating – 3 to 6 months vs. 1 year</td>
</tr>
<tr>
<td>Last Time Donating – 2+ years vs. 1 year</td>
</tr>
</tbody>
</table>
incentives may be necessary for such a program to be successful.

Although no individual inhibiting factor reached significance within the data, the impact of the needle poke was studied closely. Comparing previous donors who were neutral/unlikely to donate to those who were likely to donate the p-value for the needle-poke was 0.06, while the p-value for comparing them to all donors was 0.12. The difference between these two values indicates that the needle-poke is an important inhibiting factor for previous donors. Considering the data was collected from individuals well aware that a needle stick would be required led us initially to consider it would not be a strong inhibiting factor. We therefore suggest the trend toward significance found in previous donors may be due to previous experiences that required multiple need-sticks. An individual’s experience while donating is very much an important factor in their decision to donate.6

Additionally, the challenge of scheduling an appointment (as related to the time required to donate) was examined as a potential deterrent to blood donation. When looking at all donors and comparing the responses of those neutral/unlikely to donate versus those likely to donate again the response “scheduling an appointment” gave a p-value of 0.08, also approaching significance. Allocating 30-45 minutes between the hours of 8 a.m.-5 p.m. for the entire process of donating blood can prove difficult. Convenience is essential and is a significant factor in an individual’s motivation to donate.6,14 Convenience is greatly increased by mobile collection facilities, such as the blood mobile.

Finally, no employer was found to discourage employees from donating. Considering this, further partnerships allowing an employee to take a break to donate blood could be investigated. In this type of partnership the individual would be incentivized to donate, while the business would benefit from the positive public relations generated via a relationship with the blood bank.

The blood donor demographic is quite unique in their motivations, inhibitions, and preferences towards blood donations. As we continue to develop a better understanding of blood donors it will be imperative to evaluate how we are currently attracting, recruiting, and retaining donors. Revamping rewards programs with incentives that appeal to both younger and older donors, reaching out to local businesses to establish partnerships, and strategic scheduling of events that bring in higher volumes of donors are all possible ways to improve current recruitment and retention rates to establish a stable and sufficient supply of blood products for all circumstances.

**REFERENCES**


About the Authors:
Nathaniel Paulson MS IV, University of South Dakota Sanford School of Medicine.
Henry Travers MD, FACP, Clinical Professor of Pathology, University of South Dakota Sanford School of Medicine; Physician’s Laboratory, Ltd., Sioux Falls.

Acknowledgement:
Special thank you to Dr. Susan Puumala and Ms. Katie Burgess for their assistance with the statistical analysis. Also, thank you to the staff of the Community Blood Bank for their assistance with collecting the raw data for this project. Lastly, thank you to Amy Aylor, PharmD for her editorial assistance.
the one to trust
to keep your body in Motion

Your body is a remarkable network of bone, tissue and joints working in perfect harmony. But when injuries occur, that process can be interrupted. At Orthopedic Institute, orthopedic medicine is all we do. We work to get you up and moving again, recreating that perfect harmony, whatever that may be for you. OrthopedicInstituteSF.com | 605.331.5890

2015 SDSMA ANNUAL MEETING
MAY 29-30, 2015 | HILTON GARDEN INN, DOWNTOWN SIOUX FALLS
Stress Fracture of the Hook of the Hamate: A Case Report

By Robert E. Van Demark, Jr., MD; Robert E. Van Demark, III, MD; and Elizabeth Helsper

Abstract
Hook of the hamate fractures are uncommon. This fracture is usually seen in sports involving a club or a racquet (i.e., baseball or golf) and is caused by blunt trauma. Stress fractures of the hamate are exceedingly rare. Because of its subcutaneous position and associated soft tissue structures, hook of the hamate fractures can be difficult to diagnosis. When treated early, conservative (non-operative) options can be used to successfully treat the fracture. When the diagnosis is delayed, nonunion of the fracture is common and is usually treated with surgery.

This case represents a hook of the hamate stress fracture that healed with casting in spite of being seen two months from the onset of symptoms. Hamate fractures are reviewed, including the anatomy and treatment options for hook of the hamate fractures.

Introduction
Stress fractures of the hook of the hamate caused by repetitive trauma have been rarely reported. Patients with hook of the hamate fractures present with ulnar sided wrist pain that is often the result of blunt trauma from swinging a bat, club or racquet. These fractures may not be obvious on clinical examination and are frequently missed on the patient’s initial presentation. When diagnosed promptly, conservative (non-operative) treatment of hook of the hamate fractures can be successful. If there is a delay in diagnosis, nonunion of the fracture is more common and operative treatment gives a more predictable result.

Based on the high nonunion rate with delayed diagnosis, excision of the hook of the hamate has been recommended for cases seen greater than seven days following injury.

In this case report, a hook of the hamate stress fracture that was seen two months following the onset of wrist pain was successfully treated with cast immobilization.

Case Report
A 40-year-old right hand dominant female presented to an orthopedic surgeon with a two-month history of dull, aching pain on the ulnar side of her wrist. She was an avid tennis player and played several times a week. There was no history of an acute injury to the wrist, but she had recently changed her grip to improve her shot making. She denied any history of previous fractures, osteopenia or vitamin D deficiency. Her medications included omega-3 fatty acids and Niacin.

Clinical examination revealed pain along the ulnar aspect of the wrist. She complained of pain over the dorsal hamate and was also tender over the hamate hook. Resisted flexion of the ring and small fingers reproduced her pain. Routine radiographs of the hand and wrist were normal. Based on the patient's history and clinical exam, a presumptive diagnosis of a hook of the hamate fracture was made and an MRI was ordered. The MRI (Figure 1) showed a high grade signal of the hamate that was felt to be a contusion of the hamate. Her physician felt that this finding was consistent with a hamate fracture. She was placed in removable ulnar-based short arm orthoplast splint.

She continued to have wrist pain and was seen five weeks after her initial evaluation. Because of the continued pain,
her attending physician ordered another MRI which was unchanged from the initial MRI. At that time, her treating physician suggested surgery for removal of the hook of the hamate.

The patient was seen in our office for a second opinion. Her examination was unchanged with pain over the dorsum of the hamate and a positive hook of the hamate pull test (HHPT). A computed tomography (CT) scan was done at that time and showed a non-displaced and incomplete fracture through the base of the hamate hook (Figure 2). Because of her continued pain and CT scan findings, she was placed in a short arm cast which included the MCP joints of the ring and small fingers. She wore the cast for six weeks before starting a therapy program. At that time, she was pain free.

She was seen three months after the cast removal. She was pain free and had returned to playing tennis several times a week. No further testing was done.

**Discussion**

Hamate hook fractures were first described by Milch in 1934. Hamate fractures are rare and comprise only 2-4 percent of all carpal bone fractures. These fractures typically occur in sports involving a racquet, bat or club as the result of direct trauma or an indirect blow. In contrast, stress fractures of the body or hamate hook caused by repetitive trauma have been rarely reported.

The hamate is one of eight carpal bones in the wrist and is located on the ulnar side of the carpus (Figure 3). The hook of the hamate protrudes from the body of the hamate into the palm and makes up the ulnar border of the carpal tunnel. The hamate hook has been compared to the mast of a ship. Multiple soft tissue attachments to the hook include the pisohamate ligament, the transverse carpal ligament, the flexor digiti minimi and the abductor digiti minimi muscles of the small finger, all of which function as stays to a mast. These intermittent forces applied to the fractured hamate hook can also interfere with fracture healing. (Figure 4). The blood supply of the hamate has also been well documented. Vascular studies have shown a poor vascular anastomosis between the body and the hook of the hamate. In combination with the forces...
placed on the hamate by the multiple soft tissue attachments, the poor vascularity of the hook of the hamate predisposes to nonunion, especially in cases of delayed diagnosis.22,27

The clinical presentation of hook of the hamate fractures can include ulnar sided wrist pain and swelling, pain in the palm that is aggravated by grasp and tenderness over the hook of the hamate and sometimes on the dorsum of the hamate.2,18,22 However, due to asymptomatic fractures and non-diagnostic radiographs, hook of the hamate fractures are difficult to diagnose without a high index of suspicion.19,26,28 Other common causes of ulnar-sided wrist pain include the distal radioulnar joint pathology, triangular fibro cartilage complex disorders, lunotriquetral ligament injuries, flexor carpi ulnaris tenosynovitis and pisotriquetral arthritis.4,22,30

Because of the subcutaneous location and surrounding soft tissue attachments, it can be difficult to accurately diagnose a hook of the hamate fracture.19 The HHPT, as described by Wright,31 is diagnostic for a hamate hook fracture, both in the acute and chronic situation. With the wrist in full ulnar deviation, the examiner pulls on the ring and small fingers. With resisted flexion, the ulnar tendons load the hook of the hamate displacing the fracture. This maneuver causes pain specific to a hamate hook fracture (Figure 5). Ulnar deviation of the wrist is crucial in this test: the hook of the hamate will be maximally loaded with ulnar deviation of the wrist.31,32 This test is both sensitive and specific for hook of the hamate fractures.31,32

Routine radiographs of the wrist are often non-diagnostic. Norman has described three findings seen on plain films with hamate hook fractures: 1) absence of the hook; 2) sclerosis of the hook; and 3) lack of cortical density of the hamate hook.33 Because plain radiographs are often normal with hamate fractures, multiple specialized views have been described for radiographic visualization.19 These include carpal tunnel views with the wrist in full dorsiflexion, partially supinated lateral (reverse oblique) view with the wrist in maximal radial deviation and semi oblique views.12,17,19,20,33,34-41 Additional imaging has also been used to evaluate the hook of the hamate. Prior to the advent of CT scanning, bone scans3,18,19,42 and trispiral tomograms of the wrist were commonly used for diagnosis of hamate hook fractures.14,43 The use of CT has been a popular imaging choice and is felt to be the most accurate diagnostic test for hamate hook fractures.18,19,22,28,34,44,45 CT scanning is indicated if the fracture is not diagnosed on plain radiographs. In fact, some authors have suggested that CT scanning be done as primary test.38 CT offers a symmetric study, allowing comparison of the opposite side, and does not require a wrist position that might increase pain.14,19,27,28,46 CT scans of both wrists in the “praying position” can help rule out congenital anomalies of the hand and aid in diagnosis.14 MRI scanning is useful in showing avascular necrosis of the hook and also shows marrow edema of the body of the hamate.22,47

Depending on the age of the fracture, several treatment options are available for hook of the hamate fractures. Cast immobilization has been used for acute fractures,1,12,14,20,29,32,34,36,39,42,48-51 ORIF for acute fractures,1,5,28,32 ORIF with bone grafting for nonunions,22 hook excision
REGISTER

SOUTH DAKOTA STATE MEDICAL ASSOCIATION

2015 ANNUAL MEETING

WHAT: 2015 SDSMA Annual Meeting

WHEN: May 29-30

Friday, May 29 - Educational sessions, exhibitors, Young Physician Mixer, Celebrating Medicine Reception, Presidential Banquet, Awards & Scholarships

Saturday, May 30 - SDSMA PAC Breakfast, Council of Physicians meeting

WHERE: Hilton Garden Inn, Downtown Sioux Falls

And don't miss the golf tournament and the SDSMA Alliance Medical Student Scholarship Fundraiser on Thursday, May 28!

We hope to see you there – register today!

To register, visit www.sdsma.org.

for acute fractures and nonunions, and ultrasound treatment for nonunions. Past literature suggests that an acute, non-displaced hamate hook fracture can be successfully treated with cast immobilization if treatment is started early, preferably within the first week of the fracture. Factors related to a poor prognosis and a higher rate of nonunion include diagnostic delays of longer than one week and failure to immobilize the wrist with acute symptoms (less than seven days). Surgery should be reserved for displaced fractures or chronic undiagnosed fractures.

Our patient with a two-month-old non-displaced stress fracture of the hamate hook was successfully treated with short arm cast immobilization which included the ring and small finger MCP joints. Despite the delay between injury and diagnosis, conservative management with cast immobilization of this rare, non-displaced fracture was successful and should be considered as a treatment option.

REFERENCES

Please note: Due to limited space, we are unable to list all references. You may contact South Dakota Medicine at 605.336.1965 for a complete listing.

About the Authors:
Robert E. Van Demark, Jr., MD, Sanford Orthopedics and Sports Medicine, Sioux Falls.
Robert E. Van Demark, III, MD, Mayo Clinic Department of Orthopedic Surgery, Rochester.
Elizabeth Helsper, Student, University of South Dakota Sanford School of Medicine.
Specialized CARDIOLOGY CARE for kids

Trust your patient’s care to the team of experts at Sanford Children's.

With the largest team of pediatric specialists in the region, our advanced care options allow us to deliver the best quality of care for the smallest patients to young adults.

Our team of experts treats a number of cardiac conditions including:

- Chest pain
- Congenital or acquired heart disease
- Heart murmurs
- Hyperlipidemia
- Palpitations
- Pediatric electrophysiology

To refer a patient, call (605) 312-1050 or visit childrens.sanfordhealth.org.

Now seeing patients in:
Sioux Falls, Aberdeen, Brookings, Mitchell, Pierre, Watertown, Winner, Worthington, MN
Pregnancy of Unknown Location

By Margaret Schuneman, MSIV; Tiffany Von Wald MD, MPH; and Keith Hansen, MD

Abstract
The development of highly sensitive and accurate human chorionic gonadotropin assays as well as the improvement of vaginal ultrasound have allowed for the early detection of pregnancy and have reduced the morbidity and mortality associated with ectopic gestations. One of the byproducts of this increased sensitivity is pregnancy of unknown location (PUL), a term which is used to describe pregnancy in a woman with a positive pregnancy test but no signs of intrauterine or extrauterine pregnancy. A PUL can include an early intrauterine pregnancy, a failing intrauterine/extrauterine pregnancy or ectopic pregnancy. Modern medical management has improved the diagnosis and treatment of early pregnancy and pregnancy loss. In the hemodynamically stable patient with PUL, expectant management has been shown to be safe and allows for confirmatory studies before proceeding with therapy.

Introduction
Pregnancy of unknown location (PUL) is a descriptive clinical term when there is a positive pregnancy test and no ultrasound evidence of intra- or extrauterine pregnancy. Although studies vary, 7-31 percent of pregnancies may initially be classified as PUL.1,2 This transient clinical situation requires subsequent diagnostic testing and patient follow-up. Although there is no clear algorithm for the management and outcome prediction of PUL, sonographic evaluation and interval serum hCG are essential, especially prior to medical or surgical treatment.1,3 The main outcomes of PUL can be a normal intrauterine pregnancy (IUP), a failing pregnancy of unknown location (miscarriage), or an ectopic pregnancy (EP).

Many patients initially diagnosed with PUL have normal IUPs that are at such an early gestational age at the time of ultrasound that a gestational sac is not visualized. Another common outcome for a patient with PUL is a spontaneous miscarriage. One difficulty with the patient who has a completed miscarriage is when they are first seen in the clinic with a residual positive pregnancy test but the trophoblastic tissue has already been lost. In this situation the location of the PUL may never be completely determined, and one has to assume that it was a failed IUP or failed EP. Most of these patients will have had a failed IUP, but the possibility of a failed ectopic gestation can’t be ruled out, and the patient must be counseled on their potentially increased risk for future EPs.

Although PUL is not synonymous with EP, missing this diagnosis is one of the most feared outcomes due to associated morbidity and mortality. A second concern includes overtreatment of a potentially viable intrauterine pregnancy.

Human Chorionic Gonadotropin
Dr. Georgeanna Seegar Jones, while a resident at Johns Hopkins University in the 1930s, determined that human chorionic gonadotropin (hCG) was produced by the placenta. This landmark discovery allowed for the development of a number of pregnancy tests which have increased in sensitivity and accuracy over time. The presence of hCG is now one of the earliest specific signs of pregnancy and it is secreted by the trophoblast (eventual placenta) eight days after ovulation.4 A patient may have a positive urine pregnancy test nine days after ovulation.5 This increased sensitivity of pregnancy testing has allowed for earlier clinical evaluation and confirmation of location.
and viability of pregnancy.

Human chorionic gonadotropin levels increase rapidly (doubling every two to three days) initially in pregnancy, reaching maximum levels between eight to 10 weeks (maternal serum levels of around 100,000 mIU/mL). The levels then begin to decline at 10-12 weeks and reach a plateau around 16 weeks, which continues until delivery. There are over 100 assays for hCG in clinical use with variable characteristics including differing cross-reactivity with circulating hCG subunits. Because of this variability in assays it is important when comparing results over time to ensure that the tests were done using the same assay. There are both qualitative (urine and serum) and quantitative assays (serum) for hCG.

When evaluating the patient with an early pregnancy, a quantitative serum hCG level can be very helpful in confirming and localizing the pregnancy. However, a single value of hCG has limited utility but can provide a guideline for expected gestational age and appearance on transvaginal ultrasound (TVUS). The discriminatory hCG level is that level at which TVUS should detect the intrauterine location of a normal, singleton pregnancy. The discriminatory range for transvaginal ultrasound most commonly used is between 1,500 and 2,000 mIU/mL, while for transabdominal ultrasound it is usually from 6,000 to 6,500 mIU/mL.\(^{2,3,7,10}\)

In a patient with PUL, the provider should use clinical evaluation, serial hCG levels and imaging to determine the location and viability of the pregnancy. In this evaluation it is important to realize that the discriminatory zone is not the lowest level at which an IUP or EP may be detected by imaging. Very low hCG levels (less than 25 iu/l) that do not correlate with the last menstrual period may be suggestive of spontaneous resolution of pregnancy, while higher levels (greater than 2,000 iu/l) may suggest normal IUP, EP or even molar pregnancy. Management of these conditions varies greatly, underscoring the need to determine the exact nature of the gestation.

When the hCG level is at or above the discriminatory level of 2,000 mIU/mL and no pregnancy is seen with TVUS, it then becomes a PUL. In a hemodynamically stable patient, serial hCG levels can help distinguish the location of the PUL and its viability. Nearly 99 percent of viable IUPs will demonstrate an increase of quantitative hCG levels (in the same lab) of at least 53 percent in 48 hours, whereas 71 percent of EP will have hCG levels that increase less than 53 percent in 48 hours.\(^ {10}\) In patients whom hCG levels are decreasing, spontaneous miscarriage is very likely and serial hCG measurements should be performed until it is no longer detectable in the serum.\(^ {10}\)

**Positive hCG Not Associated with Pregnancy**

In the patient with PUL, it is important to remember clinical situations that can complicate the diagnosis by resulting in a positive hCG assay but not because of an early IUP, miscarriage or ectopic pregnancy. Laboratory error is a possible cause and must be considered in the differential diagnosis. Other causes of elevated hCG include gestational trophoblastic disease, choriocarcinoma, a heterophile antibody, and nontrophoblastic neoplasms.

After excluding other laboratory errors, one must consider the possibility of a heterophile antibody. Heterophile antibodies are common in individuals who have worked with animals in veterinary facilities or currently live or were raised on farms.\(^ {11}\) Heterophile antibodies can also occur in individuals who have received an antibody-based therapy. If the antibody-based medical therapy is from the same animal type in which the antibodies for the hCG assay were raised, then it is possible that the exposed individual could make a heterophile antibody that will interfere. Differentiating a heterophile antibody and early pregnancy/PUL can be done by obtaining both serum and urine hCG levels or requesting a serial dilution of the serum.\(^ {11}\) In the case of a heterophile antibody, the serum test will be positive while the urine will be negative and at the same time the levels will not serially dilute.

Nontrophoblastic neoplasms may also have a positive hCG assay. Bladder, lung, liver, pancreas, stomach and ovarian cancers can have a positive hCG assay.\(^ {12}\) These neoplasms are primarily associated with free hCG beta subunit, not the intact hormone normally seen with pregnancy.\(^ {12}\) Although a positive hCG not due to pregnancy is relatively uncommon, the treatment for elevated serum hCG varies, indicating the need to determine the root cause of elevation.

**Ultrasound Use in PUL**

The other major clinical advancement in diagnosis of location and viability of pregnancy following a positive hCG is ultrasonography (US). Transvaginal ultrasound (TVUS) is the principal imaging modality as it allows earlier detection of fetal heartbeat and tissue when compared to transabdominal US, and is thus considered the gold standard for PUL imaging. Initially, a patient may have no US findings but if in stable condition she should
have repeat TVUS in 48-72 hours. The gestational sac should grow by approximately 1 mm per day and be visible when it reaches 3 mm. A quantitative serum hCG level at or above 1,500-2,000 mIU/mL is commonly used as a threshold when an intrauterine gestational sac should be visualized in a normal singleton intrauterine gestation by transvaginal ultrasound.

The earliest US finding (4.5 weeks gestation) in a normal IUP is the intradecidual sign which appears as a small round fluid collection surrounded by an echogenic rim within the endometrial echo. In an ectopic pregnancy a "pseudosac", which is often not round, may also be seen within the endometrium. A more definitive US finding of pregnancy location is when the yolk sac (5.5 weeks gestation) is seen as a round fluid-filled structure within the gestational sac. As the pregnancy progresses a yolk sac and embryo (6.5 weeks gestation) may be visualized, confirming the location.

Ultrasound findings consistent with an ectopic pregnancy include no gestational sac within the uterus and an adnexal mass, either within the ovary, fallopian tube, or nearby interstitium. The provider must use caution in interpreting adnexal masses seen on ultrasound as corpus luteal cysts, which are commonly seen in early pregnancy, may mimic an EP. A large amount of free peritoneal fluid in the setting of a PUL increases ones index of suspicion of EP rather than ruptured ovarian cyst, tuboovarian abscess, or ruptured appendix.

**TVUS with PUL and hCG Above Discriminatory Zone: Possible Causes**

Possible causes of a PUL with an hCG level at or above the discriminatory zone most commonly are due to a spontaneous miscarriage or ectopic pregnancy. As noted earlier, hCG producing tumors, laboratory error and assay-interfering antibodies can result in a positive pregnancy test with nothing visualized within the endometrial cavity by ultrasound. It is also important to remember that in an intrauterine multiple pregnancy, the hCG level will be above the discriminatory zone before ultrasound can detect its intrauterine location.

**Other Diagnostic Tools**

A serum progesterone level may also aid in further management of a PUL. Progesterone levels less than 25 ng/dL may assist in predicting a failing pregnancy while levels above 25 ng/dL are likely to predict a viable pregnancy. Like all laboratory tests a serum progesterone level should supplement other information gathered by the practitioner from the history, physical examination, other laboratory tests and imaging. A progesterone level may help the practitioner determine the viability of the pregnancy but should not stand-alone.

Dilation and curettage (D&C) and endometrial biopsy may assist the practitioner in determining the location of a failing PUL. In women with non-diagnostic pelvic ultrasound accompanied by an abnormal rise, fall, or plateau of serial hCG values, a D&C with inspection of the endometrial sample for the presence or absence of chorionic villi can assist in diagnosis. The presence of chorionic villi in the D&C specimen is diagnostic of an intrauterine location and with a failing IUP, the D&C can be therapeutic in the case of spontaneous abortion. This method can prevent unnecessary presumptive medical treatment and exposure to methotrexate for a suspected EP in the case of PUL.

Similar to D&C, endometrial sampling may identify chorionic villi in the setting of suboptimal increase or decline of hCG. This method has primarily been used in clinics where patients have undergone in vitro fertilization. The presence of chorionic villi on endometrial sampling also decreases the number of patients unnecessarily receiving Methotrexate therapy. Patients who fail to have evidence of chorionic villi following endometrial sampling are presumed to have EP.

**Treatment**

PUL is a diagnostic challenge with the primary goal to determine viability before proceeding with any invasive procedures. In asymptomatic patients imaging of an early gestation (less than five weeks) may suggest an abnormal gestation when in reality, it is a PUL. For this reason, many stable patients with PUL need to be expectantly managed until a definitive diagnosis is reached, as a large proportion of these patients will eventually be found to have a normal intrauterine pregnancy.

Patients with PUL who have signs of acute abdominal pain, rebound tenderness or guarding are presumed to have EP. In this clinical situation, especially if the patient has evidence of intraperitoneal bleeding or hemodynamic compromise, they should be managed immediately with diagnostic laparoscopy or laparotomy. Surgical treatment of EP may include salpingectomy or salpingostomy based upon patient history, skill of surgeon, desire for future fertility, and extent of damage. Post-operatively, hCG levels need to be serially monitored until they are negative. In the presence of persistent EP, patients may
Figure 1. A Suggested Algorithm for the Management of PUL.

KEY:
PUL - pregnancy of unknown location
IUP - intrauterine pregnancy
US - ultrasound (transvaginal ultrasound)
EP - ectopic pregnancy

Patient with PUL

Asymptomatic: Expectant management and serum hCG in 48 hours

Falling hCG: and probable failing PUL
  Repeat hCG and US in 1 week to confirm
  Management of miscarriage if not already completed

Suboptimal rise or fall of hCG
  Serial hCG until less than 1000IU/l OR 3 measurements showing suboptimal rise or fall
  Repeat US

HCG increase of greater than 50%
  Early IUP confirmed with US; establish routine antenatal care

Symptomatic: Refer to experienced Ob/Gyn for surgical management

Consider referral to Ob/Gyn
  If hCG < 2000IU/l and no IUP - consider D&C
  Repeat US in 1-2 weeks for viability
  Management of EP

If viable, establish routine antenatal care
  If nonviable, management of miscarriage
require further surgical therapy or adjuvant medical therapy with Methotrexate.¹

Methotrexate is a folic acid antagonist used as an alternative to surgical intervention for stable patients with EP. Single-dose, double-dose, and multidose intramuscular injections are used. A single dose regimen of 50 milligrams/meter squared is the most common because it is less expensive, easy to use, and has few associated side effects even though it has a failure rate as high as 12 percent.⁴⁻⁵,¹⁸ As discussed above, medical management of a presumed EP in the setting of PUL must be avoided until a viable IUP is ruled out. In a clinically stable patient with PUL, imaging and serial hCG levels should be repeated until one is absolutely sure that the pregnancy is not viable prior to medical therapy. Methotrexate therapy can be initiated in the presence of a suboptimal increase or plateauing of hCG levels, adnexal ultrasound findings, and proper patient indications.⁵⁻¹⁸ Prior to the use of methotrexate the patient must have a thorough history and physical examination with normal complete blood count (including hemoglobin and platelet count), liver function tests, and renal function tests.

When miscarriage is suspected (without suspicion of EP), there is little harm in delaying the diagnosis until non-viability is confirmed.⁹ Published data have shown that miscarriage is the most common outcome of PUL (50-70 percent).¹⁹⁻²¹ As a result, the location of a failing PUL may never be definitively known if the pregnancy could not be visualized with TVUS.

When to Refer

In the event of PUL, providers may lack sufficient resources for patient monitoring and determination of location and pregnancy outcome. Providers may also lack the appropriate surgical skill and tools to adequately manage pregnancies requiring surgical intervention. Referral to an obstetrician gynecologist should be considered for the patient with PUL.

Conclusion

Technologic and modern medical advances allow providers to more readily diagnose and manage early pregnancy. A PUL and its subsequent surveillance are not without diagnostic and treatment related iatrogenic complications.⁹ In PUL it is vital to correlate serum hCG levels and ultrasound findings with the clinical presentation to avoid making an error.⁹ The main objectives in managing a patient with PUL is to not miss the diagnosis of an ectopic pregnancy, while at the same time not mistakenly treating and ending an early viable gestation. Expectant management of PUL has been shown to be safe and avoids overtreatment which would result in unnecessary medical or surgical intervention leading to loss of a potentially viable intrauterine pregnancy (IUP).¹⁹,²⁰

A suggested algorithm for the management of PUL is shown in Figure 1.²²,²³

In the clinically stable, asymptomatic patient with PUL, expectant management has shown to be safe. Referral to an experienced OB/GYN must be considered for patients with PUL, especially those who develop symptoms and may eventually require surgical treatment.

REFERENCES

17. Please note: Due to limited space, we are unable to list all references. You may contact South Dakota Medicine at 605.336.1965 for a complete listing.

About the Authors:
Margaret Schuneman, MSIV, University of South Dakota Sanford School of Medicine.
Tiffany Von Wald, MD, MPH, University of South Dakota Sanford School of Medicine; Sanford Fertility and Reproductive Medicine, Sioux Falls.
Keith Hansen, MD, University of South Dakota Sanford School of Medicine; Sanford Fertility and Reproductive Medicine, Sioux Falls.
DEADLY DIARRHEA:
C. DIFFICILE CAUSES IMMENSE SUFFERING, DEATH

**IMPACT**

- Caused close to half a million illnesses in one year.
- Comes back at least once in about 1 in 3 patients who get C. difficile.
- 1 in 11 people 65 and older died within a month of C. difficile infection diagnosis.
- Caused 15,000 deaths in one year.

**RISK**

- People on antibiotics are 7-10 times more likely to get C. difficile while on the drugs and during the month after.
- Being in healthcare settings, especially hospitals or nursing homes.
- More than 80% of C. difficile deaths occurred in people 65 and older.

**SPREAD**

- Touching unclean surfaces, especially those in healthcare settings, contaminated with feces from an infected person.
- Dirty hands.
- Failing to notify other healthcare facilities when patients with C. difficile transfer from one facility to another.

**PREVENT**

- Improve prescribing of antibiotics.
- Use best tests for accurate results to prevent spread.
- Rapidly identify and isolate patients with C. difficile.
- Wear gloves and gowns when treating patient with C. difficile. Remember that hand sanitizer doesn’t kill C. difficile.
- Clean room surfaces with EPA-approved, spore-killing disinfectant (such as bleach), where C. difficile patients are treated.

http://www.cdc.gov/HAI/organisms/cdiff/Cdiff_infect.html
www.cdc.gov/media

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

SOUTH DAKOTA DEPARTMENT OF HEALTH
Chronic obstructive pulmonary disease (COPD) is a progressive lower respiratory disease of airway obstruction and persistent airflow limitation leading to impaired breathing. COPD affects 15 million Americans and the incidence is growing. Here in South Dakota, 5.4 percent currently report a diagnosis of COPD. Of those with COPD, frequent symptoms, exacerbations, and poor exercise tolerance can adversely affect quality of life and mortality. COPD is the third leading cause of death in the U.S. and contributes to 15.4 million doctors’ visits and 739,000 hospitalizations annually.

While there is not a cure, current COPD therapies can improve symptoms, reduce exacerbations and improve the quality of life. The cornerstone of COPD therapy are bronchodilators which work by inducing smooth muscle relaxation to cause bronchodilation. There are two classes available, anticholinergics and beta2-adrenergic receptor agonists available in both short and long acting formulations. The Global Initiative for Chronic Obstructive Lung Disease recommends use of a short acting bronchodilator for intermittent disease or Group A COPD. Long acting bronchodilators (either a long acting anticholinergic or long acting beta2-agonist) are recommended as maintenance therapy. For patients not controlled by a single bronchodilator, combination of an anticholinergic and long acting beta2-agonist or a combination of inhaled corticosteroid and long acting beta2-agonist should be used. Combination of all three mechanisms of action is recommended for patients with severe COPD with frequent exacerbations.

Common to all chronic disease states, patient compliance with maintenance therapy is low. By decreasing number of daily doses and number of inhalers, compliance may be improved. The market therefore presents an opportunity for more convenient long acting therapies or more user friendly devices. In the last two years, the U.S. Food and Drug Administration (FDA) has approved three new bronchodilator inhalers and a new device for tiotropium which are described below.

Spiriva Respimat (tiotropium bromide)
Tiotropium, a long-acting anticholinergic, has dominated the market as a first line agent due to its 24-hour duration of action. Tiotropium is available in a Handihaler device, a product in which patients place a capsule into the device, puncture the capsule and forcibly inhale the contents. The product has caused confusion for some patients, with capsules being swallowed or shattered by multiple punctures. In September 2014, tiotropium’s newest device, the Spiriva Respimat 2.5 mcg Soft Mist inhaler, was approved. The Respimat is a slow mist inhaler (SMI) which uses mechanical energy to produce a fine, slow-moving mist. Studies have shown a higher proportion of drug disposition in the lungs with less oropharyngeal delivery. The tiotropium Respimat was shown to have noninferior efficacy at 5 mcg and 10 mcg SMI to the tiotropium 18 mcg Handihaler (change in FEV1 at end of four weeks: 0.126L, 0.127L, 0.097L for tiotropium 5 mcg SMI, 10 mcg SMI, and 18 mcg HH, respectively; noninferiority P <0.0001). Tiotropium Respimat was initially rejected in 2008 due to concerns for increased cardiovascular mortality. Three one-year, placebo-controlled trials of tiotropium Respimat showed an imbalance in all-cause mortality over placebo, without any consistent cause of death. However, newer studies have not shown a similar increase. In the TIOtrupium Safety and Performance In Respimat (TIOSPIR) trial of 17,000 COPD patients, no statistically significant differences in all cause death or cardiovascular-related death were found. Side effects were shown to be similar in both devices. However, in a small study of 29 patients who switched from Handihaler to Respimat, decreased dry mouth was seen as well as an increase in cough at the start of using the Respimat. Cough declined after four weeks in six of the seven patients. The tiotropium Respimat is approved at two inhalations of 2.5 mcg once daily. While the tiotropium Handihaler is still expected to stay on the market, consider changing to the Respimat in patients with low peak inspiratory flow or those with significant dry mouth.
Striverdi Respimat (olodaterol hydrochloride)

Striverdi Respimat, containing olodaterol 2.5 mcg joins indacaterol (Arcapta Neohaler) as the newest once-daily long acting beta2-agonist inhaler. Due to olodaterol’s high beta2 receptor selectivity, duration of action is over 24 hours. Olodaterol 2.5 mcg two puffs once daily is approved for the maintenance treatment of airflow obstruction in patients with COPD. It is not approved for the treatment of acute exacerbations.14 Olodaterol was approved following 10 studies in approximately 4,000 patients with moderate to severe COPD.15 Overall benefits were seen in trough FEV1, FEV1 area under the curve (AUC), St George’s Respiratory Questionnaire, and exercise tolerance.16-17 In two replicate, randomized, double-blind, placebo-controlled, parallel-group studies, olodaterol 5 mcg and 10 mcg were shown to improve mean trough FEV1 to placebo at 12 weeks (Study 122.11: 0.091L, 0.101L; P=0.0001; Study 122.12: 0.047L, 0.048L; P=0.0001 for olodaterol 5 mcg and 10 mcg, respectively). This was also shown to be significant at 48 weeks. At week 48, use of SABA decreased by 0.46 actuations/day for olodaterol 5 mcg and 0.57 actuations/day for olodaterol 10mcg (P<0.0001 for both doses). The most common adverse effect seen in the study was exacerbation of COPD at 24, 32.4 and 34 percent for olodaterol 5 mcg, 10 mcg and placebo, respectively. Upper respiratory tract infections and nasopharyngitis were also seen in about 5-10 percent of olodaterol and placebo treatment groups.16 In two other replicate 48-week studies, olodaterol 5 mcg and 10 mcg once daily and formoterol 12 mcg twice daily all showed statistically significant changes in FEV1, AUC and trough FEV1 against placebo (Study 1222.13: AUC: 0.151L, 0.165L, 0.177L; P<0.0001; trough FEV1: 0.078L, 0.085L, 0.054L; P<0.01; Study 1222.14: AUC: 0.0129L, 0.154, 0.150L; P=0.0001; trough FEV1: 0.053L, 0.069L, 0.042L; P<0.05 for olodaterol 5 mcg, 10 mcg, and formoterol 12 mcg, respectively). Symptom improvement through the St. George’s Respiratory Questionnaire was statistically significant for olodaterol 5 mcg and 10 mcg, but not for formoterol (difference from placebo: -2.8, -3.4, -1.2 for olodaterol 5 mcg, 10 mcg, and formoterol 12 mcg, respectively). Olodaterol was well tolerated and no differences in adverse effects compared to placebo were seen.17 A one-year pooled safety analysis showed no increase in death or cardiovascular-related death.18 Consider olodaterol as another option for patients needing a once daily bronchodilator.

Anoro Ellipta (umeclidinium bromide/vilanterol trifenatate)

The first combination LABA/LAMA to hit the US market is Anoro Ellipta, containing umeclidinium/vilanterol (UMEC/VI) 62.5/25 mcg inhaled one puff once daily. This inhaler utilizes the synergistic effects of the two long acting bronchodilators to improve FEV1 and decrease exacerbations. Umeclidinium/vilanterol was approved following seven phase III studies in approximately 6,000 patients with moderate to severe COPD.20 Two studies (Trial 3361 and 3373) looked at the comparison of umclidinium/vilanterol to the monotherapy of umeclidinium alone, vilanterol alone, and placebo in a 24-week double-blind, placebo-controlled, parallel-group study. In both studies all active comparators showed statistically significant improvements in trough FEV1 at day 169 (Study 3373: 0.167 L, 0.115 L, and 0.072 L; all p<0.001 for UMEC/VI 62.5/25 mcg, UMEC 62.5 mcg and VI 25 mcg, respectively). Statistically significant improvements were also demonstrated for umeclidinium/vilanterol 62.5/25 mcg compared with umeclidinium 62.5 mcg (0.052 L;p=0.004) and vilanterol 25 mcg at Day 168 (0.095 L; p<0.001). Adverse effects were similar across all active treatments with headache, nasopharyngitis, and upper respiratory tract infections being most common.21 Umeclidinium/vilanterol was also shown to be effective in comparison to tiotropium 18mcg in two active-controlled trials of a similar design (Trial 3360 and 3374) with a trough FEV1 at Day 169 (0.205L, 0.093L; p <0.001). St. George’s Respiratory Questionnaire and use of short-acting beta agonist were statistically improved in patients on umeclidinium/vilanterol. Again no difference in adverse events was seen between the active treatments.22-23 While not powered to assess COPD exacerbations, analysis of time to first COPD exacerbation in Trial 3373 and 3361 suggested that umeclidinium/vilanterol 62.5/25 mcg and umeclidinium 62.5 mcg may have a lower risk of COPD exacerbation compared with placebo.20-21 Future studies plan to look specifically at this. Umeclidinium/vilanterol also showed benefit in two exercise endurance trials.24 Safety was confirmed in a 52-week placebo controlled trial.25 Due to its once daily use and benefit of two mechanisms of action in one inhaler, consider umeclidinium/vilanterol as an option for patients with moderate to severe COPD, especially in patients in which an inhaled corticosteroid is not preferred.

Incruse Ellipta (umeclidinium bromide)

FDA approval for umeclidinium monocomponent inhaler, Incruse Ellipta, followed the Anoro Ellipta after review of
the same clinical trials looking specifically at umeclidinium alone. In the studies, umeclidinium also showed benefit in FEV1 trough, symptom improvement through St. George’s Respiratory Questionnaire, and SABA use. In addition, as umeclidinium is metabolized by cytochrome P450 2D6 (CYP2D6), safety, tolerability, pharmacokinetics and pharmacodynamics were studied in patients with normal and deficient CYP2D6 metabolism. Similar adverse effects and plasma levels were found for both groups suggesting no need for concern based on CYP2D6 metabolizer status or if using umeclidinium in patients taking CYP2D6 inhibitors. 26 Umeclidinium adds to the number of long acting anticholinergics to use for the maintenance of COPD. Consider umeclidinium as an additional choice for COPD patients in GOLD stages 1-2 for needing once daily treatment.

Advances in COPD inhaler devices and medications have the potential to improve convenience for the patient by decreasing number of times the inhaler is needed each day or improving the inhaler device. While these agents have been shown to provide significant improvements in lung function and other outcomes, their benefits are likely similar to current agents on the market. Consider these newer agents for patients who need once daily administration or are noticing side effects with their current bronchodilators. All products do have patient assistance programs and manufacturer discount cards available for patients needing financial support. With the approval of newer inhalers, health care providers have ample choices and delivery methods to continue to improve the maintenance treatment of chronic obstructive pulmonary disease.

References


About the Author:
Jennifer Ball, PharmD, Assistant Professor of Pharmacy Practice, South Dakota State University; Clinical Pharmacist, Center for Family Medicine.

SOUTH DAKOTA STATE MEDICAL ASSOCIATION
ANNUAL MEETING

MAY 29 - 30, 2015
HILTON GARDEN INN. DOWNTOWN SIOUX FALLS • SIOUX FALLS, SOUTH DAKOTA

FEATURED PRESENTATIONS
FRIDAY, MAY 29

Winds of Change: Emerging Issues in Payment Models
David Basel, MD
Medical Director of Clinical Quality, Avera Medical Group

Improving the Health of the Nation: The Power of the Physician Voice in a Time of Change
Ardis Dee Hoven, MD
Immediate Past President, AMA

Meeting the Challenges Ahead: Solutions to Preventing Stress & Burnout
Team-Based Care: Physician Leaders as Key Facilitators
Deb Wood, PhD
Senior Consultant, VITAL WorkLife, Inc.

Transforming Care Through a Better Understanding of Our Patients
Daniel J. Heinemann, MD
Chief Medical Officer, Sanford Health

The Future Has Arrived - Medical School Update
Mary D. Nettleton, MD
Dean, USD Sanford School of Medicine

JOIN US FOR THESE OTHER EXCITING EVENTS!

Thursday, May 28
- Golf Outing .................................................. 11 am
- Alliance Medical Student Scholarship Fundraiser .......................... 7 pm

Friday, May 29
- Educational Sessions ........................................ 8:15 am - 4:15 pm
- Networking Lunch ........................................... 12:15 pm
- Young Physicians Mixer & “Celebrating Medicine” Reception .............. 6:15 pm
- Presidential Banquet with Awards & Scholarship Recognition ............. 7 pm

Saturday, May 30
- SDSMA PAC Breakfast with South Dakota Attorney General Marty Jackley .............................................. 7:30 am

For more information and to register, visit www.sdsma.org.
There has been much talk over the airways that I monitor lately over what truly constitutes quality in health care. During some recent presentations a few of you may have attended, I have espoused the fact that we physicians have pretty much “dropped the ball” when this issue first arose and thereby de facto deferred this subject to others within our industry. Payers (AKA CMS/Medicare) were the first to fill this void and assume control of setting these standards. What we are left with is a potpourri of abbreviations (PQRS, HEDIS, etc.) that probably have left you wondering what these entities were thinking when they developed said “quality measures” that seem more focused on counting certain care interactions between you and your patients rather than something that has a vital impact on clinical outcomes.

In response to this matter, back in 2012 one of our colleague organizations the American College of Internal Medicine, via their foundation, developed a program entitled “Choosing Wisely.” This initiative aims to promote conversations between providers and patients by helping patients choose care that is:

- Evidence-based;
- Not duplicative of other tests or procedures already received;
- Free from harm; and
- Truly necessary.

In response to this challenge, national organizations representing medical specialists have asked its providers to “choose wisely” through the identification of tests or procedures commonly used in their field, whose necessity should be questioned and discussed. More than 70 specialty societies have joined the campaign, which I believe encompasses all specialties represented in South Dakota. New lists will continue to be published through 2015. The resulting lists of “Things Providers and Patients Should Question” will spark discussion about the need – or lack thereof – for many frequently ordered tests or treatments. In this era of increasing transparency and patient responsibility for their health care costs, I suspect you are hearing more from patients questioning the necessity of services you have recommended. I don’t see this trend slowing, so plan for this to increase as individuals become more educated through initiatives such as this.

We’ve spent quite a bit of time over the last few years ensuring our members receive appropriate care (e.g., cancer screenings, vaccinations, etc.), but minimal discussion/debate has occurred regarding over-utilization of health care services. DAKOTACARE’s Clinical Oversight Committee has been debating this matter as well. Some studies have estimated nearly 40 percent of overall U.S. health care spending is unnecessary or duplicative. Reducing these costs is the proverbial “low hanging fruit” in working to reduce medical spending; however, these costs are someone else’s income, so difficult decisions have to be made that are ultimately in the best interest of your patients.

Recognizing that patients need better information about what care they truly need in order to have these conversations with their providers, Consumer Reports is developing patient-friendly materials and is working with consumer groups to disseminate them widely. Please spend some time reviewing the various recommendations at www.choosingwisely.org as I can ensure you that your patients are checking this out for you.

Choosing Wisely recommendations should not be used to establish coverage decisions or exclusions. Rather, they are meant to spur conversation about what is appropriate and necessary treatment. As each patient situation is unique, providers and patients should use the recommendations as guidelines to determine an appropriate treatment plan together. I would like to see some of these recommendations imbedded into provider quality reports so that each clinic and/or health care facility can see how they are doing to achieve initiatives brought forth by their own specialty organization. Please stay tuned.

By the way, welcome spring. We’ve been waiting for you.
Complete care for children and adolescents, treating:

- Headaches
- Seizures
- Cerebral palsy
- Epilepsy
- Developmental delays
- Movement disorders
- Attention difficulties
- Learning disabilities

EEG services, including ambulatory EEG monitoring

New treatment for children with intractable seizures

Acupuncture treatment available

Outreach clinics available in Mitchell and Rapid City

Child & Adolescent Neurology

Jorge D. Sanchez, MD

Child & Adolescent Neurology
117 W. 39th St.
Sioux Falls, SD 57105
605.334.8000
SDBMOE Board News

By Margaret B. Hansen, PA-C, MPAS, Executive Director, South Dakota Board of Medical and Osteopathic Examiners

Interstate Medical Licensure Compact Bill Passes the South Dakota Legislature

The Interstate Medical Licensure Compact

- Is an expedited additional and voluntary pathway for medical licensure for physicians interested in practicing in multiple states
- Is a way for states to preserve and exercise their authority to license and regulate the practice of professions while addressing shared interests and concerns
- Does not change the definition of or the practice scope for physicians in the South Dakota Medical Practice Act

The traditional medical licensure pathway remains intact with no changes in requirements or how physicians are allowed to practice

Support for the Interstate Medical Licensure Compact in South Dakota

- AARP South Dakota
- Avera Health
- Governor's Primary Care Task Force Oversight Committee
- Regional Health
- Sanford Health
- South Dakota Association of Healthcare Organizations
- South Dakota Board of Medical and Osteopathic Examiners
- South Dakota Department of Health
- South Dakota State Medical Association
Everyone wants to find a way to prevent aging.

Let’s face it, we will all grow old...that is unless we die early from a motor vehicle accident, cancer or an early stroke or heart attack. Of course even if we took every precaution, one of those causes for early death might occur. But now a days don’t we know how to prevent aging arteries, heart attacks and strokes?

Not surprisingly, in a response to the call to prevent early death, there has been an effort to just look or act younger in this country. The pharmaceutical industry has developed estrogen and testosterone replacement, as well as Viagra to help sexual function, Botox and special creams to erase wrinkles, and even steroids and non-steroidals to treat arthritis.

But what have we done to find ways to protect our aging blood vessels. In the 90s researchers started blaming aging on excessive oxidation and not long after, we heard advertisers talking about antioxidant effects trying to sell this product or that supplement. We’ve been advised to eat this diet and buy that book each holding the secret to a long, oxidant-free healthy life. Unfortunately we have learned that the main oxidative driver is simply too much food, and there’s no pill for that.

After scientific researchers found high cholesterol as a mild predictor for vascular disease, many have been focusing on cholesterol lowering medicines in an attempt to prevent aging arteries and atherosclerosis. Despite the fact that lowering cholesterol has been disappointing in the prevention of vascular disease, sales for statins, the main cholesterol-lowering group of meds has grown to be a five and a half billion dollar yearly business.

All in all, these medicinal short cuts to prevent vascular aging have too little effect, and pale in comparison to the most powerful preventative treatment.

Recently the World Health Organization (WHO) stated that three-quarters of all cardiovascular deaths and disease are connected to lifestyle. Say it another way: three-quarters of all cardiovascular deaths could be delayed by making lifestyle changes. We’re talking: use of tobacco, unhealthy diet habits, psychosocial stress, and most important physical inactivity. Indeed the real fountain of youth comes from lifestyle, and not medicines. There are no short cuts.

The way to prevent premature aging is not by a pill, but by the way you live.
South Dakota Foundation for Medical Care (SDFMC) has been serving South Dakota health care providers and Medicare beneficiaries to improve the quality of health care since 1973. In this role, SDFMC serves as a quality improvement facilitator and local resource to health care professionals. Past scopes of work, or contracts, with the Centers for Medicare and Medicaid Services (CMS), included both quality improvement efforts and case review/peer review services.

As you are probably aware, on Aug. 1, 2014, SDFMC started working under a new era of quality improvement for CMS known as the 11th Scope of Work, whereby we work solely on quality improvement. We have joined together with the Quality Improvement Organizations from Kansas, Nebraska and North Dakota to form the Great Plains Quality Innovation Network (QIN). It is through the Great Plains QIN that we are working to focus on our continuing goal to improve health outcomes and health care delivery for South Dakota Medicare consumers.

Please check out the new Great Plains QIN website at greatplainsqin.org. You will find quality improvement tools and resources on our improvement projects: coordination of care, improving cardiac care, medication safety, prevention coordination through meaningful use, reducing disparities in diabetic care, reducing healthcare-acquired conditions in nursing homes, reducing health-care associated infections in hospitals, and value-based payment, quality reporting, and physician feedback.

While on the site, we invite you to join the Great Plains QIN Learning and Action Network (LAN). Through the LAN, we will be offering education and tools on a variety of healthcare topics. Join today to demonstrate your commitment to quality improvement and get connected.
See the effect in South Dakota.

The American Medical Association 2014 Economic Impact Study, completed in conjunction with the South Dakota State Medical Association, shows how much physicians add to the economic health of South Dakota.

Check the effect physicians have on the U.S. economy by viewing the national report from the AMA, as well as highlights from the South Dakota study, at ama-assn.org/go/eis.
<table>
<thead>
<tr>
<th>Membership Level</th>
<th>Memberships</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chairman's Club $1,000+ (PHYSICIAN AND SPOUSE)</td>
<td>Daniel C. Johnson, Mary J. Milroy, MD, Karla K. Murphy, MD, Thomas Murphy</td>
</tr>
<tr>
<td>Senate Club $500+ (PHYSICIAN AND SPOUSE)</td>
<td>Mary S. Carpenter, MD, Jean Bubak, Mark E. Bubak, MD, Mark East, Dan Flynn, Janice Knutsen, Roger S. Knutsen, MD, Jennifer K. May, MD, Jean McHale, Stephan J. Miller, MD, Connie Schroeder, Stephan D. Schroeder, MD, Barb Smith</td>
</tr>
<tr>
<td>House Club $300+ (PHYSICIAN AND SPOUSE)</td>
<td>Mike Alley, Marty L. Allison, MD, Robert L. Allison, MD, Kevin L. Bjordahl, MD, Mary Bjordahl, Joanie Holm, Richard P. Holm, MD, James Keil, MD, Deborah Ann Kullerd, MD, Janice Minder</td>
</tr>
<tr>
<td>House Club $300+ (PHYSICIAN AND SPOUSE)</td>
<td>Jim L. Minder, MD, Rodney R. Parry, MD, Ruth Parry, Marlys Porter, Richard I. Porter, MD, Ihlene Rossing, William O. Rossing, MD, Herbert A. Saloum, MD, Linda Saloum, J. Geoffrey Slingsby, MD, Jacelyn Slingsby, Emily Thomas, Eric R. Thomas, MD</td>
</tr>
<tr>
<td>Member $175+</td>
<td>Benjamin C. Aaker, MD, Michelle L. Baack, MD, Jerome W. Bentz, MD, Scott L. Boyens, MD, James Brunz, MD, Alan R. Christensen, MD, Rochelle Christensen, MD, Kara L. Dahl, MD, Jeffrey S. Dean, MD, Stephen T. Foley, MD, Richard T. Gudvangen, MD, Daniel J. Heinemann, MD, H. Thomas Hermann, Jr., MD, Tom D. Howey, MD, Jeffrey A. Johnson, MD, Blake A. Jones, MD, Laurie B. Landeen, MD</td>
</tr>
<tr>
<td>Student $25</td>
<td>Broderick T. Allen, Anthony H. Loewen, Benjamin Meyer</td>
</tr>
</tbody>
</table>

Your SDSMA PAC membership is very important in order to elect political candidates who understand the practice of organized medicine in South Dakota. To donate to SDSMA PAC, please visit www.sdsmoa.org.
<table>
<thead>
<tr>
<th>Name</th>
<th>Residency Program</th>
<th>Institution</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leslie Addengast</td>
<td>SURG-PRE</td>
<td>Mount Carmel-West Hospital</td>
<td>Columbus, Ohio</td>
</tr>
<tr>
<td>Jeremy Berg</td>
<td>PATH</td>
<td>University of South Dakota</td>
<td>Sioux Falls, South Dakota</td>
</tr>
<tr>
<td>Adam Binneboese</td>
<td>SURG-GEN</td>
<td>University of South Dakota</td>
<td>Sioux Falls, South Dakota</td>
</tr>
<tr>
<td>David Brennan</td>
<td>MEDC</td>
<td>Mayo Clinic Department of Medicine</td>
<td>Rochester, Minnesota</td>
</tr>
<tr>
<td>Sabrina Burn</td>
<td>OGYN</td>
<td>University of Minnesota Medical School</td>
<td>Minneapolis, Minnesota</td>
</tr>
<tr>
<td>Joseph Carda</td>
<td>ANES</td>
<td>University of Oklahoma Health Sciences Center Department of Anesthesiology</td>
<td>Oklahoma City, Oklahoma</td>
</tr>
<tr>
<td>Corbin Cleary</td>
<td>SURG-GEN</td>
<td>New York Methodist Hospital Surgery Program</td>
<td>Brooklyn, New York</td>
</tr>
<tr>
<td>Laura Danielson</td>
<td>NEUR</td>
<td>West Virginia University Health Sciences Center</td>
<td>Morgantown, West Virginia</td>
</tr>
<tr>
<td>Aaron Dewald</td>
<td>MEDC-PRE</td>
<td>University of South Dakota</td>
<td>Sioux Falls, South Dakota</td>
</tr>
<tr>
<td>James Dreessen</td>
<td>SURG-PRE</td>
<td>UPMC Mercy Department of Surgery</td>
<td>Pittsburgh, Pennsylvania</td>
</tr>
<tr>
<td>Thomas Fischer</td>
<td>FAMP</td>
<td>Lincoln Medical Education Partnership</td>
<td>Lincoln, Nebraska</td>
</tr>
<tr>
<td>Nicholas Gau</td>
<td>PATH /CLINC &amp; ANAT</td>
<td>Washington University Medical Center</td>
<td>St. Louis, Missouri</td>
</tr>
<tr>
<td>Anne Grady</td>
<td>FAMP</td>
<td>Center for Family Medicine Family Medicine Program</td>
<td>Sioux Falls, South Dakota</td>
</tr>
<tr>
<td>Luke Hofkamp</td>
<td>EMER</td>
<td>Washington University Medical Center</td>
<td>St. Louis, Missouri</td>
</tr>
<tr>
<td>Kelsey Holkesvik</td>
<td>MEDC</td>
<td>Mount Carmel Health System</td>
<td>Columbus, Ohio</td>
</tr>
<tr>
<td>Joshua Hughes</td>
<td>FAMP</td>
<td>Center for Family Medicine Family Medicine Program</td>
<td>Sioux Falls, South Dakota</td>
</tr>
<tr>
<td>Keary Johnson</td>
<td>OGYN</td>
<td>Aultman Hospital Department of OB/GYN</td>
<td>Canton, Ohio</td>
</tr>
<tr>
<td>Brian Juber</td>
<td>PEDS</td>
<td>Ann &amp; Robert H Lurie Children's Hospital</td>
<td>Chicago, Illinois</td>
</tr>
<tr>
<td>Marcella Knauf</td>
<td>EMER</td>
<td>Scott and White Healthcare</td>
<td>Temple, Texas</td>
</tr>
<tr>
<td>Deanna Lassegard</td>
<td>EMER</td>
<td>East Carolina University Department of Emergency Medicine</td>
<td>Greenville, North Carolina</td>
</tr>
<tr>
<td>Abigail Lichter</td>
<td>FAMP</td>
<td>Center for Family Medicine Family Medicine Program</td>
<td>Sioux Falls, South Dakota</td>
</tr>
<tr>
<td>Anthony Loewen</td>
<td>SURG-PRE</td>
<td>University of North Dakota Department of Surgery</td>
<td>Grand Forks, North Dakota</td>
</tr>
<tr>
<td>Teresa Maas</td>
<td>FAMP</td>
<td>St Vincent Hospital and Health Care Center Family Medicine Program</td>
<td>Indianapolis, Indiana</td>
</tr>
<tr>
<td>Kathryn Martinez</td>
<td>FAMP</td>
<td>University of Missouri Hospitals and Clinics Department of Family/Community Medicine</td>
<td>Columbia, Missouri</td>
</tr>
<tr>
<td>Drew Messerschmidt</td>
<td>MEDC</td>
<td>University of Utah Med Center Department of Internal Medicine</td>
<td>Salt Lake City, Utah</td>
</tr>
<tr>
<td>Courtney Nelson</td>
<td>PEDS</td>
<td>Creighton-Nebraska Universities Joint Pediatric Program</td>
<td>Omaha, Nebraska</td>
</tr>
<tr>
<td>Andrew Novick</td>
<td>PTRY</td>
<td>Butler Hospital Brown Psychiatry Program</td>
<td>Providence, Rhode Island</td>
</tr>
<tr>
<td>Seth Parson</td>
<td>PTRY</td>
<td>University of South Dakota</td>
<td>Sioux Falls, South Dakota</td>
</tr>
<tr>
<td>Name</td>
<td>Institution and Program</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----------------------------</td>
<td>---------------------------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wade Paulson (SURG-GEN)</td>
<td>University of South Dakota Sanford School of Medicine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jeremy Pepin (MEDC)</td>
<td>University of Nebraska Medical Center Department of Internal Medicine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sara Pepper (Peds)</td>
<td>University of Iowa Children’s Hospital</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Luke Rasmussen (SURG-PRE)</td>
<td>MedStar Washington Hospital Center</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emily Reinbold (FAMP)</td>
<td>St Joseph Regional Medical Center</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Michael Reopelle (SURG-GEN)</td>
<td>Virginia Mason Medical Center Seattle, Washington</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MacKenzie Reynolds (ANES)</td>
<td>University of Nebraska Medical Center Department of Anesthesiology</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nichole Schafer (EMER)</td>
<td>University of Nebraska Medical Center Department of Emergency Medicine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spencer Schilling (MEDC)</td>
<td>Hennepin County Medical Center Department of Medicine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phillip Schneider (ORTHO)</td>
<td>William Beaumont Army Medical Center</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Margaret Schuneman (OGYN)</td>
<td>University of Iowa Hospitals and Clinics Department of OB/GYN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>William Sheaffer (SURG-GEN)</td>
<td>Mayo Clinic Hospital Department of Surgery</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deanne Tamang (FAMP)</td>
<td>Rapid City Regional Hospital Family Medicine Program</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daniel Terveen (MED/PRE)</td>
<td>University of Iowa Hospitals and Clinics Department of Internal Medicine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emily Thornton (OGYN)</td>
<td>University of Nebraska Medical Center Department of OB/GYN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Miranda Tracy (MEDC Peds)</td>
<td>University of Utah Medical Center Medicine/Pediatrics Program</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Austin Vande Berg (Peds)</td>
<td>Creighton-Nebraska Universities Joint Pediatric Program</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jared Velgersdyk (MEDC)</td>
<td>University of North Dakota School of Medicine Education Center</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nathan Weltman (TRAN)</td>
<td>University of South Dakota Sanford School of Medicine Transitional Year Program</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Christopher Wenger (FAMP)</td>
<td>Rapid City Regional Hospital Family Medicine Program</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heidi Werner (FAMP)</td>
<td>Center for Family Medicine Family Medicine Program</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brian Westerhuis (SURG-PRE)</td>
<td>Western Michigan University School of Medicine Department of Surgery</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vanessa Wookey (MEDC)</td>
<td>University of Nebraska Medical Center Department of Internal Medicine</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

April 2015
QuitLine works even better for spit tobacco users.

In 2013, 300 spit tobacco users signed up for QuitLine services, and 55% reported no tobacco use 7 months after completing our program.

Compare that to 43.2%, the 7-month quit rate for smokers in 2013.

So, don’t be shy about making that referral! Spit tobacco users are eligible for QuitLine services, and they do quit and stay quit with our help... even better than smokers do.

Just something to chew on, in case you didn’t already know...

South Dakota QuitLine
1.866.SD-QUITs www.SDQuitLine.com

Know the facts.

A PUBLIC HEALTH MESSAGE FROM THE SOUTH DAKOTA DEPARTMENT OF HEALTH
Registration Now Open for the 2015 SDSMA Annual Meeting

With presentations, discussions, networking opportunities and social and fundraising events, the annual meeting is a great time to share ideas and learn from fellow SDSMA members, including medical students, residents, active physicians and life members.

The annual meeting is a benefit of your SDSMA membership; most events are included with annual SDSMA dues. View the schedule of events taking place during the 2015 SDSMA Annual Meeting online at www.sdsm.org.

WHAT: 2015 SDSMA Annual Meeting
WHEN: Friday, May 29-Saturday, May 30
WHERE: Hilton Garden Inn, Downtown Sioux Falls

You won’t want to miss the exciting lineup of presentations on May 29. Featured presentations include:

• Winds of Change: Emerging Issues in Payment Models - David Basel, MD, Medical Director of Clinical Quality, Avera Medical Group

• Transforming Care Through a Better Understanding of Our Patients - Daniel J. Heinemann, MD, Chief Medical Officer, Sanford Health

• Improving the Health of the Nation: The Power of the Physician Voice in a Time of Change - Ardis Dee Hoven, MD, Immediate Past President, AMA

• The Future Has Arrived: Medical School Update - Mary D. Nettleman, MD, Dean, USD Sanford School of Medicine

• Meeting the Challenges Ahead: Solutions to Preventing Stress & Burnout and Team-Based Care: Physician Leaders as Key Facilitators - Deb Wood, PhD, Senior Consultant, VITAL WorkLife, Inc.

In addition, don’t miss the golf tournament and the SDSMA Alliance Medical Student Scholarship Fundraiser on Thursday, May 28, the social, reception and banquet on Friday, May 29, and the SDSMA PAC Breakfast featuring Attorney General Marty Jackley on Saturday, May 30. Visit www.sdsm.org for more information.

For Your Benefit: Membership Services

Your membership is voluntary, and we appreciate it. As a member of the SDSMA, you have access to valuable member services and programs. Those include:

• Member advocacy and physician representation
• Legislative
• Legal
• Regulatory
• Peer-to-peer networking events
• Leadership development
• Personal and professional education

• Medical practice management services

Want to know more? Call us at 605-336-1965, visit the SDSMA website, www.sdsm.org or email membership@sdsm.org.

SDSMA Membership Services works hard to ensure that you have the programs and services you want and need, as well as marketing the association to potential new members. We want to hear from you if you have questions, concerns or ideas on how we can serve you better, or if you know of a potential new member. It’s your Association and we’ll work with you to make it the best it can be.

“For Your Benefit” is the SDSMA’s monthly update on programs and services available to physicians through their affiliation with the SDSMA.
ISSUE The Issue Is...

Facts on the Interstate Medical Licensure Compact

Among the bills passed and signed by Gov. Dennis Daugaard at the end of the 2015 Legislative Session was Senate Bill 63 – the Interstate Medical Licensure Compact, which allows states to work together to expedite the licensure process for physicians who seek licensure in multiple states.

The compact represents a dynamic, streamlined, self regulatory system of expedited licensure in which a state can retain all the authority, autonomy and control it currently has, while providing the opportunity for substantial reduction in the time and energy it takes for physicians to be issued a licensed in multiple states. The first section of the compact states, “The compact creates another pathway for licensure and does not otherwise change a state’s existing medical practice act.”

Physician participation in the compact is completely voluntary. In addition, there will be no increased costs to either the state or physicians because licensure fees paid by the voluntary participants will cover any costs associated with the compact.

Source: SDSMA

“The Issue Is “ is the SDSMA’s monthly update on key policy issues of importance to physicians.

Legal Brief Highlight: Anatomical Gifts

Anatomical gifts may be made for the purposes of transplantation, therapy, research, or education. The gift must be made by an authorized person and in the manner required by law. It may be made by the person during his or her lifetime, and in certain limited cases, by persons other than the donor. The person’s legal representative and certain family members may make an anatomical gift after the person’s death. A person may also revoke or amend an anatomical gift, or refuse to make any such gift, during his or her lifetime. Acting upon an anatomical gift in good faith compliance with the law renders the person doing so immune from civil liability or criminal prosecution for doing so.

For more information, download the SDSMA legal brief Anatomical Gifts at www.sdsm.org. Through the SDSMA Center for Physician Resources, the SDSMA develops and delivers programs for members in the area of practice management, leadership and health and wellness.

SGR and GME Among Topics at AMA National Advocacy Conference

SDSMA Delegate to the AMA Herb Saloum, MD, and SDSMA President Mary Milroy, MD, met with South Dakota’s Congressional Delegation in Washington, D.C. during the AMA National Advocacy Conference.

SDSMA Delegate to the American Medical Association (AMA) Herb A. Saloum, MD, and SDSMA President Mary J. Milroy, MD, attended the AMA National Advocacy Conference in Washington, D.C., Feb. 24-25.

There were a number of speakers including the Secretary of the U.S. Department of Health Sylvia Mathews Burwell, former Mississippi Gov. Haley Barbour, and Willie Geist, a co-host on MSNBC’s Morning Joe and the Today show on NBC.

Physicians heard a Capitol Hill briefing and discussed regulatory issues and 21st century health care – specifically the 21st Century Cures initiative which came out of the House Committee on Energy and Commerce to help bridge the gap between medical science and legislative action and regulations that slow progress.

The SDSMA representatives met with Sens. John Thune and Mike Rounds, and a Rep. Kristi Noem staff member to discuss support for the Medicare sustainable growth rate repeal, support for graduate medical education and licensing of team physicians across state lines.

Source: SDSMA staff
SDSMA 2015 Legislative Accomplishments

South Dakota’s 2015 Legislative Session ended March 13, with Veto Day being held on March 30. Legislators brought forward 429 pieces of legislation – 54 had the potential to impact health care delivery in South Dakota. The SDSMA worked on a wide range of issues to protect the practice of medicine and to enhance the delivery of medical care. Some highlights of the important issues the SDSMA was involved in include the following:

Promoting the Art and Science of Medicine

Screening newborns for inherited and genetic disorders. SB 60 updates South Dakota codified law to add inherited and genetic disorders to the infant screening requirements prescribed by the state. The South Dakota Department of Health (SDDOH) already requires screening for certain metabolic disorders and screening for severe combined immunodeficiency (SCID) was added. The SDSMA supported this legislation which was a direct result of the efforts of the SCID work group. Gov. Dennis Daugaard signed SB 60 into law.

Expediting the physician licensure process. SB 63 creates an Interstate Medical Licensure Compact for the purpose of allowing states to work together to expedite the licensure process for physicians who seek licensure in multiple states. The SDSMA supported this legislation, and the bill was signed into law by the governor.

Protecting the patient-physician relationship. HB 1156 proposed that any person found guilty of performing an abortion based on the determination of Down syndrome is guilty of a Class 1 misdemeanor and subject to a civil action by the mother and/or survivors. While the SDSMA does not have a position on abortion, the Association opposed HB 1156 based on the fact that South Dakota already has strict regulations regarding the performance of abortion. HB 1156 was eventually withdrawn by the primary sponsor.

Protecting and Improving Public Health

Curtailing the spread of contagious disease. HB 1058, an act to revise certain provisions regarding contagious disease control quarantine measures, grants the SDDOH the authority to establish and direct a statewide system for communicable disease prevention, control and treatment to include quarantine in response to the recent Ebola outbreak. The SDSMA supported this legislation which was signed by Gov. Daugaard.

Reducing the number of deaths from drug overdose. Any first responder who is trained and acting under a standing order issued by a physician licensed pursuant to chapter 36-4 may possess and administer opioid antagonists to a person exhibiting symptoms of opiate overdose. SB 14, which was introduced on behalf of the Attorney General’s office, was signed by Gov. Daugaard. The SDSMA supported this legislation.

Improving Access to and Delivery of Quality Medical Care

Recruiting and retaining top-quality health care providers for rural communities. Recruitment and retention of rural health care providers continues to be a challenge. HB 1060 will fund reimbursement to family physicians, dentists and physician assistants who have complied with requirements of the state’s recruitment assistance program and will provide assistance for rural communities to recruit health care providers. This bill was signed by the governor.

Other Legislative Issues

Preventing the state from withholding physician license renewal. SB 59 was introduced for the purpose of establishing a state debt collection office. It proposed that no person who owes a debt to the state may renew or obtain a professional license, registration, certification, or permit issued by any agency or board or entity of the state. The SDSMA joined a number of other professional organizations in opposing this legislation which died in Committee.

Medical records and the costs of reproduction. HB 1067 proposed to establish a maximum amount a health provider could charge a patient for reproducing medical records. The SDSMA opposed this legislation which ultimately failed to pass the House because statute already dictates that reasonable copying, postage, and summary costs are recoverable, and because a cost analysis indicated the proposed reimbursement rate was not adequate to cover staff time and other administrative costs.

Protecting our justice system. HB 1103, an act to revise certain provisions relating to comparative negligence, would have eliminated the basic and fundamental step in which every jury has to decide whether or not a plaintiff should even be allowed to seek damages from another. The language proposed in HB 1103 would have abandoned South Dakota’s “slight-gross” law in favor of “pure” comparative fault, and would have lowered the bar for recoveries and increased the potential of frivolous lawsuits. The SDSMA opposed this legislation which failed to pass out of the Senate.

Outcome of Other Priorities

Protecting the public from food borne illnesses. SB 45 will allow the purchase of raw milk directly from the producer without inspection or pasteurization. Before pasteurization of milk began in the U.S. in the 1920s, consumption of raw dairy products accounted for a significant proportion of food borne illnesses. The SDSMA opposed SB 45; however, bill was passed by an overwhelming majority and was signed in law.

Protecting Youth from dangerous cancers. HB 1166 sought to prohibit the use of tanning devices by minors. Frequent exposure to ultraviolet rays for individuals under 35 increases the risk of developing melanoma – the most aggressive and deadliest form of skin cancer – by 75 percent, and melanoma is currently the second most common cancer after thyroid cancer among women in their 20s. While the SDSMA strongly supported this legislation, it did not have sufficient support to pass.

Source: SDSMA
## CME Events

*Continuing Medical Education events which are being held throughout the United States (Category 1 CME credit available as listed)*

<table>
<thead>
<tr>
<th>April 2015</th>
<th>April 2015</th>
<th>April 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>April 10</strong></td>
<td><strong>April 21</strong></td>
<td><strong>April 18</strong></td>
</tr>
<tr>
<td>Surgery Grand Rounds – Trauma Care in the Military Environment</td>
<td>Humphreys’ Forum for Infectious Disease</td>
<td>Professionalism and Social Change</td>
</tr>
<tr>
<td>AMA PRA Category 1Credit(s)” available</td>
<td>AMA PRA Category 1Credit(s)” available</td>
<td>AMA PRA Category 1Credit(s)” available</td>
</tr>
<tr>
<td>Register online: usdssom.learningexpressce.com</td>
<td>Register online: usdssom.learningexpressce.com</td>
<td>Register online: usdssom.learningexpressce.com</td>
</tr>
<tr>
<td><strong>April 10</strong></td>
<td><strong>April 21</strong></td>
<td><strong>April 24</strong></td>
</tr>
<tr>
<td>OB/GYN Grand Rounds – Radiology for Patients from Developing Countries</td>
<td>VA ACLS Course</td>
<td>VA Medical Center CME Activity – You Can Make a Difference: Honoring Veterans Who Experienced Military Sexual Trauma</td>
</tr>
<tr>
<td>AMA PRA Category 1Credit(s)” available</td>
<td>AMA PRA Category 1Credit(s)” available</td>
<td>AMA PRA Category 1Credit(s)” available</td>
</tr>
<tr>
<td>Register online: usdssom.learningexpressce.com</td>
<td>Register online: usdssom.learningexpressce.com</td>
<td>Register online: usdssom.learningexpressce.com</td>
</tr>
<tr>
<td><strong>April 15</strong></td>
<td><strong>April 22</strong></td>
<td><strong>April 28</strong></td>
</tr>
<tr>
<td>VA Tumor Conference</td>
<td>Internal Medicine Grand Rounds</td>
<td>Surgery Education Series – Best Practices for Mentoring Residents in Academic Medicine</td>
</tr>
<tr>
<td>AMA PRA Category 1Credit(s)” available</td>
<td>AMA PRA Category 1Credit(s)” available</td>
<td>AMA PRA Category 1Credit(s)” available</td>
</tr>
<tr>
<td>Register online: usdssom.learningexpressce.com</td>
<td>Register online: usdssom.learningexpressce.com</td>
<td>Register online: usdssom.learningexpressce.com</td>
</tr>
<tr>
<td><strong>April 15</strong></td>
<td><strong>April 23</strong></td>
<td><strong>April 29</strong></td>
</tr>
<tr>
<td>Internal Medicine Grand Rounds</td>
<td>Pediatric Grand Rounds – Using a Strength Based Approach with Adolescents</td>
<td>Internal Medicine Grand Rounds</td>
</tr>
<tr>
<td>AMA PRA Category 1Credit(s)” available</td>
<td>AMA PRA Category 1Credit(s)” available</td>
<td>AMA PRA Category 1Credit(s)” available</td>
</tr>
<tr>
<td>Register online: usdssom.learningexpressce.com</td>
<td>Register online: usdssom.learningexpressce.com</td>
<td>Register online: usdssom.learningexpressce.com</td>
</tr>
<tr>
<td><strong>April 16</strong></td>
<td><strong>April 16</strong></td>
<td><strong>April 30</strong></td>
</tr>
<tr>
<td>Pediatric Grand Rounds – Child Abuse Awareness/Prevention</td>
<td>Pediatric Grand Rounds – Child Abuse Awareness/Prevention</td>
<td>Pediatric Grand Rounds</td>
</tr>
<tr>
<td>AMA PRA Category 1Credit(s)” available</td>
<td>AMA PRA Category 1Credit(s)” available</td>
<td>AMA PRA Category 1Credit(s)” available</td>
</tr>
<tr>
<td>Register online: usdssom.learningexpressce.com</td>
<td>Register online: usdssom.learningexpressce.com</td>
<td>Register online: usdssom.learningexpressce.com</td>
</tr>
</tbody>
</table>

---

**DO YOU HAVE A CME EVENT COMING UP? WOULD YOU LIKE TO HAVE IT LISTED HERE?**

**Contact:** Elizabeth Reiss, South Dakota Medicine, 2600 W. 49th Street, Suite 200, Sioux Falls, SD 57105

Phone: 605.336.1965 • Fax: 605.274.3274

Email: ereiss@sdasma.org
Anatomic Pathology & Clinical Pathology

PHYSICIANS LAB SERVICES
- Dermatopathology
- Cytology
- Surgical Pathology
- Hematopathology
- Clinical Pathology Consultation
- Fine Needle Aspiration Cytology

focused on excellence

1301 S. Cliff Ave., Suite 700 • Sioux Falls, SD • (605) 322-7200 • 1-800-658-5474
www.plpath.com

SIoux FALLS:
Steven P. Olson, MD
Karla K. Murphy, MD
Diane C. Sneed, MD
Rael A. Sulaiman, MD
Bruce R. Prouse, MD
Desiree J. Langel, MD
Michelle J. Bliele, MD
Jacquelyn Choate, MD
Shannon Gabriel-Griggs, MD
Heather Peck, MD
Jenny Starks, PA
Kirsten Whalen, PA
Rachel Young, PA

MICHETTLE
Kim M. Lorenzen, MD

YANKTON
Richard D. Strom, MD

SPENCER, IA
Stephanie Johnson, MD
Lori L. Sinclair, MD

Advanced technology
powered by human touch

Sioux Falls Client Support & Laboratory
(605) 322-7200 • 1-800-322-7547

Rapid City Client Support & Laboratory
(605) 402-4817 • 1-800-322-7547

sanfordlaboratories.org

SANFORD®
Laboratories
MAYO CLINIC HEALTH SYSTEM is a family of clinics, hospitals, and other health care facilities serving over 70 communities in Minnesota, Iowa, and Wisconsin. Sharing Mayo Clinic’s primary value of “the needs of the patient come first,” Mayo Clinic Health System links the expertise of Mayo Clinic in practice, education, and research with the health-delivery systems of our local communities. Today, more than 1000 physicians practice in the health system. We are seeking full time Board Certified/Board Eligible Family Medicine Physicians for several of our Wisconsin locations.

Clinic Only Positions (all sites qualify for H1B):

- Eau Claire: phone call of 1:26; 4 ½ day work week; participate in Urgent Care rotation
- Urgent Care (Eau Claire)- shifts are flexible, on average 36 hours/week

Traditional Positions: (90% clinic, 10% hospital, Critical Access Hospital (CAH) locations, established daytime Hospitalist program at most locations. All sites qualify for H1B.)

- Barron: OB/OB optional, site qualifies for J1, Call 1:6 without OB; Call 1:5 with OB
- Chetek: OB/OB optional, site qualifies for J1, Call 1:6 without OB; Call 1:5 with OB; admit to CAH located 15 minutes away
- Rice Lake: OB/OB optional, site qualifies for J1, Call 1:6 without OB; Call 1:5 with OB; admit to CAH located 15 minutes away
- Osseo: Interest in Women’s Health preferred, call 1:4
- Bloomer: Traditional, call 1:7
- Menomonie: OB/OB optional, call 1:10

If you wish to learn more or to express interest in these positions, contact Karly Wallace Toll Free: 1-800-573-2580; email: wallace.karly@mayo.edu; or fax: 715-838-6192.
Looking for a better way to manage risk?
Get on board.

At MMIC, we believe patients get the best care when their doctors feel confident and supported. So we put our energy into creating risk solutions that everyone in your organization can get into. Solutions such as medical liability insurance, physician well-being, health IT support and patient safety consulting. It’s our own quiet way of revolutionizing health care.

To join the Peace of Mind Movement, give us a call at 1.800.328.5532 or visit MMICgroup.com.
WHY CHOOSE US?

5 Great Reasons to Choose Physicians Vein Clinics!

1. **99.9% Success Rate.**
Physicians Vein Clinics has performed thousands of outpatient vein procedures with a nearly 100% success rate. As a private clinic specializing only in veins, you will receive the most advanced levels of care using minimally invasive technology and no general anesthesia.

2. **FREE Ultrasound Screening.**
Many vein complications go beyond varicose veins to deeper problems below the surface. Physicians Vein Clinics offers a FREE ultrasound screening for anyone with the following ongoing symptoms:
   - Leg aching
   - Heaviness
   - Muscle cramping
   - Leg fatigue
   - Restless Legs Syndrome
   - Ankle or leg swelling
   - Itching and burning
   - Skin discoloration
   - Ulcers of the skin
   - Eczema on the lower legs
   - Phlebitis (blood clots)

3. **Comprehensive Vein Treatments.**
Physicians Vein Clinics will customize the right treatment plans for you. The specialized clinic provides all levels of care — from complicated venous issues to surface spider veins.

4. **Medical Expertise.**
Owner and Medical Director Lornell E. Hansen II, MD, is one of the area’s leading experts in laser technology and is continually performing research in the area of venous medicine, with over 2,500 vein procedures. Jeffrey Heier, MD, brings 15 years of acute care expertise to the Physicians Vein Clinics team.

5. **Insurance Coverage.**
Most procedures performed at Physicians Vein Clinics are covered by insurance. We will determine if you qualify for coverage through our free screening.

If you need help with your varicose veins, call us today at **800-VEIN DOC**

Lornell Hansen II, MD
Owner/Phlebologist

Jeffrey Heier, MD

800-VEIN-DOC » www.physiciansveinclinics.com