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Cover photo by Mark Hennies: “This photo was taken in our backyard, ‘The Bird Sanctuary,’ in Canton, South Dakota, where we had enticed an abundance of Bluejays with peanuts and sunflower seeds. They continued to visit us throughout the winter.”
Should I Invest the Money I Am Saving for a Future Purchase?

MATT MOKLESTAD, CFP®, MBA, AIF®, Advisor

I am a self-proclaimed member of what I like to call the “Van Clan”. No, I’m not part of the adventurous group of people that travel around the world in campervans. My wife and I just have a plain old minivan that we carry our three kids around in. Although not the coolest of vehicles, I’ll admit that it’s extremely practical, and the sliding doors are nice. However, our van keeps having issues, and we are probably going to have to replace it within the next few years.

Consequently, we have begun to set aside dollars for this future purchase, which brings up the question: “Should we invest this money?” We often get this question from clients, and our answer is usually the same; it depends.

When it comes to saving and investing, a lot depends on your time frame. A general rule of thumb is that you shouldn’t invest in stocks if you need the money in five years or less. Five years is still a relatively short time period for something as unpredictable as the stock market, so you may want to be even more conservative. The last thing you want is for there to be a market downturn without enough time for your investments to recover before you need the money.

Question: “What about investing in fixed income for shorter-term needs?”

Again, it depends. I recently wrote a blog about the two primary characteristics we focus on when choosing the bond funds in our portfolios; maturity and credit. Both are important to consider because the longer the maturity and the lower the credit quality, the more volatile the holding will be.

Here are a few thoughts on investing in fixed income for short-term cash needs:

- Overall, stick with high-quality bonds. Lower quality bonds, which some advisors refer to as high yield or “junk” bonds, tend to be riskier and more correlated with equity markets, meaning they will likely go down as stocks fall.
- Short-term (1-2 years) cash needs are best met with short-term bonds, because of their lower volatility.
- Intermediate-term needs (3 years and beyond) may be better met with longer, intermediate-term bonds.

Some investors like to match their time frame with the maturity of an individual bond. For example, if you know that you have a liability coming due in three years, you could buy a bond that matures in three years to match the liability. However, there are other considerations involved in buying individual bonds, like liquidity, lack of diversification, and potentially higher transaction costs to name a few. For short-term cash needs we prefer to use either money market funds (cash) or bond funds with a duration closely matched to the investment time frame. This provides diversification and daily liquidity, often at a very low cost.

So how do you think my wife and I should invest the money we are saving for a new vehicle? Because our time frame is short (the van may stop running in three years or less!), we have opted to save this money in short-term high-quality bond funds.

Everyone’s situation is different, and there often are many things to consider before making an investment decision. It’s always a good idea to review your financial plan with your financial advisor before making an investment decision.
Holiday Greetings! Wishing you and your family health, happiness, and a joyous holiday season.

The Christmas season is one of my favorite times of the year. This is in large part to several of the customs and traditions in which we participate during the Christmas season. We are surrounded by shimmering lights, music, and amazing treats. Each family and community adds their own twist and style to these traditions. I especially enjoy the school programs, local concerts, holiday movies, and Christmas parties. Depending on the type of event, I may even sport an ugly Christmas sweater. Throughout the years these traditions have created special times that I have enjoyed with family and friends.

One “tradition” in medicine that is coming under increased scrutiny is the prescribing of opioids for acute pain. “Traditionally” patients were prescribed large quantities of pills and relatively high doses for acute pain. This includes acute post-surgical pain, emergency depart- ment visits, trauma, and dental procedures. Recent CDC evidence demonstrates a direct relationship between the duration of the initial prescription and the risk of ongoing opioid use. Specifically the likelihood of chronic opioid use and/or dependence increased with each subsequent day of opioid use. When an individual receives an initial 30-day prescription there is a 30 percent likelihood that they will remain on the opiate one year later.

Our challenge is to provide the necessary care for patients in need, specifically for patients with acute pain after surgery or trauma. However, in doing so, we need to reduce the potential for long-term opioid use, dependence and abuse. Essentially, we need to provide effective pain control for the shortest amount of time necessary. This means the days of 120-240 pill scripts for acute pain and post-surgical pain need to fall by the wayside as we change our practice patterns to include tighter surveillance, with fewer pills being initially prescribed, while scheduling post-surgery follow-up appointments within a shorter timeframe.

In 2015, the SDSMA created and published guidelines for chronic non-cancer pain. You can find these guidelines at sdsma.org. These guidelines were endorsed by the South Dakota Board of Medical and Osteopathic Examiners. There are also South Dakota administrative rules for Standards for Medical Records When Prescribing Controlled Substances for the Treatment of Chronic, Non-Cancer Pain.

While the CDC has published acute pain guidelines, South Dakota and the SDSMA have not. However, currently the SDSMA is working on developing acute opioid guidelines. Anticipate a white paper to include these guidelines in 2019. Items that this will include the ladder of pain control concept, non-pharmacologic methods, non-opioid analgesics, and dealing with patients in rural settings. More specifically the guidelines will address smaller quantities of pills following procedures and surgeries. This range is typically in the 5-10 day range. This mirrors what other states are doing with “5-alive” or similar programs.

We will also need to become familiar with the use of modalities (heat, ice, physical therapy), and non-ophiate medications that can control pain alone or reduce opiate dosages when used together. This will certainly involve patient education, counseling, and working with a team to provide options for pain control.

Holiday traditions can be a great way to celebrate the season and to preserve our culture and heritage. Practice traditions unfortunately have led us to a national opiate crisis and generations of entitled pill taking “quick fix” patients. It will take time and significant effort but the SDSMA is up to the task and looks forward to working with you to improve how we approach acute pain.

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The South Dakota State Medical Association (SDSMA) has long been a strong voice in Pierre, sponsoring legislation to improve healthcare in South Dakota. The 2019 SDSMA Advocacy Agenda includes: “Advocate for High-Quality Health Care — Respect Patient Wishes at End of Life.” This editorial is in support of MOST — Medical Orders for Scope of Treatment, South Dakota’s POLST document. I will start by explaining the POLST paradigm, then the work accomplished in South Dakota, and conclude with pending legislation and what is needed to promote these efforts.

“Dad never wanted to be on machines.”
“I wish I knew the right thing to do.”
“Mom never told us what she wanted.”

The quotes above come from patients or families I have met during palliative care consultations to determine goals of care. Families struggle emotionally as they attempt to discern what a loved one would want in a medical crisis. Advance directives, such as the durable power of attorney for healthcare and the living will, do provide some guidance. It is appropriate and encouraged, for any adult, healthy or ill, to complete an advance directive and discuss their wishes with family and trusted individuals. The limitation of advance directives is they are not always actionable in a medical emergency.

Physician Orders for Life-Sustaining Treatment, POLST, was started in Oregon in 1993, to aid in end of life planning. A POLST form “is a portable, actionable medical order that helps ensure patient treatment wishes are known and honored and helps prevent initiation of unwanted, disproportionately burdensome extraordinary treatment.” (POLST Paradigm Fundamental 1). A POLST document communicates a patient's treatment preferences between facilities. These documents follow a model for reviewing desired treatment at end of life. All other states have developed a POLST-type document; and often change the name to meet the particular needs of their community, such as POST (Portable Orders for Life Sustaining Treatment), MOLST (Medical Orders for Life Sustaining Treatment, etc.). South Dakota is the final state to propose portable orders for end of life treatment choices following the POLST Paradigm which will be known as SD MOST – Medical Orders for Scope of Treatment.

Completing a POLST form should be considered for patients who have a terminal illness, a serious illness or fragility when it would not be a surprise if death occurred within a year. A healthcare professional who has knowledge of the patient’s diagnosis, prognosis and treatment options generally initiates the POLST discussion asking the patient to share their values and goals, thereby helping determine treatment preferences, and aligning them with appropriate medical options. This is a process of shared decision making. (POLST Paradigm Fundamentals 3 and 4). This discussion allows patients to choose what treatments they would want in a crisis or what treatments they would consider a burden. (POLST Paradigm Fundamental 6).

LifeCircle South Dakota is a statewide coalition of professionals with the purpose of improving end of life care for citizens of our state through professional education, public education and public policy. The group has been based at the University of South Dakota Sanford School of Medicine since its inception in 1999.

In 2017, the LifeCircleSD advisory board decided to pursue POLST. Professionals from across South Dakota were invited to discuss POLST and what this would mean for the state. Participants were representative of all major health systems, professional organizations, state organizations, government, and interested individuals. The panel has met monthly to learn, listen, discuss, and develop the plan. It became clear that the goal was to go through the legislative process and to have one document for all in
South Dakota. Through these meetings and discussions, the members agreed that, for our state, the best form would be Medical Orders for Scope of Treatment, or MOST.

LifeCircleSD drafted the MOST form for South Dakota. As with the national POLST paradigm, SD MOST is divided into sections. The first part includes:

1. Heading and Explanation. This includes an explanation of MOST, patient information, diagnosis and goals of care.
2. Section A: Code Status options. When a patient has no pulse and is not breathing:
   a. Do CPR, attempt resuscitation, or
   b. DNAR, do not attempt resuscitation.
3. Section B: Medical Interventions. Choice of:
   a. Comfort measures,
   b. Selective treatment, or
   c. Full intervention.
4. Section C: Antibiotics options.
   a. No antibiotics,
   b. Use of antibiotics if life can be prolonged or
   c. Use if antibiotics can provide comfort.
5. Section D: Medically Assisted Fluids and Nutrition (Note: Food and fluid that can be taken in naturally will always be provided). Options include:
   a. No artificial nutrition by tube,
   b. A trial period, or
   c. Provision of long-term artificial nutrition.
6. Section F: Informed Consent complete by and with whom.

7. Signatures. The patient or POA/guardian who signs the document voluntarily consents for SD MOST. These are medical orders and therefore need to be signed by the healthcare provider.

The second part includes instructions and explanations. At the bottom of the page are guidelines for periodically reviewing the document, requiring the name of the reviewer and outcome of the review.

LifeCircleSD encourages you to be informed about SD MOST. Its use provides a way to respect a person’s autonomy to live the life they wish, to direct his/her healthcare, and to complete the form voluntarily. MOST orders are a way for people to live at home or in their community and still be afforded the emergency services if needed, without necessitating unwanted attempts at cardiopulmonary resuscitation. In developing MOST for South Dakota, we acknowledge that allowing a natural death is not killing, to choose a natural death at end of life is not suicide. Nor is it physician aid in dying. It is about allowing a natural death when hope for meaningful recovery does not exist. (POLST Paradigm Fundamentals 2, 11 and 12).

A legislative bill has been drafted and will be introduced in the 2019 South Dakota Legislative Session by Sen. Deb Soholt. As healthcare professionals, we encourage you to educate your legislators and ask them to support the bill.

POLST has existed for over 25 years and is present nationwide. We do not have to re-invent the concept or the paradigm; we just need to do what is right for South Dakotans.

Members of LifeCircleSD are available to provide education in your community. Feel free to contact us through lifecirclesd@usd.edu.

REFERENCES


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The Collaborative Laborist and Midwifery Model: An Accepted and Sustainable Model

By Keely K. Krolikowski-Ulmer, MD; Trevor J. Watson, MD; Elizabeth M. Westhoff, MS, MD; Sarah L. Ashmore, MD; Paul A. Thompson, PhD, PSTAT; and Laurie B. Landeen, MD, MBA, FACOG

Abstract
In 2010, the OB/GYN physicians at this mid-sized midwestern medical center implemented a laborist model on the obstetrics ward. A laborist is a dedicated obstetrician within the obstetric ward who oversees the management of labor and performs deliveries as both the primary physician and also when consulted by other providers, including community obstetricians, family physicians and nurse midwives. In 2014, a collaborative obstetric model was implemented with the addition of an in-house certified nurse midwife (CNM) to assist the laborist in obstetric care. This retrospective study analyzes the impact of these care models on clinical outcomes, including rates of induction of labor, total (primary and repeat) cesarean sections, and vaginal births after cesarean section. The three time periods (i.e., pre-laborist, laborist, laborist plus CNM) periods are compared. Induction rates decreased from 48.6 percent to 46.5 percent to 28.8 percent during the three time periods. Primary cesarean section rates decreased from 15.9 percent to 14.6 percent to 13.6 percent. Total cesarean section rates slightly decreased but this was not statistically significant, going from 28.9 percent to 28.4 percent, to 27.7 percent. Vaginal births after cesarean section increased from 9.2 percent to 12.9 percent to 15 percent. Staff satisfaction was also measured utilizing anonymous surveys during the first two time periods. There was improvement in seven of the eight questions from the pre-laborist to the laborist model. In conclusion, a collaborative care model on the obstetric floor at this Institution has had a positive impact on patient care outcomes and staff satisfaction.

Introduction
The concept of a laborist emerged from the 1990s hospitalist movement and was first suggested in 2002 with the goals of improving physician lifestyle, decreasing burnout, and improving patient care. Laborists are hospital-based obstetrician/gynecologists (OB/GYNs) whose primary role is to care for the hospitalized labor patients along with any obstetric or gynecologic emergencies that arise. Their sole focus is inpatient care, with limited outpatient and elective surgeries. The laborist model has evolved over the years and institutions have developed their own variations, but the main goals remain the same.

Experience over the first two years of the laborist model suggested that laborist’s responsibilities were excessive. In 2014, a collaborative obstetric model (COM) was implemented, with the addition of an in-house certified nurse midwife (CNM) to assist the laborist in obstetric care. The primary duties of the CNM are to triage all patients initially presenting to the birth place and to be readily available for vaginal deliveries when the laborist is busy with another emergency or delivery. The CNM also is responsible for the CNM’s own patient population that present in labor and postpartum rounds.

This retrospective study evaluates the impact of these two approaches (i.e., laborist model, collaborative obstetric model) on clinical outcomes including rates of induction of labor, total (primary and repeat) cesarean sections, and vaginal births after cesarean section. Nursing and non-nursing staff satisfaction was also measured utilizing anonymous surveys at three different time periods: pre-laborist period, laborist period, and collaborative obstetric period.
Methods

In 2010, a laborist model was implemented at Sanford Medical Center, a Sioux Falls tertiary care hospital. Previously, the OB/GYNs delivered the patients they followed for prenatal care during the day, and at night physicians had the option of transferring care to the on-call in-house physician or continuing to manage their patient’s care. With the new model, the laborist on call manages all hospitalized labor patients from all OB/GYN physicians. The laborist also responds to emergencies and consultations from midwives and family medicine physicians. The duties include consultations on inpatient GYN patients, the emergency department (ED), and operating room (OR). Data on clinical outcomes for this retrospective study were obtained from the electronic medical record (EMR) using the Midas data entry system.

The nurse in attendance at the time of delivery is responsible for entering the data and it then goes through two checks, one with the nurse coordinator and lastly with the director, on a monthly basis. Permission to conduct this study was obtained by the Institutional Review Board at our medical center.

The data were obtained from three periods. The pre-laborist period (PLP) occurred from 2008 to 2010, laborist period (LP) from 2011 to 2013, and the collaborative obstetric period (COP) from 2014 to 2016.

Clinical outcomes that were evaluated included the rates of induction of labor (IOL), total (primary and repeat) cesarean sections (C/S), and vaginal births after cesarean (VBAC). Analysis was performed using a generalized linear model analysis of rates in the various time periods. Data from the PLP was presented as yearly counts, while data from the LP and COP was presented as monthly counts. Estimates of rates of the four dependent variables (IOL, primary and total C/S, and VBAC) were computed along with 95 percent confidence intervals (CIs). For comparisons of the different periods, designed contrasts were used.

The director of the birthing unit, along with nursing leadership, developed a questionnaire that was distributed to staff on the unit. Envelopes with the questionnaires were placed at the nursing stations and individuals were asked to complete them and place them in a box anonymously. Surveys were conducted to evaluate staff satisfaction with working conditions, during the PLP and LP (the survey taken during the COP was excluded, as it was not comparable to the previous two surveys due to changes in personal). Eight statements concerning various aspects of the birthing environment were evaluated using a 5-point Likert scale (Figure 1 presents wording of the questions). Questions were posed to nurses and non-nursing staff in other positions, but physicians were excluded. All surveys were de-identified and saved without personal information. Analysis of variance was used to examine each question in the survey.

All computations and tests were performed using PROC GLIMMIX or PROC GLM in SAS 9.4. Statistical significance was determined using $\alpha < 0.05$.

Results

Table 1 presents proportions of the clinical outcomes evaluated over the three periods (95 percent CI values are presented in the Table). Induction rates dropped, primary Cesarean section (C/S) rates were reduced, total C/S rates were unchanged, and VBAC rates increased.
Table 2 shows the means of the staff survey questions answers with associated 95 percent CIs. In addition, significance levels of the differences between the PLP and LP responses are shown. Staff surveys were divided into nursing staff and other non-nursing staff. Increase in value indicated improved satisfaction. Differences between nurses and OP respondents were examined, to determine if interactions (different patterns of change) were observed. Out of the eight questions, one interaction was observed, which is close to a chance result. Thus, responses were pooled.

In examining these responses for the questionnaires, the differences between responses are significant in seven of the eight questions. In all cases, the change is to “more satisfied.”

<table>
<thead>
<tr>
<th>Question #</th>
<th>PLP</th>
<th>LP</th>
<th>Pr &gt; F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Question 1</td>
<td>4.3(4.2,4.4)</td>
<td>4.6(4.5,4.7)</td>
<td>0.0009</td>
</tr>
<tr>
<td>Question 2</td>
<td>4.0(3.9,4.2)</td>
<td>4.4(4.3,4.6)</td>
<td>0.0002</td>
</tr>
<tr>
<td>Question 3</td>
<td>4.2(4.1,4.3)</td>
<td>4.5(4.4,4.7)</td>
<td>0.0008</td>
</tr>
<tr>
<td>Question 4</td>
<td>3.5(3.3,3.7)</td>
<td>3.6(3.4,3.8)</td>
<td>0.5076</td>
</tr>
<tr>
<td>Question 5</td>
<td>3.2(2.9,3.4)</td>
<td>3.9(3.6,4.1)</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Question 6</td>
<td>3.5(3.3,3.7)</td>
<td>4.1(3.9,4.3)</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Question 7</td>
<td>3.5(3.4,3.7)</td>
<td>4.0(3.8,4.2)</td>
<td>0.0005</td>
</tr>
<tr>
<td>Question 8</td>
<td>3.7(3.6,3.9)</td>
<td>4.5(4.3,4.6)</td>
<td>&lt;.0001</td>
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Results at Sanford Health show positive effects of the LM and CNM approaches. Induction rates decreased from 48.6 percent to 28.8 percent. These rates now align with the 2015 rate (24 percent). Under the COM, there are fewer pressures to schedule inductions around clinic, surgery, and personal schedules. The laborist cares for those actively laboring, which takes pressure off the physicians who are not on call. The COM provides further support to the laborist on call. Both total and primary C/S rates are under the 2011 national average. Furthermore, it is anticipated that as primary C-sections continue to decrease, this should naturally lead to a decrease in repeat C-sections as well. Lastly, laborist knowledge about women on the unit may increase the laborist’s comfort to continue with labor progression rather than choosing to perform a C/S. Rates of VBAC increased at this medical center from 9.2 percent to 15 percent with the collaborative obstetric model and are above the 2015 national average (15.0 percent compared to 12.1 percent). The labor model may impact VBAC rates significantly because a physician is continually present within the hospital to respond to obstetrical emergencies for women attempting TOLAC. With a physician continually monitoring laboring patients, the OB/GYNs may be encouraging patients more to attempt TOLAC rather than scheduling an elective repeat C/S. Both nursing and other non-nursing staff satisfaction improved with the implementation of the laborist and collaborative obstetric models.

Discussion

National induction rates increased from 9.6 percent in 1990 to peak at 23.8 percent in 2010. Labor induction leads to increased C/S rates, instrumental deliveries, shoulder dystocia, and need for pain relief compared to patients that spontaneously labor. A majority of these inductions are elective and result in higher costs of care due to increases in medical interventions and hospital time. In 2011, national total and primary C/S rates were 33 percent and 23 percent. These are associated with increased rates of maternal and fetal/neonatal morbidity compared to women who deliver vaginally. Fetal/neonatal morbidity and mortality is higher in subsequent pregnancies due to preterm birth or hypoxic events associated with placental complications and uterine rupture. For VBAC, U.S. rates increased from 1985 (5 percent) to 1996 (28.3 percent), although this also led to increasing rates of uterine rupture with trial of labor after cesarean section (TOLAC). This increased rupture rate resulted in a 1999 American College of Obstetricians and Gynecologists (ACOG) guideline that dramatically decreased VBAC rates with a nadir of 8.5 percent in 2008. The decline in TOLAC rates were affected by professional society guidelines stating that places offering TOLAC need to be equipped with emergency services to respond to obstetrical emergencies, including a physician and anesthesiologist available for emergent C/S deliveries. However, there was an uptick in VBAC rates after a 2010 NIH guideline recommending that institutions offer women TOLAC due to benefits of VBAC verses elective repeat C/S, including lower maternal mortality rates, shorter hospitalization, and decreased deep venous thrombosis, not to mention decreased rates of placenta accreta in future pregnancies.

Table 2. Mean responses to survey with associated p values
addressed, and there is a smoother process with earlier patient discharge. Both the nursing staff and patients benefit from this.

Study Strengths and Limitations
The strength of this study rests in the fact that the laborists and CNMs come from one group and although the practice of obstetrics changed at this medical center, the majority of the providers remained the same. The nursing leadership was also consistent throughout the years of this study, with the same staff satisfaction survey being deployed by them. This facility performs approximately 3000 deliveries per year, giving added strength by the sheer numbers of deliveries performed. One significant limitation to the study may be that in 2013 ACOG released new guidelines for non-medically indicated IOL. For women with no medical indications, early-term delivery was no longer deemed appropriate. This medical center now has a hard stop for all inductions or C/S’s that are scheduled less than 39 weeks. This change in policy could also have impacted the decreased induction and C/S rates. Successful VBAC rates also decline when women are being induced instead of allowing for spontaneous labor. Another limitation is that anonymous staff satisfaction surveys could have been negatively impacted by a high staff turnover rate in the six-year period of distribution. Therefore, staff taking the surveys may not have been consistent or may have not witnessed each step in the changing care models. Future research should be considered to include how other stake holders (including residents, medical students, non-laborist OB/GYNs, family practice and CNM providers) perceive the success of this model, and whether they feel supported or excluded from this integrative approach.

Conclusions
OB/GYN physicians implemented a laborist model at this upper mid-west medical center. In 2014 a collaborative obstetric model was implemented with the addition of an in-house CNM to assist the laborist in obstetric care. Induction and primary C/S rates decreased, while VBAC rates increased. Mean responses from staff satisfaction surveys improved with seven of eight questions (see Figure 1). With the implementation of the collaborative obstetric model, physician lifestyle has improved because physicians who are not the acting laborist, do not have to come in and care for their own patients. IOL rates at this institution reflect the 2015 national average, total and primary C/S rates are below the 2011 national average, and VBAC rates are above the 2015 national average. The OB/GYN physicians at this facility are matching ACOG and SFMF national efforts to decrease C/S rates along with decreasing rates of IOL and increasing rates of VBACs.

The medical model of collaborative care is becoming mainstream and this study reveals that patients have potentially better outcomes when this model is incorporated into daily practice.

Acknowledgements: The authors would like to thank Sanford Women’s OB/GYN physicians and certified nurse midwives, the Birth Place staff, and Sanford Health for allowing us to do this study. Gratitude is also extended to Sanford School of Medicine at the University of South Dakota and Sanford Health and Research for their help and contribution.

References

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Please note: Due to limited space, we are unable to list all references. You may contact South Dakota Medicine at 605.236.1865 for a complete listing.

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Osteomyelitis Pubis Treated with Wedge Resection: A Case Report with 26-Year Follow-up and Literature Review

By Nathan J. Jacobson, MD; Robert E. Van Demark, Jr., MD; and Bradley Reeves, MD

Abstract

Osteomyelitis pubis is a rare orthopedic infection, accounting for less than 1-2 percent of all hematogenous osteomyelitis. Osteomyelitis pubis generally affects children, elderly patients who have undergone genitourinary procedures, and parenteral drug users. Interestingly, cases of acute osteomyelitis pubis have also been documented in previously young, healthy athletes. The diagnosis is often difficult to differentiate from osteitis pubis, which is a self-limiting, painful inflammatory condition affecting the symphysis pubis.

The authors report what is to our knowledge the first case of osteomyelitis pubis in a baseball player and provide a brief review of the literature. The patient was a previously healthy 18-year-old baseball player who presented with left groin pain after presumably straining his groin during a baseball game. Over the next 24 hours, he developed fever, chills, and left lower quadrant pain. He received IV antibiotics and was discharged from the hospital after clinical improvement. However, he returned six weeks later with increased groin pain, a 20-pound weight loss, and an inability to bear weight. Laboratory studies revealed an elevated white blood cell count and a bone scan demonstrated increased uptake at the symphysis pubis. The patient was taken to the operating room where a wedge-resection was performed and tissue cultures grew Staphylococcus aureus, confirming the diagnosis of osteomyelitis pubis.

The patient recovered without complication postoperatively and played four years of college baseball. He was seen at a follow-up appointment 26 years later and demonstrated a normal physical exam with radiographic evidence of regeneration of the symphysis pubis without SI joint instability.

Introduction

The symphysis pubis is a non-synovial ampiarthrodal joint that is situated at the confluence of the two pubic bones. A thick intra-pubic fibrocartilaginous disc is sandwiched between thin layers of hyaline cartilage. Most of the joint stability is due to the inferior pubic (arcuate) ligament. The muscles attaching to this region of the symphysis include the pyramidalis and rectus abdominis cephalad, the gracilis and adductors anteroinferior, and the obturators and levator ani posterior. Although this articulation seldom manifests with significant signs or symptoms and often falls outside the typical complications seen by orthopedic surgeons, the joint is not without clinical significance.

Here we present our management of a previously healthy 18-year-old baseball player presenting with osteomyelitis pubis, a challenging differential from osteitis pubis, who was treated with symphysis pubis wedge-resection and was clinically and radiographically stable at 26 years follow-up.

Case Description

An 18-year-old male baseball player presented in early...
August 1986 with a 12-hour history of groin and abdominal pain. He was seen at his local hospital with acute onset of left groin pain. He played baseball the previous day and felt he had strained his groin. Over the next 24 hours, he became febrile with a temperature of 103 degrees F, chills, and left lower quadrant pain. Initial radiographs (Figure 1), a computed tomography (CT) scan of the pelvis, a bone scan, and an intravenous pyelogram were all normal. A laparotomy was performed for an acute abdomen and a normal appendix was removed. No intra-abdominal pathology was found. Preoperative blood cultures grew *Staphylococcus aureus*. A diagnosis of staph septicemia was made and the patient was started on Oxacillin 2 Gm IV q 6hrs. He became afebrile and was discharged after four days of IV antibiotics on oral antibiotics (Celcor 250 mgs TID x 10 days.)

He presented to our institution six weeks later with a history of increasing pain and weakness over a three-week period. He complained of left-sided groin pain and had lost 20 pounds. He walked with an antalgic, waddling gait, had point tenderness over the symphysis pubis, and had groin pain with passive hip abduction. Radiographs showed bony changes with new bone formation at the symphysis (Figure 2). Sclerotic bone and cortical resorption was noted on the pelvic CT scan (Figure 3). A bone scan showed increased uptake at the symphysis pubis. His erythrocyte sedimentation rate (ESR) was elevated at 120 mm/hr along with an elevated leukocyte count of 11,500/mm with a left shift.

On Oct. 1, 1986 he was taken to the operating room and the symphysis pubis was resected using a wedge-resection technique. A urethral catheter was placed to facilitate surgical exposure. The symphysis was exposed using a Pfannenstiel incision. The superior and inferior arcuate ligaments were preserved. Necrotic bone was present in both the right and left pubis. Approximately 1.5 cm of necrotic material was debrided down to bleeding bone (Figure 4). The soft tissues of the symphysis were closed.
over a drain that was removed after 24 hours. The skin and subcutaneous tissues were closed primarily. The patient began weight bearing as tolerated with crutches. Photomicrographs of the excised bone were consistent with osteomyelitis (Figure 5). Postoperative pelvic radiographs revealed a successful wedge resection, with a pelvic girdle diagram labeled for further clarification of the procedure (Figures 6 and 7). An operative gram stain was negative. Cultures of the necrotic tissue grew pansensitive coagulase positive S. aureus. He was placed on Cefazolin 2 GM IV q 6 hrs and later switched to Cefuroxime 1.5 GM IV TID. He was discharged and continued on IV Cefuroxime 1.5 GM IV TID for a total of six weeks following surgery.

At his six-week follow-up examination, his wound was healed and the patient was ambulating without pain. His
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ESR was 25mm/h and the C-reactive protein (CRP) was 0.6. He was released to full activity with no restrictions. He returned to college athletics and played college baseball for four years.

He was seen in December 2012, 26 years status-post wedge-resection for osteomyelitis pubis. He denied any groin or low back pain. His orthopedic examination was normal with full hip motion, no symphysis pubis pain and no low back pain. He had no limitation in his sporting activities and was not using any pain medication. Radiographs, including single-stance views, showed regeneration of the symphysis without SI joint instability. (Figures 8a-c). There was an incidental finding of asymptomatic femoral-acetabular impingement.

Discussion

Osteomyelitis of the pubis is rare, comprising less than 1-2 percent of hematogenous osteomyelitis. Studies published before 2000 identified young age, intravenous drug use, and genitourinary surgery as key risk factors for osteomyelitis pubis. A study in 2003 of 100 cases of septic arthritis of the pubic symphysis, 97 of which were osteomyelitis pubis, Ross and Hu identified female patients recently having undergone surgery for urinary incontinence, athletes, patients with pelvic malignancies, and intravenous drug users as the four major risk groups. Osteomyelitis pubis has also been documented following blunt trauma, abortion, cardiac catheterization, and suprapubic bladder puncture.

Interestingly, strenuous physical activity has been considered a risk factor. In a report published in 2004, Meirovitz et al. found there were 18 cases of osteomyelitis pubis in young athletes, in which 17 of those cases were male. Further, the authors found a traumatic etiology in just two patients and only three patients had potential sites of infection via skin lesions. Consistent with existing literature, the study found the most common pathogen affecting these athletes was S. aureus. This occurrence in athletes may be due to a stress reaction in the pelvis, decreased immune response in the athletes, or may occur in a pelvis with pre-existing osteitis pubis, which can predispose to osteomyelitis. Further literature suggests that younger patients may be at increased risk for hematogenous bacterial seeding of an inflamed amphiarthrosis due to the ligamentous laxity.

In line with this evidence, we believe our patient had underlying sub-clinical osteitis pubis when he first
presented in early August when he was diagnosed with staphylococcal sepsis. It is thought he acquired his infection during a baseball game the day before he presented. Additionally, histologic examination of the tissue resected during surgery not only revealed an acute inflammatory cell infiltrate consisting of segmented neutrophils, lymphocytes, histiocytes, and multinucleated giant cells consistent with osteomyelitis, but another specimen revealed fibrous tissue consisting of acute and chronic inflammation along with reactive fibroblastic tissue proliferation. Furthermore, a pelvic CT scan taken a week before the wedge-resection was thought to be more suggestive of post-traumatic change than osteomyelitis.

**Epidemiology**

Edwin Beer initially described osteitis pubis in 1924 when he discovered this in patients undergoing suprapubic surgery. Osteitis pubis is the most common inflammatory condition of the pubic symphysis leading to pain in the pubic region, groin, and lower rectus abdominis muscles, but is often undiagnosed. This condition is more prevalent in men ages 30-49, although it can present in any patient demographic. Osteomyelitis pubis is an infectious disease with clinical manifestations similar to those of osteitis pubis and is perhaps one reason why osteomyelitis of the pubis has been infrequently reported. Osteomyelitis pubis can occur concurrently and spontaneously with osteitis pubis. Pelvic osteomyelitis represents 2-11 percent of all cases of acute osteomyelitis, with the os pubis being the least commonly involved bone.

**Etiology**

No single etiologic factor or agent seems to be responsible for all cases of osteitis pubis, and in some patients, no cause for the disease was found. Numerous cases have been reported following urological and gynecological procedures, but also in association with pregnancy, rheumatological disorders, trauma, infection, and athletic activity. Post-traumatic osteitis pubis may result from a single traumatic event, or after repetitive microtrauma encountered by athletes participating in running or kicking.

The precise etiology of osteomyelitis pubis is unknown. In intravenous drug users, an infected synchondritis of the pubic symphysis is felt to be the primary lesion. Outbreaks of staphylococcal disease have been reported in young adults participating in strenuous physical activity. Local trauma lowers the threshold for osteomyelitis and athletes may predispose the pubis to bacterial seeding via repetitive microtrauma. In other risk groups, bacterial seeding of the pubis may occur from transient bacteremia.

There are four patient populations including females having recently undergone surgery for urinary incontinence, athletes, intravenous drug users, and patients with pelvic malignancies who have a higher incidence of osteomyelitis pubis. The offending pathogens are monomicrobial (no specific pathogen predominates), S. aureus, Pseudomonas aeruginosa, and polymicrobial (from fecal flora), respectively. Athletes are typically infected with S. aureus. The most common cause of osteomyelitis pubis is postoperative inoculation, particularly after gynecological and urological surgeries, usually when a technical complication has occurred. Additionally, as is thought to be the case with our patient, inflammation from preexisting osteitis pubis may predispose patients to septic arthritis of the symphysis pubis, if transient staphylococcal bacteremia occurs.
Clinical Features

Many of the initial clinical findings of osteitis pubis and osteomyelitis pubis are similar and overlap. The differential diagnosis between the two conditions can be difficult. The diagnosis of either condition should be considered when a patient presents with pain or pubic tenderness, painful hip abduction, and fever. Most patients report pubic pain, with the most obvious and specific physical exam finding being tenderness of the pubic bone, superior pubic rami, or inferior pubic rami. Additionally, patients usually have pain while ambulating with radiation into the perineal, testicular, suprapubic, or inguinal region. A wide-based gait is commonly seen on physical exam. Patients with osteitis pubis can present with vague unilateral or bilateral complaints of abdominal, pelvic, or groin pain. The clinical symptoms encountered with pubic osteomyelitis include fever with chills, limitations of active hip motion, inability to bear weight, and tenderness over the pubic symphysis. Hip motion is limited and hip abduction is painful. There is local tenderness over the symphysis.

Evaluation

There is often a delay in diagnosis as abdominal findings can sometimes confuse the clinical exam. Laboratory work may be abnormal with an elevated white blood cell count, ESR, and CRP. However, there may be no fever, the white blood cell count and differential may be normal, and ESR may or may not be elevated. CT scans of the pelvis seem to be more sensitive than plain radiography in the detection of osteomyelitis, but less sensitive than radionuclide scintigraphy. In a study conducted by McPhee et al. in 2007, the authors reported that magnetic resonance imaging (MRI) seemed to be the most sensitive technique for evaluating pyogenic infections in the pelvis and concluded that early use of MRI in patients suspected of osteomyelitis pubis can diminish delays in diagnosis, accelerate treatment, and eliminate unnecessary studies and interventions. At the time of our patient’s work-up in 1986, MRI was not yet available.

Radiographs of the pelvis may be normal, even after several weeks of infection, as bony radiographic changes typically lag behind the evolution of the infection. As the infection proceeds, typical findings may be bone rarefaction, osteolysis, and sclerosis. Pelvic radiographs may show irregular borders over the pubic symphysis and rami. Furthermore, varying stages of articular surface irregularity, erosion, sclerosis, and osteophyte formation may be present. These findings are not specific to osteitis pubis and may not be present early in the disease course.

The demonstration of a sequestrum is diagnostic for osteomyelitis pubis on pelvic radiographs. A bone scan may be helpful in making the diagnosis of osteomyelitis, but a definitive diagnosis is made with a positive culture (blood or tissue). Although laboratory studies are not required for the diagnosis of either osteitis pubis or osteomyelitis pubis, to distinguish between the two, a biopsy and culture of the affected area are necessary.

Treatment

Multiple treatment modalities exist for osteitis pubis, while IV antibiotic therapy is the cornerstone management for osteomyelitis pubis. The goal in treating osteitis pubis is to limit inflammation with rest and non-steroidal anti-inflammatory drugs. Glucocorticosteroid injection and/or local anesthetics have been used along with dextrose prolotherapy. Surgery is rarely indicated in this group of patients and should be reserved for patients failing conservative treatment with retractable pain or pubic instability. Most authors would recommend a four to six week course of IV antibiotics for osteomyelitis pubis. Surgical debridement and curettage is reserved for the following conditions: pelvic diastasis, bone necrosis, cystic perforation, pelvic instability and failed conservative treatment.

The first reported wedge-resection technique was described by Schnute in 1961 in a case series of three patients in which he reported dramatic improvement compared to nonoperative treatment. A case series published in 1989 by Grace et al. of 10 patients with osteitis pubis who had undergone wedge-resection concluded that it was a safe and reliable method of excising the involved symphysis pubis in carefully selected patients refractory to nonoperative therapy. Additionally, the study recommended symphyseodesis as a reasonable option should the wedge-resection fail or the pelvis become unstable. Average follow-up time was 92 months.

In 2000, Williams et al. published a case series that suggested arthrodesis of the pubic symphysis had a definite role to play in the treatment of patients with proven osteitis pubis recalcitrant to nonoperative treatment and in whom instability was clearly demonstrated. The authors further postulated that wedge resection may have resulted in increased symphyseal instability in their series of patients. More recently, endoscopic techniques have been described for pubic symphysectomy for treatment of recalcitrant osteitis pubis, with one report of a successful
outcome at one year follow-up. This minimally invasive treatment is a safe and feasible technique for resection of diseased endplates of the pubic symphysis for cases of recalcitrant osteitis pubis. 40,41

Conclusion

Osteomyelitis pubis is a rare orthopedic infection involving the symphysis pubis, which can lead to severe, long-term complications if not diagnosed and treated appropriately. Clinicians should maintain a high degree of suspicion when differentiating this entity from osteitis pubis, which is a self-limiting inflammatory process that often does not require antibiotics or surgical intervention. Diagnosis can be challenging, but tissue cultures often reveal the source of infection, along with radiographic evidence and clinical symptomatology. The treatment of osteomyelitis pubis includes appropriate IV antibiotics, although surgical intervention may be necessary for recalcitrant cases. This case was a wedge-resection operation with a successful 26-year follow-up on a young, previously healthy baseball player with osteomyelitis pubis.

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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.

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Prosthetic Aortic Valve Endocarditis Following Transcatheter Aortic Valve Implantation

By Maheedhar Gedela, MD; Anup Shrestha, MD; Tomasz Stys, MD; and Adam Stys, MD

Abstract

Infective endocarditis after transcatheter aortic valve implantation is a life-threatening complication, resulting in high in-hospital and one-year mortality. With the ongoing evolution of transcatheter aortic interventions, the proportion of endocarditis cases encountered by health care providers will continue to rise. Early diagnosis of infective endocarditis is of paramount importance to institute appropriate treatment with antibiotics and/or surgery to avoid negative clinical outcomes. In this review, we outline our experience with two cases of infective endocarditis following transcatheter aortic valve implantation and briefly review the literature on the incidence, microbiology, diagnosis, and management of this condition.

Introduction

Prosthetic valve endocarditis (PVE) following transcatheter aortic valve implantation (TAVI) is an infrequent but serious complication. The incidence of post-TAVI PVE has been reported to be less than 1 percent, close to PVE following surgical aortic valve replacement (SAVR), and in-hospital mortality reaches up to 30 percent.1,2 The most common presenting symptoms are fever and heart failure in this group of patients. However, some may present with wide-ranging symptoms such as frailty or weight loss, and therefore, there is a low threshold for the evaluation of endocarditis. The most common microorganism causing post-TAVI PVE varies from study to study, but enterococci have been observed as a predominant microbiological etiology.1 The recognition of the vegetations and associated findings of PVE might be difficult with echocardiography, so advanced imaging techniques may need to be considered. Management should be tailored case by case, and most patients will undergo conservative antibiotic treatment due to the prohibitive risk and inherent challenges associated with the redo surgery. In this article, we describe our experience with two cases of post-TAVI PVE encountered in our clinical practice and briefly review the literature on this condition.

Case 1

An 87-year-old male with a history of TAVI with a 29 mm Edwards S3 valve, coronary artery disease (CAD), heart failure (HF) with mid-range ejection fraction (EF) of 45 percent, and polymyalgia rheumatica (on chronic steroid therapy) was transferred from an outside facility after he was found to have Streptococcus sanguinis bacteremia. He initially presented with altered mental status and presumed pneumonia. His blood cultures showed two out of the two bottles as positive for S. sanguinis bacteria. A transesophageal echocardiogram (TEE) showed 1.5 cm of vegetation on the prosthetic aortic valve (Figures 1 and 2). The patient...
had undergone TAVI 11 months prior to this hospitalization. After completing six weeks of ceftriaxone and gentamicin, he had another TEE, which showed a decrease in the size of the vegetation (Figure 3).

Case 2
A 76-year-old male with a history of TAVI with a 29 mm Edwards S3 valve, CAD, HF with reduced EF and now with an improved EF of 40-45 percent, ischemic cardiomyopathy status post-implantable cardioverter-defibrillator, and stage 3 chronic kidney disease was admitted to the hospital following episodes of dizziness leading to falls and bright red blood in his stools for two days. His lab work was significant for low hemoglobin (5.6 g/dl) and creatinine (3.69 mg/dl). He underwent a transthoracic echocardiogram (TTE) due to the falls, fever of 101 degrees F and new-onset atrial fibrillation, in addition to his complex cardiovascular history. One out of the two blood cultures were positive for methicillin-sensitive Staphylococcus aureus. The TTE revealed a poorly defined mobile echo density on the prosthetic aortic valve for probable vegetation versus thrombus. The patient then underwent a TEE to better define the TTE findings given his prosthetic valve history, and this confirmed the valve vegetation (Figures 4 and 5). The patient had undergone TAVI 17 months prior to this presentation. He was started on ceftriaxone, rifampin, and gentamicin for a total of six weeks. The patient was then transitioned to hospice care after a few weeks due to the worsening of his renal function and disseminated intravascular coagulation.

Discussion
Based on the latest Valve Academic Research Consortium-2 consensus document, endocarditis following
TAVI is defined as any one of the following: meeting Duke endocarditis criteria; proof of an abscess, paravalvular leak, pus, or vegetation manifested as secondary to the infection by histological or bacteriological studies during a reoperation; or findings during an autopsy of an abscess, pus, or vegetation involving a repaired or replaced valve. The poor prognostic factors for six-month mortality were heart failure, periannular complications, and nonenterococcal/streptococcal etiology.

Although it might be counterintuitive to assume a lower incidence of post-TAVI PVE given the less invasive nature of percutaneous valve implantation, some factors might be at play in contributing to PVE: the probability of less sterile conditions in a catheterization laboratory compared to an operating or hybrid room; the large size of the metal prosthesis; the probability of leaflet damage during transcatheter valve preparation and loading; and residual AR leading to endothelial damage. Moreover, these patients carry the highest risk profile due to their advanced age (greater than 80 years) and associated comorbidities such as DM, immunosuppressive conditions, cancer, and chronic renal failure. Few case studies have postulated the occurrence of post-TAVI PVE due to the lack of administration of peri procedural antibiotic prophylaxis during dental procedures and colonoscopies. Based on a review of the available literature, the presumed sources of post-TAVI PVE were respiratory infections, dental interventions, skin infections, and urological or gastrointestinal infections; however, the source of the infection was unclear in nearly 50 percent of the patients. The most common initial presenting symptoms are fever and heart failure. Although the "typical microorganisms" (Streptococcus viridans, Streptococcus bovis, the HACEK group, Staphylococcus aureus, and enterococci) are involved in the pathogenesis of post-TAVI PVE, recent studies have reported that enterococci was predominant among the patients, especially in those cases diagnosed within the first two months post-TAVI. Staphylococci and enterococci are the predominant organisms post-transapical TAVI and post-transfemoral TAVI, respectively.

The diagnosis of post-TAVI PVE poses a significant challenge because of the nonspecific and variable symptoms upon presentation, increased administration of empiric antibiotic therapy in the elderly, the lack of typical echocardiographic features of PVE, and the difficulty in ascertaining new valvular regurgitation from prosthetic valvular leaks and dehiscence, all of which may lead to delays in diagnosis. TEE is helpful in the diagnosis, identification of complications, management, and follow-up of these patients after treatment. Notably, the valve prosthesis vegetation was observed only in approximately 50 percent of the patients diagnosed with post-TAVI PVE. Due to the shadowing artifact of the prosthetic valve and native aortic valve calcifications, it might be difficult to notice small vegetation and abscesses. Periannular complications, fistula formation, and the involvement of other valves (satellite endocarditis) were observed more in post-TAVI PVE compared to surgical PVE. When the initial echocardiography is negative for PVE, other modalities such as three-dimensional TEE, F-fluorodeoxyglucose positron emission tomography/computed tomography, multislice computed tomography, and labeled leukocyte scintigraphy could be considered in the detection of PVE and associated complications.

There is no established consensus or guidelines to date on the management of PVE in TAVI patients. A multidisciplinary approach should be considered early for the most favorable results. A majority of the patients were treated conservatively with antibiotics alone targeting the microorganism (for at least six weeks) due to the high surgical risk and some underwent surgery in most of the studies. The rate of valve explantation in post-TAVI...
PVE was less than with native and surgical prosthetic valve endocarditis; however, this might be due to the baseline high-risk profile for the patients undergoing TAVI and technical challenges with the reintervention on a large stent frame. Of note, one retrospective study showed a high mortality rate among patients with heart failure who did not undergo surgery compared to those who underwent surgery. In selected cases, a valve-in-valve procedure could be considered after the complete clearance of the microorganism with antibiotics. Further studies are needed to assess the usefulness of appropriate antibiotic prophylactic measures given the occurrence of post-TAVI PVE in relation to the timing of health care-related procedures. Perioperative antibiotic prophylaxis should be strictly considered in TAVI patients who are undergoing high-risk procedures.

**Conclusion**

PVE after TAVI should be identified promptly due to the high mortality rate. Antibiotic prophylaxis should be considered strongly prior to dental procedures and other invasive procedures when indicated due to advanced age and other associated immunocompromised conditions that could lead to PVE in these patients. The decision on management — whether conservative or surgical — should be made on an individual basis.

**REFERENCES**


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Work-Life Balance in Women Physicians in South Dakota: Results of a State-Wide Assessment Survey

By Nicole M. Clemen; Bryan C. Blacker, MD; Miranda J. Floen, MD, PhD; William E. Schweinle, PhD; and Jody N. Huber, MD, FAAP

Introduction

Burnout is a topic of much discussion in the field of medicine today. In the U.S., the rate of burnout among physicians in 2016 is 54 percent, compared to 45 percent in 2011.1 When comparing physicians to the general population, doctors are more likely to experience symptoms of burnout (37.9 vs. 27.8 percent) and be dissatisfied with work-life balance (40.2 and 23.2 percent).2,3 An imbalance between work and home life is associated with decreased job satisfaction, productivity, and burnout.4,5 Burnout involves emotional exhaustion, depersonalization, loss of meaning in work and job satisfaction, and a low sense of personal accomplishment.6-8 The effects of burnout include a decrease in professionalism, negative influence on quality of patient care, increased risk for medical errors, lower patient satisfaction, and longer post-discharge recovery times.2,6-8 Female physicians are twice as likely than their male colleagues to experience burnout and more likely to have high levels of emotional exhaustion and more depressive symptoms.7,9 Characteristics associated with increased risk of burnout in physicians include younger age, female gender, single relationship status, lack of children, and greater student loan debt.10 Burnout can also lead to the devastating occurrence of suicide. Male physician suicide rates are 40 percent higher than the general population, and female physician suicide rates are

Abstract

Introduction/background: There is currently a high prevalence of burnout among women physicians. This is associated with factors related to job satisfaction and work-life balance. Female physicians are more likely to experience burnout and related negative consequences. Preventing burnout among physicians improves wellness in both doctors and patients. The goal of this study is to determine burnout among physicians in South Dakota and identify possible burnout prevention strategies to improve work-life balance.

Methods: South Dakota State Medical Association (SDSMA) physician members were emailed a survey with anonymous responses in November 2017 and January 2018. Survey questions were based on a 5-point Likert scale with two open-ended questions which were evaluated by qualitative measures.

Results: A total of 1,989 surveys were administered with 433 responses (21.8 percent). Of the 433 survey responses, 133 individuals provided additional comments regarding work-life balance. A slender majority of male and female physicians are satisfied with their work-life balance (54.7 and 55.4 percent, respectively). Both men and women physicians would choose the same specialty again (78.2 and 74.8 percent, respectively) as well as choose to be a physician again (79.4 and 78.7 percent respectively). Overall, women suggested more time for administrative tasks, more flexible hours, offering daycare at the hospital (p<0.0002, p<0.0004, p<0.0001, respectively).

Conclusions: Possible workplace interventions to prevent physician burnout include hiring scribes, allocating time for administrative work, and allowing less work hours. Personal strategies aiding in work-life balance include utilizing daycares, having supportive families, and hiring individuals to assist in daily home tasks.
130 percent higher than general population. Women are more likely to struggle with obtaining balance between their work and personal lives, and this is also true for female doctors. The reality is that burnout can have negative consequences on more individuals than just the physicians experiencing it.

Burnout can lead to a decrease in productivity, high turnover, and early retirement. This physician loss is especially detrimental to the rural population. Nationally, there are 6,100 federally designated primary care Health Professional Shortage Areas (HPSAs) where almost 67 million Americans reside. In the state of South Dakota, 53 of 66 counties are categorized as health professional shortage areas. Furthermore, there is an estimated 8,000 additional healthcare workers needed for this state by 2020. At the same time, the physician workforce is also changing. Of the 771,732 physicians practicing medicine in the U.S., approximately 36 percent are female. This number continues to grow as nearly 50 percent of medical school matriculants, graduates and residents being female. Within the state of South Dakota, there are 1,882 practicing physicians, 511 (27 percent) of whom are females. As the percentage of female physicians grows, it is imperative to ensure they are able to balance their home and work lives. Addressing the unique desires of female physicians can assist in the recruitment and retention of qualified healthcare providers to meet the needs of rural South Dakota.

While there is substantial literature in regards to burnout, there is a paucity of research regarding strategies to reduce burnout and work-life balance and wellness. Boles et al. explored job satisfaction of rural physicians in South Dakota and determined that “connectedness” correlated with an increase in job satisfaction. By investigating factors that influence work-life balance, there is a potential to decrease the experience of burnout in physicians.

The goal of this study is to identify the satisfaction of South Dakotan physicians and to establish possible interventions to assist physicians, particularly female physicians, in balancing home and work lives. Possible workplace interventions to prevent physician burnout include hiring scribes, allocating time for administrative work, and allowing less work hours. Personal strategies aiding in work-life balance include utilizing daycares, having supportive families, and hiring individuals to assist in daily home tasks.

Methods
Participants
This is a prospective study involving survey data analysis. Eligible subjects were identified as physician members of the South Dakota State Medical Association (SDSMA). The SDSMA provided an email link to the survey. The authors did not have contact with individual participants and all responses were anonymous. Exclusion criteria were non-members of the SDSMA. The University of South Dakota granted IRB approval for this study.

Survey
The survey consisted of 15 questions: seven basic demographic questions, five regarding attitudes toward career, two check lists related to strategies and interventions for work-life balance, and one for open comments regarding current work-life balance. For statistical analysis, specialties were combined into family medicine; general surgery, surgery subspecialty, and anesthesiology; internal medicine; obstetrics/gynecology; pediatrics and pediatric subspecialty; subspecialty and neurology; and other (emergency medicine, pathology, radiology, and other). The hours worked each week were combined into part time (part time less than 40 hours and part time greater than 40 hours), full time (40-80 hours and greater than 80 hours), and not active. Relationship status was assessed as single (single, widowed, or divorced) and in a relationship (married or domestic partnership).

There were two open-ended questions at the end of the survey titled “other” to share additional strategies utilized for successful work-life balance and “share additional comments regarding your home and work life.” These were analyzed using qualitative methods. Comments were extracted from the survey and placed into a shared document. There was independent review of the data for codes and themes by four reviewers providing validation comment data. Any discrepancies in classification were resolved through discussion between the four reviewers.

Statistical Analysis
Associations between variables were evaluated using Chi-square tests in SAS software version 9.4 (SAS Institute Cary, North Carolina).

Results
The SDSMA administered an online anonymous survey in November 2017, to all members of the SDSMA. In the first distribution, 1,989 surveys were administered with
239 (12 percent) responses. A second request was administered in January 2018, to the same members as previous, with 194 (9.8 percent of surveys sent) responses, giving a total of 433 (21.8 percent) responses. Basic demographics are summarized in Table 1. A summary of survey responses regarding attitudes toward career is found in Table 2. Survey responses regarding strategies and interventions are summarized in Table 3. Out of the 433 survey responses, there were 95 individuals who shared additional strategies used and 133 individuals who provided additional comments regarding work-life balance. A summary of all open comments are found in Table 4. The most common themes in additional strategies were documentation, schedules, taking call, and part-time work. The majority of open comments for work-life balance included prioritizing schedule, work environment, family support, and paperwork.

Demographics
Weekly hours worked, call coverage, relationship status, family status, and population of practice location are all summarized in Table 1. There was no association between satisfaction with work-life balance and specialty. Female physicians were predominant in family medicine, internal medicine, obstetrics/gynecology, pediatrics, subspecialty, and other (p<0.0001, Table 5). Female physicians were more likely than male physicians to take call while working part time (p<0.04). A significant number of physicians report being in a relationship, where 92.4 percent of males and 83.7 percent of females were in a relationship (p<.0090). However, there was no association between population of area served and gender, relationship status, specialty, work-life balance, or hours worked each week. Interestingly, there was no correlation between population of practice area and taking call (p<0.39). The majority of physicians had children which was not correlated to hours worked each week, satisfaction with work-life balance, or gender.

Satisfaction
The likelihood of choosing the same specialty

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The majority of the responding physicians in South Dakota (55.9 percent) were satisfied with

and again is summarized in Table 2. Both men and women physicians would choose the same specialty again (78.2 and 74.8 percent, respectively). Both men and women would choose the same specialty again and were also satisfied with work-life balance (p<0.0045 and p<0.03, respectively). In addition to choosing the same specialty again, both male and female physicians would also choose to be a physician again (79.4 and 78.7 percent respectively). As summarized in Table 5, there was a significant number of physicians feeling guilty for missing family events for work and missing work for family events, with more women feeling guilty for each (p<0.0082 and p<0.0001, respectively). There was no difference in satisfaction with work-life balance between men or women (p<0.95). A slight majority of male and female physicians are satisfied with their work-life balance (54.7 and 55.4 percent, respectively).

Strategies for Balance
Male physicians were more likely to have a spouse that does not work compared to female physicians (p<0.0001); while female physicians were more likely to employ a nanny and/or housekeeper (p<0.0008 and p<0.0001, respectively). Physicians in a relationship were more likely to not use a strategy for work-life balance (p<0.0001). There was no correlation with job sharing, daycare, family members helping care for children, employing housekeeper, and work-life balance. There was a lack of satisfaction with work-life balance for those who want more advanced practice providers, more time dedicated for administrative work, and more flexible hours (p<0.01, p<0.003, and p<0.035, respectively). Male physicians were more likely to answer ‘no interventions’ by the workplace or ‘no concerns’ (p<0.0001). Overall, women wanted more time for administrative tasks, more flexible hours, offering daycare at the hospital; men had none/no concerns (p<0.0002, p<0.0004, p<0.0001, and p<0.0001, respectively, Table 6).

Discussion
Satisfaction
The majority of the responding physicians in South Dakota (55.9 percent) were satisfied with
work-life balance, suggesting a sufficient satisfaction with both career and specialty choice. However, it is possible that even with this high satisfaction, some physicians could still experience burnout. Hoff and Scott found that even with high career and specialty satisfaction, 45 percent of physicians still experience burnout.11 More research is therefore needed to determine the specific areas influencing career satisfaction that are protective against burnout. Additionally, this work will need to delineate gender differences in career satisfaction and work-life balance to address specific interventions for female physicians in South Dakota.

Specialties
This study found a significant distribution of genders between specialties in South Dakota. Women were much more likely to be in primary care specialties. There was no association between satisfaction with work-life balance and specialty in this study. This differs from a study which found that physicians working in dermatology, pathology, general pediatrics, and preventative medicine had the highest satisfaction, and those working in general surgery, general surgery subspecialties, neurology, general internal medicine, and obstetrics/gynecology had the lowest rates.2,20 In addition to satisfaction with work-life balance, specialty satisfaction was high across all specialties in our study.

Guilt for Missing Events
Although there was no way to attribute the open comments to males or females, there was a common theme of physicians feeling that they missed out on certain aspects of their children’s lives due to career choice. Regret for not spending more time with children and other family members was a recurring sentiment. A large majority

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<td>Documentation</td>
<td>The burden of paperwork takes away from time with patients. EMR is difficult to work with, and scribes would help with the load.</td>
<td>“I spend at least 10 hours each weekend doing EMR charting/review. This is all done at home during my ‘family time’. It would be nice to have a more efficient EMR, protected time for charting, or a scribe to assist. It has the largest negative impact on quality of life for me.”</td>
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<td>Schedule</td>
<td>Prioritizing and organizing my schedule helps me get more time with family.</td>
<td>“My work has been extremely flexible and accommodating to any changes in schedule that I have wanted to make”</td>
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<tr>
<td>Call</td>
<td>Taking call makes balance more difficult, especially in rural areas.</td>
<td>“The hospital required physicians to take ER call in order to have admitting privileges. This led to me eventually giving up hospital work in order to have more control over my personal life”</td>
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<td>Part Time</td>
<td>I would prefer to work less to have more time for my family.</td>
<td>“Offer options for working less. I have straight up worked not back up call, more than 80 hours in a week. I would be much happier working closer to 40 hours and being paid less”</td>
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Share Additional Comments

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<td>Prioritize schedule</td>
<td>In order to achieve balance, it is important to be able to prioritize in each moment.</td>
<td>“Do whatever you wish while you still can. Children grow up. We and our spouses have health problems even die, producing the ‘If we only had done…while we could have…’ Save and plan for the future, but live in today. That produces no regrets and prevents burnout. Never take a job/position because of the pay. Only accept jobs/positions you will enjoy. Physicians will always earn enough to live well. My best advice ever: If you accept a new responsibility, you must consciously select an activity to delete in your life. Otherwise the time and stress will come out of family time.”</td>
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<td>Work environment</td>
<td>My colleagues and work organization affect how I am able to balance my life.</td>
<td>“I found a practice with partners that are very understanding about family life/obligations. Choose your practice setting wisely and life will be great!”</td>
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<td>Supportive family</td>
<td>Without a strong support system, I would not be able to achieve balance.</td>
<td>“I am lucky in that I have an extremely supportive family (amazing husband who is a great dad), my husband has a more flexible job, and that I like what I do.”</td>
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<td>Paperwork</td>
<td>Administrative and documentation tasks take away from offering the best patient care.</td>
<td>“All of us who trained in the last century had an idea that dedication to the patient was first and foremost. That has changed. Dedication to the paperwork and administration seems to be more important than the patient to the powers that be. With this in mind, it is difficult to give up something of ourselves for something less altruistic.”</td>
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of women, 88.8 percent, agreed or strongly agreed with feeling guilty for missing family events for work. This correlates with the most common reason women want to work less hours and spend more time with family.20,21 Less physicians felt guilty about missing work for home. Interestingly, men were much more likely than women to disagree or strongly disagree with guilt for missing work for family events. A majority of women felt guilty when this occurred. Women physicians tend to express more empathy and have a greater difficulty separating home from work because they tend to view their lives as more integrated.10 They are also more likely to suffer from high levels of emotional exhaustion.1 They large amount of women physicians experiencing guilt is concerning as it could correlate with increased emotional exhaustion and experience of burnout.

Support from Colleagues and Family
Working with colleagues had a strong impact on the quality of a physician’s work. Colleagues were either supportive of each other, or there was dissatisfaction in the workplace derived from the lack of understanding from fellow physicians. Having supportive colleagues is a personal predictor of career satisfaction.21 Promoting understanding within the workplace can greatly improve the struggle of individual physicians. Without support from work and home, women physicians are more likely to experience role strain and overload and were more susceptible to burnout with subsequent health problems. Increased connectedness can also occur through technological means such as Facebook groups and decrease the perceived isolation experienced in burnout.10 Many comments in this study included the idea that a physician could not have had a successful career without the overwhelming support from a spouse. Support from family and colleagues can reduce the occurrence of burnout by 40 percent.22 Women physicians are usually less likely to be married than physicians who are men.1 Although this association was not found in the current study, 83.7 percent of females were in a relationship. Since being in a relationship has a positive effect for preventing burnout, this is encouraging for the female physicians in South Dakota.

Electronic Health Records
Dissatisfaction with electronic health records (EHR) was frequently mentioned in the comment portion with desire for more clerical help. It is common for physicians to express discontent with documentation and paperwork.23 Those who use EHRs have higher rates of burnout.11,21,24 Only 133 of the 433 respondents offered additional comments, with many regarding EHRs; it is possible that those who commented were more likely to have burnout symptoms and be dissatisfied than those who did not write additional comments. Dissatisfaction with EHRs is often derived from the time it takes away from patient care and personal family. For every one hour of direct patient care, primary care physicians spend nearly two hours with EHR tasks.25 Wanting more time in the day to be dedicated to administrative tasks was also identified. This could be addressed by incorporating scribes into daily practice, so
physicians can spend more time in direct patient care. Physicians strongly advocate for the hiring of scribes to help maintain balance within their busy schedules. Another option is to designate time within the physicians’ work day to complete paperwork. An additional intervention is a training program to optimize EHR efficiency for physicians. Dastagir et al. found individuals were spending less time on the EHR outside of their scheduled work hours and had significant improvements in job satisfaction and work-life balance after completing an EHR training program for clinicians. Creating a program best suited to a healthcare system’s EHR could improve physicians dissatisfaction with documentation.

Work Hours
This study found that female physicians in South Dakota were just as likely to work full time as male physicians, which is contrary to other studies that suggest women are more likely to work part time. However, women in this study had a greater desire to work more flexible hours compared to men. Considering that the majority of women in this study are working full time and have children, one might assume that some would prefer to work part time to better achieve work-life balance. Sigsbee and Bernat found that physicians who work fewer hours are more efficient than those who work full time. Because of this, it may be reasonable to allow part time hours for physicians to increase productivity and prevent burnout. Physicians are more likely to start working part time if experiencing symptoms of burnout. Additional research is required to determine why physicians in South Dakota would like to decrease work hours.

Population
Approximately 20 percent of the U.S. population live in rural communities, yet these areas comprise only 9 percent of the country’s active physicians. The majority of respondents in this study worked in an area with a population greater than 100,000. Although not observed in this study, female physicians are less likely to work in rural areas, but rural female physicians are more likely to anticipate a long term rural career. In order to address the healthcare professional shortage in rural areas, it is important to stress the recruitment and retention of female physicians. It was interesting that there were no associations between the population of where physicians served and other variables. In the open comment section of this study, there were numerous responses expressing discontent with the amount of call taken in a rural population. However, there was no association when comparing population and taking call. Pathman et al. found that HPSA physicians take more call shifts than non-HPSA doctors, and taking frequent call shifts negatively affects retention of physicians in rural areas.

Concerns
While the majority of physicians are satisfied with their work-life balance, there were multiple comments expressing concern. Physicians expressed that having control over their schedule helped prioritize their life. There were multiple comments expressing that autonomy in one’s schedule has made a positive impact on their work-life balance, whereas a lack of control made balancing work and personal life difficult. Keeton et al. found that having more control in one’s schedule decreased the occurrence of burnout. In addition, many physicians struggled with working full time, wanting less hours, and the influence this has on partnerships. Emphasizing understanding and clarity with work roles between colleagues and employers can alleviate strain with rigid schedules. Physicians desiring to work less often included their value of increased work-life balance over lost financial compensation. There were no major concerns in this study regarding unfair pay, although lack of equality in pay can lead to job
10 Facts Supporting Seasonal Influenza Vaccination

The Centers for Disease Control and Prevention (CDC) and South Dakota Department of Health (SD-DOH) would like to remind medical providers that influenza vaccination should be offered as long as influenza viruses are circulating (into April).

1. The 2017-2018 season was considered high severity. An estimated 79,000 people died, 600 of whom were children; 960,000 people were hospitalized; and 49 million people became ill. (1)

2. Vaccination reduces doctor’s visits (i.e., vaccine effectiveness [VE]) by 40% for persons aged 6 months and older during the 2017-2018 season; VE hit 40% or more for 8 of the past 10 flu seasons. (2)

3. Vaccination reduces flu-associated death by 51% among children with underlying medical conditions and 65% among healthy kids. (3)

4. Vaccination reduces risk of flu hospitalization among pregnant women by 40%. (4)

5. Vaccination reduces risk of hospital admission by 37% among adults aged 18 years and older and risk of admission to the intensive care unit (ICU) by 82%. (5)

6. Among adults admitted to the hospital with flu, vaccination reduced risk of admission to the ICU by 59% and decreased the ICU length of stay by 4 days. (6)

7. Influenza vaccination coverage decreased 6% in South Dakota for persons 6 months of age and older for whom it was recommended; it decreased 5% nationally. (6)

8. South Dakotans aged 65 years and older were vaccinated at their lowest rate (47.7%) since routine reporting began in 2010; lower than the national rate (59.6%) for the first time. (6)

9. Early treatment (within 4 days of illness onset) with antiviral medication of flu-hospitalized people 65 years and older decreased the length of stay. (7)

10. Flu vaccines have been updated to better match circulating viruses: (8)
   a. A/Michigan/45/2015 (H1N1)pdm09-like virus
   b. A/Singapore/INFIMH-16-0019/2016 A(H3N2)-like virus [*NEW]
   c. B/Colorado/06/2017-like (Victoria lineage) virus [*NEW]
   d. In quadrivalent vaccine only: B/Phuket/3073/2013-like (Yamagata lineage) virus

SD-DOH would like to ask you a few questions about your flu immunization practices. Please take 5 minutes to complete our survey at https://www.surveymonkey.com/r/FuSvy

References:
dissatisfaction.11 There were also comments focusing on difficulties with colleagues. Comments included frustration with partners not allowing for flexible hours and a lack of respect from female support staff. Female physicians disclosed that female nurses can treat physicians differently based upon gender. Schernhammer found that women physicians reported their decisions were frequently challenged and that they needed to repeatedly justify their medical judgment to female staff.10 More research is required to examine the details of these perceptions and whether there is a difference in support from staff based upon the gender of support staff and physicians.

Strategies

Men and women physicians in South Dakota each utilize different strategies to achieve work-life balance. Interestingly, having children is not a predictor of experiencing burnout, similar to what was found in this study.12 Male physicians were more likely to have a spouse that does not work. Dyrbuye et al. found that female physicians were more likely to have more home responsibilities and are more likely to be in dual career households.12 Female physicians in this study employed nannies and housekeepers more often than men. Dyrbuye et al. also found that women physicians were five times more likely to employ a nanny.12 Female physicians in this study desired daycares at their hospital more so than their male colleagues. It appears that women physicians are the primary caregivers for their families and may have more home responsibilities than male physicians in South Dakota. Interestingly, there was no strong desire for mentoring programs from the physicians in this study. Perhaps a mentoring system is already established for these physicians in South Dakota.

Limitations

There were limitations to this study. The study population was limited to SDSMA physician members not including non-members throughout the state. This could have caused selection bias. There could have been individuals who responded to both email invitations to the survey and submitted more than one survey response. It is possible that physicians registered with the SDSMA may be currently practicing in another state and therefore conclusions may not be able to fully represent solely physicians in South Dakota. The title of the survey “Women Physicians: Balancing Home and Work Life” may have hindered doctors from participating in the survey, particularly male physicians. Another factor to consider for this survey was that resident physicians and medical students were included in the sample population if registered with the SDSMA, possibly altering results. Furthermore, there may have been a bias towards decreased satisfaction due to the survey being active during the winter months, a known time for poor job satisfaction.

Conclusion

Overall, physicians in South Dakota appear to be satisfied with their work-life balance, specialty, and career choices. Work-life balance is not about dedicating equal amounts of time to work and life responsibilities; rather, it involves prioritizing and adapting to change. By researching the factors that contribute to work-life balance, successful strategies can be identified to prevent burnout. It is also important to consider these strategies in order to recruit and retain physicians in South Dakota.

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.

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Cases

A 15-month-old girl presents with four months of progressive episodic vomiting, diarrhea, abdominal distension, gluteal wasting, decreased activity, poor appetite, and developmental regression. Growth chart reflects weight loss from the 90th to the 33rd percentile. What testing should be considered?

An 11-year-old girl with history of type 1 diabetes mellitus and recently diagnosed hypothyroidism has a screening celiac panel obtained. She denies any gastrointestinal symptoms but does have occasional headaches. How likely is it for her to have celiac disease?

A 15-year-old boy is referred from Pediatric Endocrinology due to short stature (3rd percentile), slow weight gain (5th percentile), delayed puberty (Tanner I pubic hair, Tanner III testicles), and generalized abdominal pain. Screening labs reveal tTG IgA antibody greater than 200 U/mL. What are the anticipated endoscopic biopsy findings?

Introduction

Celiac disease is an autoimmune enteropathy triggered by the ingestion of gluten-containing grains (wheat, rye, barley) in genetically susceptible individuals. While classically associated with the gastrointestinal tract, celiac disease is a systemic process that can involve multiple body organs and tissues. If undiagnosed or improperly managed, celiac disease can result in poor bone health, anemia, various endocrine disorders, liver abnormalities, and significant nutritional deficiencies. There have also been reports of behavioral associations, including short-term memory loss, anxiety, depression, sleep disorders, cognitive impairment, psychosis, and attention deficit disorder. Although previous studies had identified an increased risk for non-Hodgkin's lymphoma and certain carcinomas of the gastrointestinal tract, more recent studies have shown that the overall cancer risk is only moderately increased in comparison to the general population and is not likely elevated during childhood and adolescence.

Prevalence

Overall prevalence of celiac disease appears to be increasing in developed countries, affecting approximately 1 percent of the population in Europe and North America. Significant regional differences have been observed across Europe, and there have been numerous cases in developing countries including North Africa, the Middle East, and India. Worldwide trends towards a more Westernized diet and increasing awareness of celiac disease are thought to
be contributing to the rising prevalence. Females have a higher predisposition, with rates roughly 1.5 to 2 times higher than males. Other populations with increased risk include those with type 1 diabetes mellitus, Hashimoto’s thyroiditis, autoimmune liver disease, Sjögren’s syndrome, IgA nephropathy, Down’s syndrome, Turner syndrome, Williams syndrome, and IgA deficiency.

The global rise in rates of celiac disease and type 1 diabetes mellitus (T1DM) raises the question of whether there is an associated predisposition between the two diseases or a coincidental co-occurrence. An estimated 5-8 percent of those with type 1 diabetes mellitus go on to develop celiac disease. Both diseases have a strong genetic predisposition and typically begin in early childhood, progressing to development of autoantibodies and T-cell-mediated end organ damage. Of those who are diagnosed with both celiac disease and T1DM, approximately 60 percent have celiac disease at the time of diabetic onset. The remaining 40 percent go on to develop celiac disease in the years following initial T1DM diagnosis. Therefore, it is recommended that children with T1DM have annual screening labs for celiac disease, recognizing that most of these patients are asymptomatic or have silent celiac disease.

**Pathogenesis**

Celiac disease is believed to be multifactorial with both genetic and environmental components. Higher disease incidence has been observed among first degree relatives (10 percent), monozygotic twins (70 percent), and HLA-identical siblings (30-40 percent). There is a strong genetic association to the major histocompatibility complex (MHC) class II alleles for HLA-DQ2 and HLA-DQ8. The HLA-DQ2 haplotype is expressed in approximately 90 percent of patients with celiac disease, while 5 percent express the HLA-DQ8 haplotype. The remaining 5 percent of patients have at least one of the two genes encoding the DQ2 heterodimer. Since the HLA-DQ2 haplotype also occurs in 30-40 percent of the general population, positive HLA-DQ2 testing alone is not indicative of underlying celiac disease. However, negative HLA-DQ2 testing does make celiac disease very unlikely. Testing for HLA types is not recommended in routine diagnostic workup for celiac disease but may be beneficial when diagnosis is unclear due to discrepancy between serology and histology results.

The primary environmental trigger is exposure to gluten, a compound protein composed of glutenin and gliadin found in wheat. Similar prolamines are found in barley (hordeins) and rye (secalins). It is believed that the high glutamine (greater than 30 percent) and proline (greater than 15 percent) content of these proteins is responsible for the toxicity to the intestinal mucosa in patients with celiac disease. Dietary consumption of these compounds leads to an inflammatory reaction in the small intestine characterized by villous atrophy, crypt hyperplasia, and increased numbers of T lymphocytes within the epithelium (intraepithelial lymphocytes) and lamina propria. An immune response leads to production of IgA antibodies to gliadin, resulting in the production of tTG-2 and endomysium autoantigens. Further production of pro-inflammatory cytokines (interferon gamma, interleukin 17A, interleukin 21) and down-regulatory cytokines ( interleukin 10, transforming growth factor) leads to an inflammatory cascade, resulting in destruction to the intestinal mucosa.

**Clinical Presentation**

As demonstrated by the cases mentioned earlier, there are a number of different ways celiac disease can present. The classic presentation is a young child between 6 months to 2 years of age with multiple gastrointestinal manifestations, including diarrhea, vomiting, weight loss, and abdominal distension. Wasting of the limbs and buttocks may be present, accentuated by abdominal distension (Figure 1).
Many affected children have a history of chronic or recurrent diarrhea related to malabsorption. Increased flatulence and abdominal pain can also occur.\textsuperscript{11} In older children, constipation could be the presenting symptom.\textsuperscript{8}

Non-gastrointestinal manifestations tend to be more common in adolescent and adult populations. Symptoms may include headaches, behavioral problems, depression, chronic fatigue, neuropathy, aphthous stomatitis, osteopenia or osteoporosis, short stature, pubertal delay, dental enamel defects, infertility, arthritis, or transaminase elevation.\textsuperscript{8} Some of the more atypical presentations include gluten ataxia, dermatitis herpetiformis (a symmetric pruritic skin rash over the extensor surfaces with subepidermal blisters and pathognomonic cutaneous IgA deposits), and celiac crisis (severe diarrhea leading to life-threatening hypoproteinemia and electrolyte imbalances).\textsuperscript{5}

There is suspicion that a large number of patients may suffer from “silent” celiac disease. These individuals are asymptomatic but have positive serologic tests and villous atrophy on biopsy.

Serologic Testing

Minimally invasive serologic testing is recommended as the initial screening for celiac disease. Over the years, numerous serologic antibodies have been used to screen for celiac disease, but more recent studies have shown that tissue transglutaminase (tTG) IgA antibody and endomysial IgA antibody (EMA) have the highest sensitivity and specificity in both children and adults.\textsuperscript{12} Since these tests are IgA-based, it is necessary to also obtain a serum IgA level. IgA deficiency makes this testing inaccurate, so the patient found to have IgA deficiency should then have IgG based testing (tTG IgG and EMA IgG).\textsuperscript{8}

Several laboratory facilities offer a celiac panel, but the components of these panels can vary by institution. A typical celiac panel may include serum IgA level, anti-tTG IgA antibodies, EMA, and deamidated gliadin peptide (DGP) IgG and IgA antibodies.

Anti-gliadin (AGA) IgA and IgG antibodies are no longer recommended to screen for celiac disease due to their poor sensitivity and specificity. There are a number of conditions that can cause false positive results, including esophagitis, gastritis, gastroenteritis, irritable bowel disease, cystic fibrosis, cow’s milk protein intolerance, advanced liver disease, collagen vascular disease, and arthritis.\textsuperscript{13}

False negative celiac screens can also occur, more commonly in children under 18 months of age. Multiple studies have shown that serologic screening is less accurate in this younger population. One study demonstrated that children less than 18-24 months of age with celiac disease had positive serologies at a rate of 83-88 percent, in comparison to their older counterparts with rates closer to 96-99 percent. Such findings demonstrate that the sensitivity of celiac serologies is lower among younger children.\textsuperscript{14,15} Serologic testing may still be obtained to screen children less than 2 years of age, but clinicians should have a lower threshold to perform endoscopic biopsies if there is high clinical suspicion for celiac disease despite normal serologies.\textsuperscript{8}

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**Figure 2.** Endoscopic biopsy of the small intestine remains the gold standard for diagnosis of celiac disease. Grossly visible findings such as scalloped folds, flattened appearance of the mucosa or a mosaic pattern may be observed. (A) Flattened mucosa with mosaic appearance; (B) Scalloped folds (arrows).
Confirmatory Testing

Endoscopic biopsy of the small intestine remains the gold standard for diagnosis of celiac disease. Grossly visible findings such as scalloped folds, flattened appearance of the mucosa or a mosaic pattern may be observed (Figure 2). The characteristic histologic findings include elongation of the crypts, villous atrophy, and increased intraepithelial lymphocytes (greater than 25 per 100 enterocytes). Figure 3 demonstrates the classic histologic changes observed in celiac disease. Mucosal findings in celiac disease may be patchy, attributing to false negative results, so multiple biopsies should be obtained from the duodenum and duodenal bulb. It is necessary that the patient is on a regular gluten containing diet when the endoscopy biopsies are done. If the patient had started a gluten free diet prior to confirmatory endoscopy, the biopsy findings could be indeterminate.

Increased number of intraepithelial lymphocytes (IELs) alone should not be considered diagnostic as several other conditions (food allergy, GI infection, Crohn's disease, ulcerative colitis, immunodeficiencies, autoimmune disorders) can elicit these findings.

Although histology findings of endoscopic biopsies remains the gold standard for diagnosis, recent guidelines from the European Society for Pediatric Gastroenterology, Hepatology, & Nutrition suggest that a biopsy may not be required in children with typical symptoms, predisposing HLA genotypes, and a high titer of anti-tissue transglutaminase antibodies (greater than 10 times the upper limit of normal). This recommendation is becoming increasingly accepted in the U.S. but is still at the discretion of the clinician.

Treatment

The only available treatment for celiac disease is lifelong strict adherence to a gluten-free diet. Initial consultation with a nutritionist or dietician is recommended for education on specific foods that should be eliminated from the diet. Some of the primary gluten-containing grains to be avoided include wheat, barley, rye, bran, and bulgur. Foods that are free of gluten (and allowed on the diet) include corn, potato, quinoa, rice, soy, tapioca, nuts, flax, and buckwheat. It is believed that oats are safe for celiac disease patients. Previous concerns related to oats were likely secondary to cross contamination. It is important to emphasize regular label reading as several products may contain hidden sources of gluten. Some of the more commonly recognized products containing hidden gluten include medications, lipstick or lip gloss, candy, soy sauce, processed meats, baking powder, and communion wafers.

Although complete elimination of gluten is the only treatment, gluten contamination can sometimes be difficult to avoid. In a study published by Catassi et al., it was determined that the lowest amount of daily gluten triggering damage to the intestinal mucosa in a patient with celiac disease was as low as 10 to 50 mg per day. For reference, a single slice of bread contains approximately 1600 mg of gluten. Some tips to avoid cross-contamination include designating a separate cupboard for all gluten-free products, regularly cleaning surfaces and utensils exposed to food, labeling foods clearly, using a separate toaster or “toast-it bag,” avoiding foods from fryers, and avoiding shared condiments or dips.

Compliance to a strict gluten-free diet should result in symptom resolution and recovery of the intestinal mucosa. Additional benefits of well-controlled celiac disease include improved nutrition and growth, enhanced physical and psychological well-being, restoration of poor bone mineralization, and decreased risk for associated intestinal cancers.

It is important to note that improvement in symptoms after implementation of a gluten-free diet alone is not diagnostic of celiac disease. Patients with wheat allergy, gluten sensitivity, or placebo effect can experience similar benefits from following a gluten-free diet.

Monitoring and Follow-up

After initiation of treatment, patients with celiac disease should continue to be monitored for improvement and
resolution of symptoms. Subsequent serologic testing (tTG IgA antibody) is typically obtained at six-month intervals, then annually once levels have normalized. Patients following a strict gluten-free diet are expected to have normalization of serologic testing, but this can sometimes take a year or longer. Decrease in antibody titer while on a strict gluten-free diet is an indirect indicator of dietary adherence and recovery.

Patients with celiac disease who do not carefully adhere to a strict gluten-free diet may be at risk for increased mortality and lower quality of life. Based on concerns for the lack of effective long-term management programs, a panel of experts convened in 2016 to critically review and discuss the recommendations for optimal care of patients with celiac disease. The group came up with twenty-five best practice principles within the following six categories: bone health, hematologic issues, endocrine problems, liver disease, nutritional issues, and testing. Some of their strong recommendations include the following:

- Provide instructions on age-appropriate intake of calcium and vitamin D during initial gluten-free diet counseling
- Obtain bone density studies to evaluate bone health in patients who do not adhere to a gluten-free diet
- Routine screening for anemia using CBC, ferritin, iron, and total iron-binding capacity at time of diagnosis
- Consider screening for liver disease using AST and ALT at the time of diagnosis
- Routinely assess height, weight, and BMI for all children at diagnosis and follow-up
- All children evaluated and treated for celiac disease should have access to an experienced dietician knowledgeable about celiac disease
- Obtain serum IgA level and tissue transglutaminase (tTG) IgA antibody as initial screening test and at periodic intervals after diagnosis to monitor compliance with the gluten-free diet
- Limit the use of EMA to patients with comorbidities that increase the chance of a false positive tTG antibody
- A negative serologic evaluation cannot rule out celiac disease.
- HLA typing should be considered to evaluate children at risk for celiac disease with negative serology testing or for those patients regarded as diagnostic dilemmas

Patients who have been diagnosed by characteristic histologic findings on small intestinal biopsy and unequivocal resolution of symptoms following initiation of a strict gluten-free diet, further endoscopic biopsies are not warranted. Normalization of the serologies indicates dietary adherence and subsequent mucosal recovery. Resolution of symptoms is often more prompt in children in comparison to adults and is expected to resolve within three to six months after starting a gluten-free diet. It is recommended to screen first-degree family members of children who have been diagnosed with celiac disease.

Cases Revisited

A 15-month-old girl presents with four months of progressive episodic vomiting, diarrhea, abdominal distension, gluteal wasting, decreased activity, poor appetite, and developmental regression. Growth chart reflects weight loss from the 90th to the 33rd percentile. What testing should be considered?

This is the classic presentation of celiac disease, warranting serologic testing for initial screening. A celiac panel was obtained, returning with significantly elevated tTG IgA antibody level greater than 200 U/mL (normal less than 20 U/mL), elevated DGP IgG and IgA antibodies greater than 200 U/mL (normal less than 20 U/mL), serum IgA level 233, and positive EMA. Since the patient had already experienced significant symptom improvement on a gluten-free diet and her initial tTG IgA antibody was over 10 times the upper limit of normal, the diagnosis was made without endoscopic biopsies. At follow-up one month after diagnosis, she had weight gain back to the 70th percentile with recovered developmental milestones. Repeat serologies six months later revealed improvement with continued downward trends on a strict gluten-free diet.

An 11-year-old girl with history of type 1 diabetes mellitus and recently diagnosed hypothyroidism has a screening celiac panel obtained. She denies any gastrointestinal symptoms but does have occasional headaches. How likely is it for her to have celiac disease?

As discussed, an estimated 5-8 percent of those with type 1 diabetes mellitus (T1DM) go on to develop celiac disease. This particular patient had been diagnosed with T1DM at age 6 and hypothyroidism at age 11. Although she denied any gastrointestinal symptoms, it is recommended that children with T1DM undergo annual screening for celiac disease given the increased prevalence and tendency...
to develop silent celiac disease. Screening serologies were obtained, revealing elevated tTG IgA antibody to 77.5, elevated DGP to 29, and negative EMA. Confirmatory endoscopic biopsy revealed mild villous blunting and increased IELs. She was started on a gluten-free diet with improvement of headaches and normalization of serologies six months following her diagnosis.

A 15-year-old boy is referred from pediatric endocrinology due to short stature (3rd percentile), slow weight gain (5th percentile), delayed puberty (Tanner I pubic hair, Tanner III testicles), and generalized abdominal pain. Screening labs reveal tTG IgA antibody greater than 200 U/mL. What are the anticipated endoscopic biopsy findings?

Endoscopic biopsy of the small intestine remains the gold standard for diagnosis of celiac disease. On upper endoscopy, this patient was noted to have grossly flattened duodenal villi with scalloping of the duodenal folds. Histology revealed increased IELs within the duodenal bulb and duodenum. He met with a registered dietician and was started on a gluten-free diet. At the 6-month follow-up visit, his abdominal pain had resolved, and he had a height increase from 153.2 cm to 154.7 cm.

Summary

Our understanding of celiac disease continues to grow. Given the vast range of symptoms and variable presentation, it is important to keep celiac disease within the differential diagnosis, especially for high prevalence populations. Initial screening with serology testing is fairly non-invasive and has shown high sensitivity and specificity. Confirmatory testing with endoscopic biopsy is warranted prior to initiation of a strict gluten-free diet but is debatable if initial serologies are greater than 10X the upper limits of normal. Referral to a pediatric gastroenterologist is helpful to determine the need for biopsies and for guidance of long-term management.

REFERENCES


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If your patients are READY TO QUIT TOBACCO but not quite ready to enroll in the phone coaching program, talk to them about the new KICKSTART KIT. This Do-It-Yourself quit plan allows your patients to get the NRT Kickstart Kit + Quit Guide or just the Quit Guide. Both options are FREE and they don’t have to enroll in the QuitLine phone coaching program to get them. They can request their free Kickstart Kit at SDQuitLine.com/kickstart.

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Kickstart Kit contains:
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- Quit Guide
The future of medicine is damned.
Young doctors, do not believe
you can attempt to heal everyone that enters your doors.
The truth is, you
prescribe health care instead of promoting health.
Do not
Believe you will change patients’ lives
By listening intently—
    forget about listening.
Do not
believe you will change the world.
By chasing your passions,
you will end up weary and broken.
There is no way
to care for the needs of every patient.
It is important
to eliminate emotion from medicine.
You will not be trained
to take a social history.
Because it is important to
rely only on data and algorithms.
You would be unwise to
Imagine medicine to be rewarding.

(Now read from the bottom to the top.)
Introduction

The 2017 American College of Cardiology/American Heart Association/Heart Failure Society of America guidelines recommend the use of renin-angiotensin-aldosterone system inhibiting (RAAS-I) medications in the treatment of patients with heart failure (HF). However, it is widely known that RAAS-I can induce hyperkalemia, usually defined as a potassium level greater than 5.0 mEq/L, which can cause fatal cardiac arrhythmias. As a result, clinicians are recommended to routinely monitor serum potassium in patients on RAAS-I medications. But hyperkalemia remains a limiting factor for heart failure patient's access to guideline directed medical therapy. Sodium polystyrene sulfonate (SPS) has been traditionally used for the treatment of acute hyperkalemia. However, given the lack of clinical data available for SPS, especially its long term use, and reported severe gastrointestinal complications, patiromer was developed to improve on SPS’s drawbacks. Patiromer acts as an orally administered cation-exchange resin. However, patiromer exchanges calcium (rather than sodium) for potassium (K+) in the distal colon and will not swell in the presence of water, both of which are linked to less constipation and medication induced bowel necrosis. Two landmark studies assessed the efficacy and safety of patiromer in the general hyperkalemia population while additional two studies focused specifically on patiromer's effect in patients with HF. This article summarizes contemporary clinical evidence of patiromer and discusses its role in clinical practice.

Clinical Evidence in Chronic Kidney Disease Population

The OPAL-HK study was a two phase trial that looked at the efficacy and safety of patiromer (4.2 g or 8.4 g twice daily) in lowering serum K+ levels in hyperkalemic patients (n=243). Included patients were 18-80 years old with stage 3-4 chronic kidney disease (CKD) (eGFR 15 to 60 ml/min), a baseline serum K+ of 5.1 to 6.5 mEq/L, and had been receiving a stable dose of a RAAS-I medication before the start of the study. The study found a significant reduction in serum K+ from baseline to week four (-1.01±0.03 mEq/L, 95% CI -1.07 to -0.95, p<0.001). After the initial phase, 76 percent of patients fell within the target serum K+ range of 3.8 to 5.1 mEq/L. One hundred seven patients continued onto the second eight-week withdrawal phase where they were randomized to either continue on with their current patiromer dose, or receive a placebo. The major finding from this phase was that only 44 percent of patients in the placebo group were able to continue with their RAAS-I therapy after the eight weeks, compared to the 94 percent in the patiromer group.

The AMETHYST-DN trial focused on the long term safety and efficacy of patiromer in 306 CKD patients. Patients were 30-80 years old, diagnosed with type II diabetes mellitus as well as CKD (eGFR 15 to 60 mL/min/1.73m²), and had a serum K+ above 5.0 mEq/L. All patients had been receiving and continued to receive RAAS-I medications throughout the study, and patiromer dosing was based on severity of hyperkalemia (4.2g to 16.8 g twice daily). Throughout the 52 weeks of the study, mean serum potassium levels were kept within the target range (3.8 to 5 mEq/L) regardless of starting patiromer dose. The most common adverse event (AE) reported was hypomagnesemia (7.6 percent), constipation (6.3 percent), and hypokalemia (5.6 percent). Ultimately, only two patients discontinued as a result of constipation and no instance of hypomagnesemia nor hypokalemia was severe. Limitations of the study include the lack of a placebo control used as a comparison, and a study population of 100 percent Caucasian patients. These two clinical trials in the general CKD population showed that patiromer is effective at keeping potassium within the target range for patients on RAAS-I medications who developed hyperkalemia at baseline before patiromer was initiated.

Clinical Evidence in Heart Failure Patients

Pitt et al. retrospectively analyzed the OPAL study focusing
specifically on HF patients.\textsuperscript{7} The analysis of 102 HF patients with HF found results were consistent with the original study including: significant reduction in serum K\textsuperscript{+} from baseline to week four (-1.06±0.05 mEq/L, 95\% CI -1.16 to -0.95, p<0.001), 76 percent of patients kept within target serum K\textsuperscript{+} range, and the most reported AE of constipation (11 percent).\textsuperscript{7} Similarly, only 8\% of HF patients receiving patiromer developed recurrent hyperkalemia by the end of the eight week randomized withdrawal phase, as compared to 52 percent in the placebo group.\textsuperscript{7} Patiromer significantly allowed more HF patients to continue with their RAAS-I medications. Ultimately, the study concluded that patiromer showed effectiveness at treating hyperkalemia in CKD patients regardless of HF status.\textsuperscript{5,7}

The PEARL-HF randomized control trial assessed the effects of patiromer at increasing RAAS-I medication doses in HF patients specifically.\textsuperscript{8} One hundred five patients with HF included in the study were required to have either a history of hyperkalemia or CKD, along with a baseline serum K\textsuperscript{+} of 4.3 to 5.1 mEq/L.\textsuperscript{8} Patients were randomized to receive either placebo or patiromer 15 g twice daily for the four weeks of study.\textsuperscript{8} Patients were initiated on spironolactone 25mg/day at day fifteen of study, and were increased to 50mg/day if serum K\textsuperscript{+} was 3.5 to 5.1 mEq/L.\textsuperscript{8} The study found that patiromer significantly reduced serum K\textsuperscript{+} level compared with the placebo (-0.45mEq/L, p<0.001).\textsuperscript{8} Similarly, 91 percent of patients receiving patiromer were able to titrate up to spironolactone 50mg/day, as compared to 74 percent in the placebo group.\textsuperscript{8} Major limitations are the exclusion of patients with GI complications, and a cohort group of patients with a less severe HF diagnosis.

**Conclusion**
Ultimately, patiromer proves to be a viable treatment option in the treatment of chronic hyperkalemia in patients with heart failure. By lowering and maintaining target serum K\textsuperscript{+} levels, patiromer increases the chances of patients being able to continue with current RAAS-I treatment and titrating medications to their target doses. While patiromer’s short term efficacy and safety data has been provided, further investigation on its long term effects is needed. Nonetheless, as more clinical data amasses, patiromer will continue to establish its role in the management of HF patients taking RAAS-I medications who develop chronic hyperkalemia.

**REFERENCES**


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**Don’t forget to send in your favorite scenic photo for South Dakota Medicine front cover consideration.**

Send photos to ereiss@sdsmoa.org.
During the South Dakota Festival of Books, I listened to a group of five successful novelists discussing the art of writing and what they gained from creating their works. They all seemed to agree with journalist Malcolm Gladwell who said that it takes some talent, but more importantly, about 10,000 hours of practice to become good at anything. They each also said that writing has given them joy, humor, an understanding about life, and a sense of meaning.

Hearing all this, I reflected on how much room I have for improvement in my own writing. On the other hand, I realized my compositions are not for a novel but for self-help, and the goal of my latest book, Life’s Final Season, is to help people during their aging and dying process. As opposed to a novel, my writing has a different purpose. I also thought of how therapeutic my own writing practice has been for me since my cancer diagnosis.

There is a lot out there about writing as therapy. Orthopedic surgeon Dr. David Hanscom, in his book Back in Control, provides for us a writing method to help people in chronic pain. He advises those in pain to write down any random thoughts for ten to thirty minutes once or twice a day for at least several months. Hanscom reports the theory that when pain becomes chronic, the signals change from damage pain activity in one part of the brain to an emotional (fear and anxiety) response in a different part of the brain. Hanscom asserts that the daily writing exercise truly helps people break the pain cycle when nothing else helps.

Professor Dr. Gillie Bolton also recommends a daily writing program for chronic pain. She says not to worry about grammar, style, or spelling. Dr. Bolton advises starting by unloading and dumping negative thoughts, followed with expressive and explorative writing about any topic. She suggests that we focus on the writing without distraction, finding time to do it once or twice daily, and doing it for yourself (not others). Her contention: writing helps us illuminate our own suppressed feelings, thereby helping us deal with chronic pain, depression, and other miseries of life.

I truly hope my book helps caregivers and people who are aging and dying, but my writing has had the added benefit of helping me cope with a deadly diagnosis. A daily writing exercise may just help you too.

On Call with the Prairie Doc

Dr. Rick Holm wrote this Prairie Doc Perspective for “On Call,” a weekly program where medical professionals discuss health concerns for the general public. “On Call” is produced by the Healing Words Foundation in association with the South Dakota State University Journalism Department. Watch On Call with the Prairie Doc® most Thursdays at 7 p.m. central on SDPTV and follow the Prairie Doc® on Facebook and YouTube for free and easy access to the entire Prairie Doc® library.
South Dakota Board of Medical and Osteopathic Examiners
2018 Legislation Update

The South Dakota Board of Medical and Osteopathic Examiners (SDBMOE) submits a column to South Dakota Medicine to inform physicians and other licensees about various topics of interest that come to the Board. Here is an update of the new 2018 laws that are of interest or directly affect SDBMOE licensees.

Senate Bill 71 (SB 71) was sponsored by the South Dakota Medical Association and is effective on July 1, 2018. This new law makes two changes to the South Dakota Medical Practice Act:

1. Requires physicians to notify the Board, within 30 days, of any acts, including but not limited to:
   a. Any changes in contact information, unprofessional conduct, malpractice or privilege to practice issues, hospital disciplinary actions, alcohol or substance abuse issues, and law enforcement issues.
2. Medical licenses change from an annual renewal to a two (2) year renewal in the odd numbered years. This law will be in effect after July 1, 2018. The initial, reinstatement, and biennial renewal license fees for physicians were all increased to $400.00 as required.

House Bill 1019 (HB 1019) revised provisions regarding background checks for physicians and was passed by the South Dakota Legislature with an emergency provision, and was made effective upon Governor Daugaard’s February 5, 2018 signature. The bill requires an applicant for expedited licensure (through the Interstate Medical License Compact) to submit to a criminal background investigation.

House Bill 1020 (HB 1020) revised provisions and regulations regarding medical assistants after 2017 legislation ended the joint regulation of the Board of Medical and Osteopathic Examiners and the Board of Nursing. This legislation removed references to the Board of Nursing and any mention of joint regulation in the medical assistant practice act, and is effective after July 1, 2018.

House Bill 1079 (HB 1079) was sponsored by the South Dakota Physical Therapy Association to allow physical therapists with advanced training to perform dry needling. Physical therapist assistants are not included in this law and are not permitted to perform dry needling. The bill will go into effect after July 1, 2018; however, dry needling cannot take place until rules regarding dry needling have been established and passed by the SDBMOE. Every effort is being made to have the rules in place by July 1, and the SDBMOE will be informing all physical therapists of the process before the performance of dry needling can begin.


A New England Journal of Medicine article in 2009 brought significant attention to the fact that Medicare patient 30-day readmission rates hovered around 20 percent. Since then, efforts at reducing readmission rates have been implemented at multiple levels. Methods have ranged from hospital reimbursement penalties to attempted modifications of social and environmental elements following discharge. The aim of the Centers for Medicare & Medicaid Services (CMS) has been to decrease the 30-day readmission rate and to enhance the transition of care. No matter where the patient goes after hospitalization there is need for safe, timely transfer and inclusion of pertinent data in reference to medications, wound care and follow-up clinic visits. This information is crucial to avoid medication error and fragmented care with providers who are not up-to-date on vital changes.

Great Plains Quality Innovation Network (QIN) has been collaborating with communities across our states to improve care coordination and medication safety. Though the communities are diverse in size and area of coverage, all share the same goal of avoiding preventable hospital admissions, readmissions and reducing adverse drug events and high-risk medications. Organized community coalition meetings are regularly held in Sioux Falls, Aberdeen and Rapid City to foster collaborative efforts among hospitals, nursing homes, home health agencies, pharmacists, discharge teams and social service providers in these higher populated areas. Updated readmission data is provided and discussion is held to gain input and overcome gaps for improving care transition. Small communities referring patients to these facilities are also welcome to attend.

Although our statewide readmission rate is below the national average, there is still ample opportunity to lower the rate and reduce adverse medication events, which can contribute to preventable readmissions. Concepts shown to improve care transition include programs that enhance health literacy. Using teach-back coaching techniques or engagement projects such as BOOST, INTERACT, or RED can assist patients in understanding their disease and post-discharge treatment. Utilizing warm handoffs, which allow the providers to access pertinent clinical information regarding transfer in real time, along with the use of telehealth, home health visits and community health workers can promote and maintain appropriate care following discharge.

Consideration of palliative and hospice care may give further options to avoid acute care readmissions. Recently, the term “super utilizer patients” has been used to identify those who frequent the emergency department and account for a fair number of readmissions. These individuals require networking and extensive community resources. Pilot projects have put together teams of nurses and community health staff to assist these patients in staying at home.

The challenges of reducing readmissions and enhancing care transition remain, and will continue to be, daunting. Patients and families or caregivers can suffer from confusion, fatigue, anxiety or feelings of abandonment upon discharge. Miscommunication and improper follow-up are always possible. Family members may not be available or may have conflict regarding the patient’s ability to remain at home. When the situation is not stable, return to the hospital is an easy solution. Social determinants of health including ranging from zip code location to family and support services may have the largest influence of any factor of care transition.

Critics of readmission public reporting and financial penalty have argued that patient morbidity and mortality both in and outside acute hospitalization maybe a more meaningful measure to improve quality of care. Upcoming reimbursement changes involving accountable care, bundled payment and block grants will potentially place clinical admitting providers into the financial risk of coordinating care. Regardless, the need for appropriate care transition requires collaboration, coordination and communication to enhance patient safety, patient family engagement and quality medical care.

More information can be found on the Great Plains QIN Care Coordination website (https://greatplainsqin.org/initiatives/coordination-care/) or by contacting Stephan Schroeder, MD, CMD, CMQ (Stephan.Schroeder@area-a.hcqis.org) or Linda Penisten, RNC, OTR/L (Linda.Penisten@area-a.hcqis.org).
**Legal Brief Highlight: Confidentiality of Patient Communications**

Both South Dakota law and the HIPAA-mandated federal medical privacy rules generally prohibit the release of health care related information to third parties. However, this legal privilege against disclosure is not without exception. Federal privacy rules and South Dakota law permit, and in some instances even require, the disclosure of information to law enforcement officials and others in specified circumstances.

Individual healthcare related information is protected both under state and federal law, and may be disclosed to a third party only if permitted or required by law. Physicians should exercise care prior to disclosure of any healthcare related information, including knowledge of illegal drug activity. However, reporting the illegal use of drugs or diversion is required when done in compliance with a court order or court-ordered warrant, subpoena or an administrative request.

Disclosure of healthcare related information is permitted, but not required, in connection with other limited law enforcement related conditions, and is required in certain circumstances, including cases of abuse and neglect.

For more, download the SDSMA legal brief *Confidentiality of Patient Communications* at sdsm.org. Through the SDSMA Center for Physician Resources, the SDSMA has developed more than 50 legal briefs that are available to members. In addition, the Center develops and delivers programs for members in the areas of practice management, leadership and health and wellness.

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**Suicide Prevention in Primary Care: Key Roles and New Opportunities**

A free webinar, “Suicide Prevention in Primary Care: Key Roles and New Opportunities,” designed for primary care providers and organizations in Region 8 states, will be held 12:30-2 p.m. CT on Dec. 12.

To join the webinar, visit the following link and use the dial-in information below:

https://hrsa.connectsolutions.com/suicide_prevention_and_primary_care/

Dial-in: 800.857.9647; participant passcode: 9438340

No registration is required. For questions, contact KPatton@HRSA.gov

The webinar is hosted by HRSA’s Office of Regional Operations – Denver. Region 8 includes Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.
SDSMA Representatives Attend American Medical Association Meeting in Maryland

SDSMA Delegate Mary S. Carpenter, MD and Alternate Delegate Robert L. Allison, MD, along with CEO Barb Smith, attended the American Medical Association (AMA) Interim Meeting Nov. 9-13 in National Harbor, Maryland. SDSMA Medical Student Section attendees were Anna Bahnsen, Schae Hanson, Cory Hewitt and Dan Pfeifle.

The meeting was filled with activities and policy debate that will help shape the future of health care in the nation. Catch up with the news and other key moments from the AMA House of Delegates meeting at ama-assn.org and an upcoming issue of *South Dakota Medicine*.

In addition, the North Central Medical Conference held a meeting; the NCMC is made up of the medical societies of South Dakota and the surrounding states.

2019 SDSMA Membership Dues Renewal Now Available

Annually, SDSMA members must renew their membership to continue receiving membership benefits. Membership renewal are done on the SDSMA website at www.sdsma.org.

To ensure a smooth renewal process for 2019, please complete the following:

1. Log into your member profile at sdsma.org. If assistance is needed, contact the SDSMA office at 605.336.1965 or membership@sdsma.org.
   - *Do not create a new account.* All members have an existing sdsma.org account.

2. It is recommended that you contact your office administrator to determine if you or your organization will be paying the dues, and who will be completing this online process.

3. Once you have logged into your account, proceed to the “Pay My Dues” link at the top of the page. Payment by electronic check and credit card are both accepted. A receipt will be emailed to you upon completion of the payment.

Those with questions may email membership@sdsma.org. Thank you for your membership in the SDSMA!
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December 2018
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