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Erratum: The preface to the January 2017 article, “State of South Dakota’s Child: 2016” contained a sentence with a significant error. The sentence should read: “Infants must sleep supine (not prone as published) and alone on a firm horizontal surface devoid of other materials.”
The SDMSA is Working For You

By Tom Hermann, MD

The 2017 Legislative Session is in full swing. And while the legislative session is not on the radar of many, I can assure you there is much work being done behind the scenes by the South Dakota State Medical Association (SDSMA) and our staff.

With the introduction of each and every bill, we have to find out the following: who are the drivers behind the proposed legislation, what is the true issue and the logic behind the movement, what is the perspective of the proponents, and who are their supporters.

In doing our research, we must look at current state statutes, federal laws and regulations, the laws and regulations of other states, and policy of the American Medical Association and SDSMA. We also look at the makeup of the legislature and its history. Has this legislation been attempted before? If so, who were the proponents, who were the opponents and what was the outcome? We must evaluate each bill to have a clear understanding of its potential impact on our ability as physicians to practice medicine and on our patients. And of course, a number of other factors come into play to include the positions of state government, the medical boards – medical, pharmacy and nursing, other health care advocacy organizations, and the health care systems.

While our decision-making process relies heavily on input from our lobbyist and SDSMA staff who research the issues for us, ultimately we need to weigh the facts and take a position. Member sentiment is also critical. How does anyone really know what is best for the practice of medicine, or more so, what is best for our patients and their care? As I review legislation, I often ask myself who is right and who is wrong. However, I find that rarely is an issue black or white, but rather some shade of gray.

This legislative session we are faced with SB 61, “an act to update and repeal certain provisions relating to the practice of nurse practitioners and nurse midwives.” As proposed, SB 61 would allow advanced practice nurse practitioners (APRNs) to practice independently after only 1,040 hours of physician collaboration. While APRNs play an important role in supporting the medical needs of the patient, we should be concerned about the proposal to allow them to practice independently.

The proponents of this legislation say it is the solution to the shortage of primary care providers in the rural areas of our state. However, the majority of APRNs, nearly 68 percent, practice in six highly populated counties (Minnehaha, Lincoln, Pennington, Brown, Brookings and Yankton), leaving very few to practice in rural areas. If the argument is that an APRN in a rural community is willing to provide care but a physician 200 miles away is unwilling to travel for collaboration, the joint Boards of Medical and Osteopathic Examiners (SDBMOE) and Nursing (SDBON) have already provided a solution to this, as they recently adopted rules eliminating the requirement for a physician to be onsite for collaboration. This collaboration is done by phone or video and assures that the APRN is part of a physician-led team to provide the best patient care possible including to patients in rural communities.

In addition, if passed, SB 61 gives the SDBON the authority to regulate the practice of medicine, thus, creating two quasi-government entities (SDBMOE and SDBON) to regulate the practice of medicine, each with their own standards with regard to being a qualified medical provider.

Nurses are critical to the health care team, but there is no substitute for education and training. Physicians have seven or more years of postgraduate education and more than 10,000 hours of clinical experience. An APRN, after undergraduate education, undergoes 1.5 to three years of a master’s program, resulting in 2,800 to 5,350 hours of training. Neither residency training nor a minimum number of patient encounters is required. A physician’s additional years of education and training are vital to optimal patient care. While we need to ensure that nurses’ unique contributions to the health care team are maximized, the nursing community’s desire to practice independently is not the direction health care is moving.

A member recently commented to me on his own development as a medical doctor in the time from when he graduated medical school to when he completed his residency – “it was huge.” And so with that being said, I believe APRNs are an integral part of the health care teams that deliver quality care to our patients; however, they are no substitute for physicians when it comes to diagnosing complex medical conditions and developing patient care plans, especially in the event of a complication or medical emergency.

Your SDSMA continues to support your profession and our mission of advocating for best interests of our patients. The SDSMA opposes SB 61 and I encourage you to do the same, and to contact your representatives in the legislature.
Why should I pay off my debts before investing if my interest rates are so low?

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ELIMINATING DEBT AND, THUS, THE INTEREST YOU PAY on those borrowed dollars, is essentially the best way to guarantee a return on your money. The added benefits of financial independence and emotional freedom of being beholden to your lender are equally important. Some will argue that they should keep their mortgage because of the tax deductibility of the interest. Trouble there is you are still paying someone a fee to use their money...money that you could use to invest and/or pursue other life goals and experiences. Others will argue that they can get a better return on their dollar than existing debt is costing them. That could prove true, but the only way to a guaranteed return is via the purchase of a product: annuity, permanent life insurance policy, CD, etc. Again, trouble there is you lose some access to those “invested” dollars, and are subject to penalties or fees if you try to pull out too much too soon. Tax ramifications can be quite unfriendly, as well, depending on product used.

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Recently, I sustained a medical malady that has caused me to reflect on the nature of accidents and how we adapt. As with most accidents I suppose, considerable time was spent mullling over what happened and what minor precautions might have prevented the calamity (which I acknowledge could have been much worse). I had cut down a 50-foot pine tree and was industriously making 6-foot sections of the trunk when a large segment fell and smashed against my lower leg. I, and other clinicians, warily watched the large hematoma which produced prominent swelling of the lower leg and foot. Ordinarily I use size 10 footwear and overnight I required a size 14 sandal to ambulate. When the hematoma was ultimately excised, I had envisioned a neat linear scar with sutures but instead discovered an open wound that required packing and a vacuum-assisted drainage device. At this point, I was committed to healing by secondary intention.

These developments have given me opportunity to ponder “secondary intention” as both personal reality and as metaphor. Sometimes our work in medicine resembles the fragile granulation tissue of an open wound, requiring time and proper environment to mature. Obviously, as clinicians, our primary intent is to make a precise diagnosis and achieve a definitive cure. But clinical care is often not straight forward, requiring us to refine and refocus our initial intentions. We confront elusive medical diagnoses and conditions that pose treatment quandaries. A recent essay in the New England Journal of Medicine reflects on how common it is to lack certainty in medicine. Although our training and expectations favor “black-and-white” answers for patients, we frequently confront uncertainties in both diagnosis and treatment. Too often we lack the “single right answer” we yearn for as we delve into the specifics of a given patient’s illness and social circumstances. This is especially true as we necessarily factor in ethics/value issues that may be interwoven into a patient’s unique circumstances. An effective technique for coping with inherent ambiguity is offered by so-called “microethics,” a perspective that prompts search for hidden values and emotions that influence decision-making.

Indeed, microethics has potential relevance for every patient encounter. When I have a medical student rotating with me during a bioethics elective, I frequently suggest that the student observe my interactions with a routine patient and then identify underlying ethics/value issues. Each such patient encounter, it seems, produces worthwhile reflections, even when there is no major crisis or pivotal decision that needs to be made. Sometimes we assume our actions reflect best clinical practice without fully understanding the priorities and idiosyncratic dynamics at work in a patient’s life.

Medicine is not linear or absolute. Effective clinical care often demands that we exercise “secondary intention” as we modify expectations and adjust to specific circumstances. While we may not achieve the definitive solutions we initially intend, experience reinforces the importance of seeking compromise strategies and adaptations to best help each patient. Ours is an imperfect world. In effect, clinicians utilize secondary intention on a daily basis.

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About the Author:
Jerome W. Freeman, MD, FACP; University of South Dakota Sanford School of Medicine; Sanford Clinic Neurology, Sioux Falls, South Dakota.
Point-Counterpoint: Genotype-Guided Warfarin Therapy

By Wenjie Jessie Lu, PhD; and Nathan J. Miller, MD

Wenjie Jessie Lu, PhD: “CYP2C9 and VKORC1 Genotyping Improve Warfarin Dosing”

Warfarin is an anticoagulant that acts by inhibiting the synthesis of vitamin K-dependent coagulation factors. Warfarin is indicated for stroke prophylaxis (e.g., in patients with atrial fibrillation or mechanical heart valves) as well as in the treatment of venous thromboembolism. It is also used as an adjunct in the prevention of systemic embolism after myocardial infarction. The worldwide use of warfarin remains high despite the development of newer anticoagulants like the direct thrombin inhibitors, which can be utilized for the treatment of venous thromboembolism (VTE), non-valvular atrial fibrillation, and VTE prophylaxis. Approximately 10 million warfarin prescriptions are written yearly in the U.S. Warfarin has a narrow therapeutic range, and its use is characterized by marked variation in individual dose requirements. Selecting a starting dose based upon population averages therefore places patients at risk for adverse bleeding events.

Because the principal, active enantiomer of warfarin, S-warfarin, is metabolized by cytochrome P450 (CYP2C9), a large number of studies have tested whether common abnormalities in the CYP2C9 gene can be used to predict a patient’s individual warfarin dosing requirement and/or anticipate clinical outcome (i.e., efficacy or toxicity) related to warfarin treatment. More than a decade ago, we learned that almost one-third of all the variability in warfarin dose can be attributable to abnormalities in the CYP2C9 gene. Further, with the addition of other genes influencing warfarin’s mechanism of action (vitamin K oxidoreductase complex-1, VKORC1), we can now leverage genetic factors to explain nearly one-half of the variance in dose. It is therefore time to start using this information to optimize outcome in routine clinical care. Of note, these genetic factors are used to guide selection of dose, not selection of agent. The presence of genetic variants does not contradict warfarin use.

Data from numerous studies have clearly indicated that bleeding risk during the first one to three months of warfarin therapy is up to 10-fold higher than subsequent monthly risk. In the U.S., warfarin represents a leading cause of emergency department visits and hospitalizations for an adverse drug reaction. Ambivalence about using this medication can lead to significant underuse of the drug in patients for whom it is strongly indicated, in particular, those at risk of stroke in the context of atrial fibrillation. For this reason, the Food and Drug Administration (FDA) has generated a series of label changes for warfarin that highlight pharmacogenetic testing and, in 2011, the FDA began providing specific initial dosing recommendations based upon CYP2C9 and VKORC1 genotypes. Numerous gene-based warfarin dosing algorithms are available, and many electronic medical records now provide links to these algorithms. Two notable algorithms have been shown to perform well in estimating stable warfarin dose in patients of diverse geographic ancestry. This approach (gene-based warfarin dosing) outperforms non-genetic clinical algorithms and fixed-dose approaches when this drug is initiated in routine clinical care.

Based on more than 30 studies, the Clinical Pharmacogenetics Implementation Consortium (CPIC) recommends use of the IWPC algorithm, or the Gage algorithm, as the preferred approaches for gene-guided selection of initial warfarin dose. These algorithms are widely available and often linked to electronic medical records (e.g., www.warfarindosing.org). Further, our understanding is growing, and the evidence has expanded since those CPIC guidelines were published in the last half decade. More recent studies involving a total of more than 8,000 patients in observational cohorts have validated the ability of CYP2C9 and VKORC1 genotypes to predict dose, and 11 clinical studies involving a total of 4,258 patients, notably including 52 children, have been presented that demonstrate positive associations between the combined VKORC1 and CYP2C9 genotype and
dynamic outcomes such as risk of bleeding and thrombotic events, warfarin sensitivity and resistance, risk of over-anticoagulation, risk of bleeding, and time to therapeutic INR or time within therapeutic range (TTR).\textsuperscript{8,11}

The recent data include two prospective trials which compared gene-guided dosing approaches to standard dosing algorithms.\textsuperscript{12-13} In a large population of patients treated with warfarin in the same hospitals, in the same time frame (at one and three months), and managed by the same clinicians or anticoagulation service teams, nearly all the end points showed benefit with the pharmacogenetic-guided dosing approach. Specifically, a significant reduction in out-of-range INR values, a greater percentage of time (10 to 12 percent better) in the therapeutic range, and a lower rate of serious adverse bleeding events were observed in the pharmacogenetic cohort. It is thus the case that the scientific evidence supporting an association between pharmacogenetic variation and warfarin efficacy and toxicity compels us to adopt this approach in routine care.

Nathan J. Miller, MD: “Genotype has a Limited Role in Guiding Warfarin Therapy”

Incorporation of genotyping into physicians’ day to day practice has the potential to enhance our ability to prescribe medications more safely. However, physicians need to weigh the risks and benefits of this approach, for each specific drug-gene application. This counterpoint will provide an overview of the recent data assessing the utility of CYP2C9 and VKORC1 testing to guide warfarin initiation.

Genes influencing drug response fall into two categories: pharmacodynamic (PD) genes (i.e., influencing a drug’s mechanism of action), and pharmacokinetic (PK) genes (i.e., influencing a drug’s absorption, distribution, metabolism, or elimination). Most early successes in the field of pharmacogenetics were realized in the context of PK genes. As discussed by Dr. Lu, this is the case for warfarin as well. Almost 1/3 of the variance in warfarin dose can be attributed to genetic variation in CYP2C9.\textsuperscript{3,14} However, even with the addition of VKORC1, a PD gene that explains even more of the variance, prospective gene-based warfarin dosing trials have shown that genotype is only informative during the first week of anticoagulation.\textsuperscript{15,17}

Average time in TTR for patients on warfarin is 68 percent,\textsuperscript{18} and patients who are not within the therapeutic range run an increased risk of therapeutic failure (thromboembolism) and/or toxicity (bleeding). Thus, it makes sense that, when 50 percent of the dosing variability can be attributed to genetics, age, and body surface area, clinicians may want to consider warfarin sensitivity genotyping for patients who will be receiving warfarin. In support of this argument, studies have shown that utilization of a gene-based dosing regimen can optimize the TTR and decrease the likelihood of serious adverse events.\textsuperscript{15,19} Using records linked to one of the largest insurance providers in the U.S., Epstein et al. demonstrated that warfarin genotyping led to fewer hospitalizations in a six-month period.\textsuperscript{20} However, these studies were limited by lack of randomization. The Clarification of Optimal Anticoagulation through Genetics (COAG) trial was therefore designed to address this limitation. COAG was a multicenter, double-blind, randomized, controlled trial that compared genotype and clinically based dosing strategies.\textsuperscript{17}

In COAG, no significant differences in the mean percentage TTR or time above therapeutic range were noted at four weeks.\textsuperscript{17} Moreover, no significant differences in major bleeding or thromboembolism were found. Unfortunately, less than half of the patients in the genotyping arm of the COAG trial were genotyped on day zero or day one, and prescribers in the gene-based dosing arm did not always have genotype prior to initiating the warfarin prescription. The European Pharmacogenetics of Anticoagulant Therapy (EU-PACT) consortium conducted a similar (albeit single-blinded) randomized controlled trial that compared gene-based warfarin dosing with usual practice, using TTR as their primary outcome. Although EU-PACT was not powered to detect a meaningful difference in clinical endpoints such as recurrence of venous thromboembolism or development of major bleeding, they did resolve a statistically significant increase in TTR (67 percent TTR in genotype-guided group versus 60 percent TTR in control group; p<0.001).\textsuperscript{16}

In the largest prospective study of gene-based warfarin dosing conducted to date, subjects with two nonfunctional CYP2C9*3 alleles were observed to have markedly elevated INR levels (with respect to other study subjects) in the first week of therapy.\textsuperscript{15} While this association may lead to clinically relevant changes in risk for adverse bleeding events, clinicians would likely need to genotype a large number of patients to find the rare individuals that express two abnormal copies of this relatively uncommon CYP2C9*3 allele (*3/*3 homozygotes). Given that CYP2C9 and VKORC1 currently cost approximately $200
to genotype, this approach would spend a considerable amount of money to find those individuals.

Thus, while preliminary data for utilization of a gene-based dosing approach to warfarin therapy has looked promising, subsequent studies have not proven statistical significance in terms of decreasing the key clinical endpoints of major bleeding, recurrent thromboembolism, or mortality.16-17 CPIC only provides guidance for what to do with genetic information when it exists, rather than advocating for (or against) genotyping.14 The cost effectiveness of gene-based drug dosing, and the impact of this approach on hard clinical events, both need to be better understood before this approach can be justified in patients initiating warfarin.

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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.
Multiple Pulmonary Arteriovenous Malformations: An Unusual Cause of Shortness of Breath and Recurrent Strokes

By Kalyan C. Potu, MD; Shenjing Li, MD; Shawn C. Kelly, MD; Julia A. Prescott-Focht, DO; and Scott Pham, MD

Abstract

Objective: To discuss an uncommon case of a patient with multiple pulmonary arteriovenous malformations (PAVMs) presenting with dyspnea on exertion and recurrent strokes.

Background: A 79-year-old woman with recent onset recurrent cerebrovascular accidents (CVAs) was referred to cardiology for evaluation of dyspnea on exertion. Clinical examination was unrevealing.

Methods: A transthoracic echocardiogram (TTE) with agitated saline was suggestive of an extra-cardiac shunt. Subsequent chest computed tomographic angiography (CTA) demonstrated five large PAVMs.

Results: The patient underwent transcatheter coil embolization of the five PAVMs, resulting in marked improvement in dyspnea and resolution of the shunt on bubble study echocardiography.

Conclusions: Although PAVMs are rare, they remain an important entity to consider when evaluating patients with extracardiac shunts. They may present with nonspecific features such as dyspnea on exertion and recurrent CVAs. All patients with multiple PAVMs should undergo thorough skin screening for telangiectasia as well as radiologic imaging to screen for additional AVMs in the liver and brain in order to exclude hereditary hemorrhagic telangiectasia (HHT).

Introduction

A pulmonary arteriovenous malformation (PAVM) is defined as a direct communication between the pulmonary artery and pulmonary vein without an intervening capillary bed. PAVMs are rare, with an incidence of one in 20,000. PAVMs commonly present in children as multiple vascular connections, most frequently associated with the hereditary disorder hereditary hemorrhagic telangiectasia (HHT), also known as Osler-Weber-Rendu syndrome. HHT is inherited as an autosomal dominant condition due to mutations in either endoglin (ENG), or activin receptor-like kinase 1 (ACVRL1/ALK1) genes. International consensus diagnostic criteria for HHT include:

1. Spontaneous and recurrent epistaxis.
2. Multiple mucocutaneous telangiectasia.
3. Visceral involvement (pulmonary, cerebral, gastrointestinal, or hepatic AVMS).
4. First-degree relative with HHT.

When three to four aforementioned criteria are present HHT is definitively diagnosed. When two criteria are present, the diagnosis may be confirmed by genetic testing for mutations involving ENG, or ALK-1 genes. When none to one of these criteria are present, HHT is unlikely. These vascular fistulae predispose patients to embolic events such as brain abscess and cerebral vascular accidents, which are observed in up to 50 percent of cases. PAVMs are usually identified with advanced imaging or catheterization techniques, including contrast echocardiography, computed tomography, or pulmonary angiography. The gold standard for diagnosis of PAVMs is pulmonary arteriography. However, the standard procedure for diagnosis is CT angiography.
Case Presentation

A 79-year-old woman presented with a history of hypertension, dyslipidemia, and recent onset symptomatic cerebrovascular accidents (CVAs). She presented two times to the emergency department for evaluation of self-limiting episodes of bilateral blurred vision over a period of two months. The patient also reported progressive dyspnea on exertion over the past year. Heart and lung auscultation was unremarkable. Magnetic resonance imaging (MRI) of the brain revealed a focal area of enhancement in the left parietal lobe suggestive of subacute infarct. Multiple chronic ischemic foci were also noted in both cerebellar hemispheres. A transthoracic echocardiogram (TTE) with agitated saline was ordered to evaluate for a cardiac etiology of CVAs and demonstrated microbubbles in the left atrium on the third cardiac cycle that persisted through the fifth cardiac cycle (Figure 1). The interatrial septum appeared intact with color Doppler and 2-D imaging, excluding an intracardiac shunt. A chest computed tomographic angiography (CTA) was obtained to evaluate for an extracardiac shunt, which revealed five large pulmonary arteriovenous malformations (AVMs) (Figures 2 and 3). Post-coil embolization saline contrast TTE confirmed resolution of the pulmonary arterial shunt. The patient’s dyspnea and CVAs resolved following transcatheter coil embolization pulmonary AVMs; thus, the patient’s dyspnea and recurrent CVAs were likely related to the pulmonary AVMs. The patient did not have any physical or radiologic manifestations of HHT. No telangiectasias were noted around her lips and mouth. No brain or hepatic AVMs were noted on enhanced brain MRI or abdominal CTA, respectively. There was no known history of HHT in the patient’s family.

Discussion

The presence of multiple pulmonary AVMs is rare and is typically associated with hereditary hemorrhagic telangiectasia and is most frequently diagnosed in childhood. We have presented an elderly female with multiple symptomatic pulmonary AVMs without any physical or radiologic features of this hereditary syndrome.

PAVMs may present with nonspecific features such as dyspnea on exertion and recurrent CVAs, as demonstrated in our case. Her symptoms completely resolved following treatment with fistulae embolotherapy. As CVA and cerebral embolization with abscess formation are common feared complications, treatment is indicated for all PAVMs with single feeding vessels of 3 mm or greater.

There are two recommended treatment options for PAVM: transcatheter embolization and surgical resection. Transcatheter embolization is less invasive with a success rate of 85 to 98 percent. In scenarios of massive hemoptysis or hemothorax, surgical resection is recommended, as there is a chance of PAVM revascularization after transcatheter embolization.

Conclusion

Although rare, pulmonary AVMs are an entity that must not be overlooked due to their potential for significant cerebral vascular complications related to embolic events. As demonstrated in our case, patients may present with nonspecific features such as dyspnea on exertion, and recurrent CVAs. It is unusual for multiple pulmonary AVMs to occur in an individual without the corresponding diagnosis of hereditary hemorrhagic telangiectasia; thus,
all patients with multiple PAVMs should undergo thorough skin screening for telangiectasias as well as radiologic imaging to screen for AVMs in the liver and brain in order to exclude HHT.

Acknowledgement
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About the Authors:
Kalyan C. Potu, MD, Resident, Department of Internal Medicine, University of South Dakota Sanford School of Medicine.
Shenjing Li, MD, Fellow, Department of Cardiology, University of South Dakota Sanford School of Medicine.
Shawn C. Kelly, MD, Fellow, Department of Cardiology, University of South Dakota Sanford School of Medicine.
Julia A. Prescott-Focht, DO, Department of Radiology, Sanford USD Medical Center, Sioux Falls, South Dakota.
Scott Pham, MD, Associate Professor, Department of Cardiology, University of South Dakota Sanford School of Medicine.
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The Impact of Maternal Diabetes, Obesity and Race on Infant Birth Weights in South Dakota

By Kari L. Halvorson, MD; H. Bruce Vogt, MD; Lon Kightlinger, MSPH, PhD; and Dennis Stevens, MS, MD

Abstract

Introduction: Maternal obesity, high gestational weight gain and diabetes mellitus during pregnancy are known risk factors that correlate with high infant birth weight and the mother’s race. Previous studies have focused on low birth weight, prematurity and infant mortality. This study examined the interaction between race, maternal risk factors and high infant birth weights at the population level in South Dakota to identify factors contributing to the high Native American infant birth weights. We hypothesized that high infant birth weights were associated with maternal diabetes, obesity and high gestational weight gain, and that Native American infants’ higher birth weights were related to the prevalence of diabetes and obesity.

Materials and Methods: De-identified birth certificate data was provided by the South Dakota Department of Health. We used data for live infant births to South Dakota resident mothers from 2006 through 2011. The mothers were categorized as Native American or white by the mother’s self-reported primary race. Infants were excluded from the study population for missing data, birth weight less than 350 g or gestational age less than 24 weeks or greater than 45 weeks. The study population included 11,416 Native American infants and 59,263 white infants for a total study population of 70,679 infants. Maternal variables (race, pre-pregnancy weight and body mass index [BMI], gestational weight gain, pre-pregnancy diabetes mellitus [DM], gestational diabetes [GDM] and delivery BMI) and infant variables (gestational age and birth weight) were analyzed using SPSS software.

Results: The mean birth weight (BW) of Native American (NA) infants (3377 g) was significantly greater than the mean BW of white (W) infants (3315 g) (p < 0.001) even though NA infants had a younger mean gestational age (p = 0.006). More NA infants were categorized as high birth weight (HBW) (11.8 percent) than W infants (8.5 percent) (p < 0.001). Both DM and GDM were significantly more common among NA mothers (p < 0.001). Infants of NA mothers with GDM had a higher mean BW than infants of W mothers with GDM (p < 0.001). There were more overweight and obese NA mothers (p = 0.006). In each maternal BMI category, NA infants had a higher mean BW. Mean BW was even higher for infants born to mothers with excessive gestational weight gain (GWG) for their BMI. The infants with the highest mean BW were born to obese NA mothers with GDM and excessive GWG (3680 g). Multivariable linear regression showed that race was the most significant variable affecting infant BW (R2 = 0.57, F = 692, p < 0.001). Pre-pregnancy BMI, GWG and excessive GWG were also significant. The most significant interaction variables were race and GDM and race and BMI.

Conclusions: Native American race, gestational diabetes mellitus, overweight and obese BMI, and excessive gestational weight gain for BMI were the most significant maternal factors associated with high infant birth weight. Mothers with any one risk factor gave birth to heavier infants. Mothers with all risk factors had infants with the highest mean birth weights in South Dakota. This large population-based study provides evidence that Native American mothers in South Dakota with GDM, overweight or obese BMI and excessive GWG are more likely to give birth to high birth weight infants. At-risk mothers should be educated regarding the risks and potential complications of high birth weight infants.
Introduction

Maternal obesity, excessive gestational weight gain (GWG) and diabetes mellitus (DM) during pregnancy are modifiable risk factors that previous studies have shown correlate with high birth weight for gestational age (GA). Race is a non-modifiable risk factor that is associated with maternal DM prevalence, maternal body mass index (BMI) and infant birth weight (BW). Many previous studies have explored the relationship between BW and race, though the majority focus on low BW as it relates to prematurity and infant mortality. Understanding the causes of high BW and its associated risks is also important for the prevention of poor pregnancy outcomes for both the mother and infant.

Pre-pregnancy obesity and excessive GWG predispose women to developing gestational diabetes and gestational diabetes further predisposes women to progression to type 2 DM. Maternal diabetes during pregnancy exposes the fetus to hyperglycemia. This results in increased fetal insulin levels that foster the storage of extra energy as fat and act as growth factors. As such, maternal diabetes is associated with fetal macrosomia (high BW) and a corresponding increased risk of complications during delivery, including shoulder dystocia and neonatal hypoglycemia. Maternal diabetes also confers a higher risk to the infant of congenital malformations and perinatal morbidity and mortality.

Maternal diabetes during pregnancy may also contribute to an increased risk to the child of obesity and development of glucose intolerance or diabetes. In fact, one study of the Pima Indians suggests that the increase in diabetes prevalence among young adults and children can be attributed almost entirely to an increasing prevalence of maternal diabetes during pregnancy and to obesity in childhood and adolescence. Studies show that diabetes and obesity have a variable impact on pregnancy and neonatal outcomes among individuals of different races but little data exist for large Native American populations to show the impact of these variables. With the prevalence of diabetes increasing, especially among Native Americans, it is important to understand the modifiable risk factors, beginning in infancy, that contribute to its development.

South Dakota's Native American infants have a higher average BW and a greater incidence of high BW infants (greater than 4,000 g) compared to the white infants in the state. Although low (1,500 to 2,499 g) and very low BWs (less than 1,500 g) are typically associated with poor outcomes, Native American infants in the state also have a higher infant mortality rate despite their higher BWs. In fact, the South Dakota Native American infant mortality rate is higher than the national Native American infant mortality rate and is the highest of any state in the nation.

This study examined the interaction between maternal risk factors and high infant BWs to determine whether these factors had a more significant impact on Native American infants than white infants at the population level in South Dakota from 2006 through 2011. Our hypothesis was that a racial difference exists in the association of maternal risk factors (pre-pregnancy diabetes, gestational diabetes, obesity and GWG) and BW. We hypothesized that Native American infants' higher BW were related to the increased prevalence of diabetes and obesity within that population. This study also sought to identify opportunities for intervention in women at high risk for high BW infants and the associated risk of complications.

Materials and Methods

De-identified birth certificate data from 2006 through 2011 was provided by the South Dakota Department of Health. We used data for live infant births to South Dakota resident mothers to conduct a cross-sectional study. Cases with unknown values for BW were excluded. The mothers were categorized as Native American (Northern Great Plains Indians) or white based on their self-reported primary race. Paternal race was not taken into consideration for the purposes of this study as maternal factors were the variables of interest. Mothers who listed both Native American and white as primary races were excluded from the study, as were mothers indicating a primary race other than Native American or white. If multiple races were indicated (0.2 percent of the study population after the above exclusions), the mother's primary race was used to classify the mother's race. Infants with BWs below 350 g were excluded, as were infants with GAs of less than 24 weeks or greater than 45 weeks. The total number of cases excluded from the study population was 2,045. After removing missing data and performing race categorizations as detailed above, the resultant study population included 11,416 Native American newborn infants and 59,263 white newborn infants for a total study population of 70,679 newborn infants over six years.

Maternal and infant variables of interest to the study were
then identified and analyzed using SPSS software to determine trends among mothers and infants according to race. Maternal study variables included race, pre-pregnancy DM, gestational diabetes mellitus (GDM), pre-pregnancy weight, pre-pregnancy and delivery BMI and GWG. Infant variables included GA and the outcome measure of BW.

We first compared the Native American and white populations within South Dakota to determine the prevalence of the above variables among mothers and then examined the impact of these factors on infants’ BWs, with an emphasis on explaining the high BWs of Native American infants. Multivariable linear regression was used to examine the relationship between these maternal factors and the outcome measure of BW.

Results

The mean BW of all infants (recorded by birthing attendant) in the study population was 3,325 g (standard deviation = 573 g) with a mean GA of 38.6 (standard deviation = 1.98) weeks. For white (W) infants, the mean BW was 3,315 g, compared to 3,377 g for Native American (NA) infants. This 62 g difference was statistically significant by t-test and indicates a relationship between higher BW and NA race, despite the younger mean GA of NA infants (Figure 1).

Infant BWs were categorized as very low birth weight (VLBW, < 1500 g), low birth weight (LBW, 1,500-2,499 g), normal birth weight (NBW, 2,500-3,999 g) and high BW (HBW, greater than 4,000 g). The mean BW of NA infants was higher than that of W infants in each birth weight category (Figure 1), although only the means of NBW and HBW NA infants were significantly higher than those of W infants. The mean BW of NBW infants was 24.4 g higher in NA infants compared to W (p < 0.001) while the mean BW of HBW infants was 47.4 g greater in NA infants than W (p < 0.001). A significantly higher percent of infants in the NA population were HBW (11.8 percent) compared to the white population (8.5 percent) (p < 0.001).

The prevalence of both pre-pregnancy DM and GDM was significantly greater among NA mothers than W mothers (p < 0.001). As expected, there was a significant increase in the mean BW of infants born to mothers with either type of diabetes compared to mothers with no diabetes in both races. When compared, the mean BW of NA infants was higher than that of W infants whether the mothers had DM, GDM or neither type of diabetes (Figure 2). The difference in BW between infants of NA and W mothers with DM was not statistically significant. NA mothers with GDM, however, did give birth to infants with significantly higher BW compared to W mothers with GDM (mean difference 214 g, p < 0.001) as did NA mothers with neither type of diabetes compared to W mothers (mean difference 53 g, p < 0.001). Additionally, 22.4 percent of NA mothers with GDM gave birth to HBW infants compared to just 10.5 percent of W mothers with GDM (p < 0.001).

Maternal pre-pregnancy BMI was categorized as underweight (BMI less than 18.5), normal (BMI 18.5-24.9), overweight (BMI 25-29.9) or obese (BMI greater than 30). Of the NA mothers, 27.9 percent were overweight and 27.6 percent were obese. These are significantly higher than the rates of overweight (24.2 percent) and obese (22.1 percent) W mothers (p = 0.006). In each maternal BMI category, NA infants had a higher mean BW (Figure 3). For overweight mothers, the mean BW of

<table>
<thead>
<tr>
<th>Birth Weight by Category</th>
<th>Native American Infants</th>
<th>White Infants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birth Weight (grams)</td>
<td>Gestational Age (weeks)</td>
<td>Birth Weight (grams)</td>
</tr>
<tr>
<td>Very Low Birth Weight &lt;1500 g</td>
<td>N (%) 129 1.1% 28.4 (p = 0.099) 1089 (p = 0.099)</td>
<td>Mean 2041 28.5</td>
</tr>
<tr>
<td>Low Birth Weight 1500 g - 2499 g</td>
<td>N (%) 605 5.3% 35.4 (p = 0.144) 2168 (p = 0.144)</td>
<td>Mean 3512 35.28</td>
</tr>
<tr>
<td>Normal Birth Weight 2500g - 3999g</td>
<td>N (%) 9337 81.8% 38.8 (p &lt; 0.001) 50080 (84.5%)</td>
<td>Mean 3330 38.92</td>
</tr>
<tr>
<td>High Birth Weight &gt;4000g</td>
<td>N (%) 1345 11.8% 39.5 (p &lt; 0.001) 5043 (8.5%)</td>
<td>Mean 4242 39.6</td>
</tr>
<tr>
<td>Total Study Population</td>
<td>N Mean 3377 38.6 (p &lt; 0.001) 3315 38.63</td>
<td></td>
</tr>
</tbody>
</table>
NA infants was 3,416 g, a significant difference of 56 g compared to the mean BW of 3,360 g of W infants (p < 0.001). For obese mothers, the mean BW of NA infants was 3,463 g, a significant difference of 101 g compared to the mean BW of 3,362 g of W infants (p < 0.001).

Excessive GWG was defined as GWG greater than the upper limit of the Institute of Medicine’s recommended ranges based on the mother’s pre-pregnancy BMI category.9 The recommended ranges and excessive GWG for each BMI category are shown in Figure 4. Figure 5 shows the mean BW of infants born to mothers with excessive GWG by race. White mothers had a higher mean GWG overall (NA: 31.0lb, W: 32.5lb, p < 0.001) and among overweight mothers (NA: 31.5, W: 33.6lb, p < 0.001). There was no significant difference in mean GWG for obese mothers between the two races. NA mothers in all BMI categories with excessive GWG gave birth to infants with significantly higher mean BW when compared to infants of W mothers with excessive GWG (Figure 5, p < 0.05 for all BMI categories).

Figure 6 shows the progressive increase in BW as risk factors are added. There was no significant difference in the BWs of infants born to mothers without any risk factors (no DM of either type, normal BMI and appropriate GWG). The mean BW for infants born to obese mothers with GDM and excessive GWG was significantly higher for NA infants (NA: 3,680 g (N = 193), W: 3,447 g (N = 554), p < 0.001). The mean BW for infants born to overweight mothers with GDM and excessive GWG was also significantly higher for NA infants (NA: 3,656 g (N = 84), W: 3,402 g (N = 433), p = 0.001). There was no significant difference in GA by race for either obese or overweight mothers with GDM and excessive GWG.

Overweight NA mothers with no diabetes and appropriate GWG gave birth to significantly heavier infants (NA: 3,276 g (N = 1,161), W: 3,204 g (N = 4,004), p < 0.001) as did obese NA mothers with no diabetes and appropriate GWG (NA: 3,351 g (N = 1,192), W: 3269g (N = 4,532), p < 0.001). Of the NA mothers with GDM, 57 percent were obese and 23.8 percent were overweight. Of the W mothers with GDM, 44.6 percent were obese and 25.8 percent were overweight (p = 0.003). Obese NA mothers with GDM but appropriate GWG gave birth to significantly heavier infants than did W mothers (NA: 3,466 g (N = 136), W: 3,335 g (N = 642), p = 0.037). There was no significant racial difference in mean BW for overweight mothers with GDM but appropriate GWG.

<table>
<thead>
<tr>
<th>Maternal BMI</th>
<th>Underweight</th>
<th>Normal</th>
<th>Overweight</th>
<th>Obese</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recommended GWG*</td>
<td>28-40 lb</td>
<td>25-35 lb</td>
<td>15-25 lb</td>
<td>11-20 lb</td>
</tr>
<tr>
<td>Excessive GWG</td>
<td>&gt; 40 lb</td>
<td>&gt; 35 lb</td>
<td>&gt; 25 lb</td>
<td>&gt; 20 lb</td>
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</tbody>
</table>

*Institute of Medicine recommended GWG by BMI category.
The relatively small number of mothers with GDM but normal BMI and appropriate GWG (W: N = 503, NA: N = 40) did not demonstrate a statistically significant difference in BW by race. Analysis of infants born to mothers with normal or underweight BMI, no diabetes of either type and GWG less than or equal to 35 pounds (W: N = 16,584, NA: N = 2,473) showed no significant difference in BW by race.

A regression analysis confirmed these findings. A regression including the variables pre-pregnancy BMI, GWG, excessive GWG, pre-pregnancy diabetes, gestational diabetes and weight showed that race was the most significant variable affecting infant BW (R² = 0.057, F = 692, p < 0.001). Pre-pregnancy BMI, GWG and excessive GWG were also significant. A regression model with interactions showed that the most significant interaction variables were race and GDM and race and BMI.

Discussion

Our results show that NA infants born in South Dakota had a higher mean BW compared to W infants. Furthermore, 11.8 percent of NA infants were categorized as HBW, compared to only 8.5 percent of W infants. The maternal risk factors that we identified correlated with higher mean infant BWs compared to infants of the same race born to mothers without those risk factors. However, NA mothers with the same risk factors as W mothers were more likely to give birth to HBW infants. The most substantial differences in BW were seen in mothers with GDM and in overweight or obese mothers, especially those with excessive GWG. Each is discussed in more detail below.

As expected, infants born to mothers with either type of diabetes had a significantly higher mean BW when compared to infants of that same race born to mothers with no diabetes (DM or GDM). But when compared by race, NA mothers with DM or GDM gave birth to heavier infants than did W mothers. Although pre-pregnancy DM was more prevalent among NA mothers, contrary to our hypothesis it was not associated with a significant increase in BW for NA infants. GDM was also more prevalent among NA mothers but was associated with a higher mean BW for NA infants compared to W, which supports our hypothesis. The mean BW of NA infants of mothers with GDM was 214 g higher than W infants of mothers with GDM. GDM more than doubled the rate of HBW infant births among NA mothers. This represents an opportunity for further research: why did GDM affect NA mothers and infants more than W? Why did GDM affect BW more than DM?

One limitation of our study is that the numbers reported here reflect known diagnoses of pre-pregnancy or GDM and may underestimate the actual incidence, given that it was unknown whether 222 mothers had diabetes of either type. In this study population, 472 mothers received no prenatal care, some of whom are likely to have had unreported or undiagnosed DM or GDM. Whether or not the mothers received regular or recent primary care before becoming pregnant was not reported in the birth certificate data, and there was no other marker identified to reflect regular medical attention. It is thus possible that some of the reported cases of GDM were previously undiagnosed DM. We similarly had no variable available to serve as a marker for control of diabetes (e.g., hemoglobin A1c), and therefore were not able to evaluate whether uncontrolled diabetes had a greater impact on infant BW than well-controlled diabetes.

The mean BW of NA infants was higher for infants born to mothers of any BMI category. The most relevant to our analysis were overweight and obese mothers. There was a higher prevalence of overweight and obese mothers in the NA population and as would be predicted, those mothers gave birth to higher BW infants compared to normal or underweight NA mothers. They also gave birth to higher BW infants compared to overweight and obese W mothers. More of the NA mothers with GDM were...
overweight or obese.

Finally, the study of GWG yielded interesting results. Surprisingly, W mothers in our study had a higher mean GWG than did NA mothers, particularly overweight W mothers. This was unexpected, given that NA mothers were more likely to be overweight or obese and more likely to develop GDM. This high mean GWG among W mothers represents an opportunity for further investigation in a future study to determine its potential causes and consequences. Although NA mothers had a lower mean GWG, NA infant BWs were more affected by excessive GWG.

The purpose of this study was to examine the relationship between maternal risk factors (DM, GDM, obesity and excessive GWG) and infant BWs to determine whether these factors contributed to a higher BW and whether they had a more significant impact on NA infants than W infants. The strength of this study stems from the large NA population that we were able to analyze and compare to the W population in the state. Our analyses clearly identify GDM, obesity and excessive GWG as risk factors for HBW infants, which supports the assertions of previous studies. Further, our analyses show a higher incidence of GDM and obesity among NA mothers, and show that these risk factors result in even higher BW for NA infants compared to W infants.

As shown in Figure 6, NA mothers with obesity, GDM and excessive GWG had the greatest increase in BW when compared to W mothers with the same risk factors and represent the population at highest risk for HBW infants and the associated complications. These mothers should be closely monitored at the start of prenatal care and at the time of GDM diagnosis and should be counseled as to the risks and potential adverse outcomes of fetal macrosomia for both the mother and infant. Overweight and obese NA mothers may also benefit from preconception counseling as to their increased risk of developing GDM.

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REFERENCES


About the Authors:
Kari L. Halvorson, MD, Family Medicine Resident - PGY1, University of Minnesota, North Memorial Family Medicine Residency.
H. Bruce Vogt, MD, Professor Emeritus, Former Chair of the Department of Family Medicine, University of South Dakota Sanford School of Medicine.
Lon Kightlinger, MPH, PhD, State Epidemiologist, South Dakota Department of Health.
Dennis Stevens, MS, MD, Medical Director, Neonatologist, Sanford Children’s Hospital, Neonatal Intensive Care Unit; Professor, Department of Pediatrics, USD Sanford School of Medicine.

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Together we can help pregnant & postpartum women quit & stay quit.
The Healing Arts Through Poetry
A Rush to Undertake a Fool’s Errand

By Henry Travers, MD, FACP

Dedication
This essay was originally begun on the premise that my medical school classmate and beloved best friend of nearly 50 years, Dr. Donald Mark Potter of Lebanon, Pennsylvania, would be an eager collaborator. He did, after all, come to medicine with a degree in English from a respected university. His literary interests were Protean, good writing nourished his soul and poetry was something he would quote from time to time bespeaking a unique understanding of contextual meaning. I was greatly disappointed, then, when a very early draft was met with the good doctor’s scorn. He had other irons in the fire, he said, and had little patience for amateurish meddling in something so important.

During that time Mark’s health gave him little sustained time to pursue the irons he had carefully set in the flames of creativity. After a while, he gave up any pretense and discovered he was afflicted with a widely metastatic pancreatic cancer. There was no time to lose on what was really important: election to membership in the Susquehannock Fly Fishers, Inc. He was inducted in late February 2016. He died on April 12, 2016.

As he struggled with his cancer, he did something completely unexpected: he asked to see a draft of this piece. After he had seen it, he mentioned the work of James Dickey (1923-1997) as well as a passage from Shakespeare’s Henry V. The latter he asked me to “slip in somewhere.”

Among the happiest times of his life were his childhood days in Duluth, Minnesota. Wherever he went, Duluth and two or three of his childhood friends followed, a sanctuary in memory for difficult times. He made real a vision in a poem penned by Dickey 50 years ago when, in 2015, he reconnected with two Duluth friends from his youth:

“If I can find them, even one, I’m home.
And if I can find him catch him in or around [Duluth], I’ll never die: it’s likely my youth will walk inside me like a king.”

Enter the Fool
It is really too difficult to collect into an essay the broad topic of poetry related to the healing arts. The number of poets is large, the number of poems even larger, and the great majority have not been subject to the kind of scholarship which attends the works of Byron, Keats, Auden, Angelou, Carducci and so on. So the entire enterprise would be difficult to get one’s arms around, unless one were inclined to devote to it a large chunk of whatever allotted lifetime remained to a writer. Further, it would challenge the limited common span of an essay in which one can only cover so much.

Although frightened by the enormity of a global literary task and despairing of subsuming it within the essay’s constraints, a writer might take courage in something limited in breadth, though not necessarily in depth. But what? James Dickey’s poem Diabetes? Byron on talipes equinovarus? Edgar Allen Poe, Sylvia Plath and John Keats on expressions of melancholy? T.S. Eliot and the poetry of anesthesia? The poet as physician (“sure the poet is a sage; A humanist, physician to all men.”)? The physician as poet? Shakespeare on dying:

…..I put my hand into the bed and felt them, and they were as cold as any stone…

A said once, the devil would have him about women.”

So now the list of possibilities itself becomes an impediment: indecision is not a long-term option even if procrastination remains a short-term one. If one must start somewhere, perhaps it should be with the help of others who have thought long and hard about poetry and medicine. Rhonda Soricelli, MD, author and adjunct assistant professor at Drexel University College of Medicine told members of the American Osler Society in the spring of 2015, “Essentially, poems are like patients –

1. While saying a poet is one who writes poetry may seem circular, poetry may be defined (as it is in Wikipedia) as a “form of literature that uses aesthetic and rhythmic qualities of language.”
2. Keats, Hyperion
3. Henry V, scene III, act 2
they all require close attention and interpretation.”

**The Layman’s Poem**

With that observation as a guide and a span of 300 years as a loose framework, examine with me three poems between the years 1709 and 2012 through the skills physicians use in approaching patients (data gathering, observation and synthesis). While the poems may seem an incohesive trio, there is, in fact, an unpretentious truth uniting all three. The first poem was written by a layman, the latter two by physicians.

Matthew Prior 4 (1664-1721) was an English poet and diplomat whose life bridged the period between John Dryden and Alexander Pope. His poetry was so broadly popular that he made a generous living from it. Not everyone liked him; Daniel Defoe criticized his penchant for taverns in his early years. His poem entitled *A Reasonable Affliction* was written around 1709. It has since found its way into multiple collections including *Poor Richard’s Almanac*, although often without attribution to its author.

On his death-bed poor Lubin lies:
His spouse is in despair:
With frequent sobs, and mutual cries,
They both express their care.

A different cause, says Parson Sly,
The same effect may give:
Poor Lubin fears that he may die;
His wife, that he may live.

Lubin here lies abed; just his wife and the parson are with him, the latter seemingly the only one of the three to understand the underlying marital discord which accounts for the couple’s expressions of fear and despair. Lubin is referred to as “poor Lubin” and it is likely that he was impecunious, although the reference could be just one of sympathy. I suspect it refers both to his economic situation and his illness. We can infer poverty from the absence of a physician whose care was reserved, in early 1700s England, for the wealthy. The absence of a doctor would probably not influence Lubin’s outcome since matriculation to medical school then required only that one could afford the tuition; the curriculum consisted nearly exclusively of lectures with little or no patient contact. 5

Lubin is naturally fearful for his life, but his wife's fear is that, if he recovers, she must continue to endure the marriage. For the poor in England at the time, marriage required only completion of a contract called “spousals” and no church or witness was required. The wife was expected to efficiently manage the household and to bear children. Since the poem makes no reference to anyone other than the couple and the parson, we may conclude the marriage was barren. We have no way of knowing exactly what grievances Lubin’s wife held, but we know she had little chance at social liberation unless Lubin died.

Prior, who had a well-known penchant for humor in his poetic works, presents an irony: 6 dying and escape. Lubin does not see it, but his wife does: death as escape from continued suffering and death as an escape from the dying person himself.

**The Physicians’ Poems**

Over the subsequent two hundred years there have been a number of poets who were also physicians, some, like Keats, abandoning their medical careers for literary ones. From the likes of Oliver Goldsmith, George Crabbe, John...

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6. While I’d like to call it a “leitmotif,” thereby appearing to be a qualified literary critic, I think it would be pretentious.
Keats, Oliver Wendell Holmes, W.H. Drummond and John McCrae we turn to William Henry Drummond (1854-1907) who wrote The Canadian Country Doctor sometime between 1883 and 1890. Born in Ireland as William Henry Drum in 1854, he moved at age 10 with his family to Montreal two years after which his father died. He worked at various jobs to help support his family, finally obtaining his medical degree from Bishop’s College around 1883.

For the next four years he had a country practice in the Québéc villages of Stormway and Knowlton, Canada. He began writing poetry in 1870, but it wasn’t until 1897 that he published The Habitat and Other French Canadian Poems, a work that enjoyed both popular and critical success. He closed his medical practice in 1905 and died of a cerebral hemorrhage in 1907. He was known well enough in Canada and the United States for Philadelphia neurologist and poet, Weir Mitchell, to have penned a posthumous poem to him.8

Though 20th century academic criticism of Drummond’s work seems to have reduced his importance, some observe that “…Drummond represents a sincere attempt to articulate a myth of cultural mosaic. The achievement of his poems lies not only in their sympathetic portrayal of rural French Canadians but also in their evocation of thoughts and feelings about the human condition and in their representation of, and experimentation with, what might be called a uniquely Canadian/canadien language.”9

The Canadian Country Doctor

I s’pose mos’ev’ry body t’ink hees job’s about de hardes’
From de boss man on de Guvernement to poor man on de town
From de curé to de lawyer, an’ de farmer to de school boy

An’ all de noder feller was mak’ de worl’ go roun’.
But dere ‘s wan man got hees han’ full t’roo ev’ry kin’ of wedder
An’ he ‘s never sure of not’ing but work an’ work away-
Dat ‘s de man dey call de doctor, w’en you ketch heem on de contree
An’ he ‘s only man I know-me, don’t got no holiday.

If you ‘re comin’ off de city spen’ de summer-tam among us
An’ you walk out on de morning w’en de leetle bird is sing
Mebbe den you see de doctor w’en he ‘s passin wit’ hees buggy
An’ you t’ink ‘Wall! contree doctor mus’ be very plesan’ t’ing

‘Drivin’ dat way all de summer up an’ down along de reever
W’ere de nice cool win’ is blowin’ among de maple tree
Den w’en he ‘s mak’ hees visit, comin’ home before de night tam
For pass de quiet evening wit’ hees wife an’ familee.’

An’ w’en off across de mountain, some wan ‘s sick an’ want de doctor
‘Mus’ be fine trip crossin’ over for watch de sun go dow’n
Makin’ all dem purty color lak w’at you call de rainbow,’
Dat ‘s de way peop’ is talkin’ was leevin’ on de town.

But it is n’t alway summer on de contree, an’ de doctor
He could tole you many story of de storm dat he ‘s been in
How hees coonskin coat come handy, w’en de win’ blow off de reever
For if she ‘s sam ole reever, she’s not alway sam’ old win’.

An’ de mountain dat ‘s so quiet w’en de w’ite cloud go a-sailin’
All about her on de summer w’ere de sheep in feedin’ high
You should see her on December w’en de snow is pilin’ roun’ her
An’ all de win’ of winter come tearin’ t’roo de sky.

O! le bon Dieu help de doctor w’en de message come to call heem
From hees warm bed on de night-tam for visit some poor man
Lyin’ sick across de hill side on noder side de reever
An’ he hear de mountain roarin’ lak de beeg Shawinigan.

O! de small Canadian pony! dat ‘s de horse can walk de snowdreef.
Dat ‘s de horse can fin’ de road too he ‘s never been before
Kip your heart up leetle feller, for dere ‘s many mile before you
An’ it ’s purty hard job tellin’ w’en you see your stable door.

Yass! de doctor he can tole you, if he have de tam for talkin’
All about de bird was singin’ before de summer lef’
For he got dem on hees bureau an’ he ‘s doin’ it hese’f too
An’ de las’ tam I was dere, me, I see dem all mese’f.

But about de way he travel t’roo de stormy night of winter
W’en de rain come on de spring flood, an’ de bridge is wash away
All de hard work, all de danger dat was offen hang aroun’ heem
Dat ‘s de tam our contree doctor don ‘t have very moche to say.

For it ‘s purty ole, ole story, an’ he alway have it wit’ heem
Ever since he come among us parish Saint Mathieu

An’ do doubt he’s feelin’ mebbe jus’ de sam’ as noder feller
So he rader do hees talkin’ about somet’ing dat was new.

Once one is accustomed to the dialect, the poem becomes one of a plain description and homage, the elegance of the imagery deriving directly from its simplicity. The poem begins by identifying the doctor, specifically the country doctor as having the hardest job there is. It then presents us with contrasting descriptions: the doctor riding in his buggy in summertime along the river, his day pleasant and free enough of burdens he has time for his family; and the doctor roused from his warm bed in winter having to cross a snowy mountain to attend the sick, the sweet breezes of summer transformed to a menacing roar much like the Shawinigan waterfall. There is a one-stanza tribute to the doctor’s horse whose unerring track through snowdrifts and unknown roads carries the doctor to his patient and safely back.

We find the busy doctor, in the rare intervals when he had the time, talking about the sounds of summer birds rather than the harrowing adventures of winter travel. In the two penultimate stanzas that portray this, the story-teller says, “For he got dem on hees bureau....” and “...de las’ tam I was dere, me, I see dem all mese’f.” Here his “bureau” likely refers to his desk, although exactly what “dem” are is unclear. Drummond himself, although a talented fisherman, did not hunt, suggesting that “dem” are probably pictures of birds and the poetic line, “an’ he ‘s doin’ it hese’f too” may refer to the doctor imitating the bird calls.

The last stanza reinforces the portrait of the doctor as “...mebbe jus’ de sam’ as noder feller...”, a part of the Saint Mathieu parish he serves, who does not consider his hardships any worse than the next man’s and, thus, unworthy of discussion. Such hardships and their effects on physicians, though, were a concern of Drummond’s Canadian contemporary, William Osler, whose essay on Chauvinism in Medicine mentioned Drummond specifically:11

“Few men live lives of more devoted self-sacrifice than the family physician, but he may become so completely absorbed in work that leisure is unknown; he has scarce time to eat or to sleep, and, as Dr. Drummond remarks in one of his poems, ‘He’s the only man, I know me, don’t get no holiday’. More than most men he feels the

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tragedy of isolation – that inner isolation so well expressed in Matthew Arnold’s line ‘We mortal millions live alone.'"

From the 18th century medical humor of Prior to a plain tribute to Drummond’s late 19th century country doctor, we end this exploration with a 21st century work of grief, anger and rejection. The author is a professor of psychiatry at the State University of New York, Upstate Medical University and Tufts University School of Medicine who views disease of the mind in phenomenological terms. Somewhat of a “maverick” in mental health circles (he would replace the DSM with a scheme that “…[enlights] the clinician regarding the ‘inner world’ of the suffering patient”12), he is also a popular author of books and poetry for the general public.

Ronald W. Pies was born in 1952 and published Night View, Pediatric Oncology in 2012.13 The poem begins with migratory bird imagery within an astronomical frame and ends with the answer, through a paleontologic reference, to the wrenching philosophical question in the second stanza.

Night View, Pediatric Oncology
Late November’s
vagrant geese
arc south
beneath the Pleiades,
winging toward
the Archer’s arrow.
In your tenth-floor room,
the IV drips
in ceaseless time.
We wait for strangers
to match your marrow.
Daughter, in all
the star-strewn heavens
there’s only one of you –
What cannibal God
would gorge
on a child’s bones?
If dying
calls for faith,
I’ll place mine
in the Eocene cry
of the constant,
pagan geese.

One can see the poet glancing out the 10th story hospital window on a late fall night, barely seeing the last flights of geese traveling from east northeast (the location of the Pleiades in the late-fall northern hemisphere sky then) to the south southwest where Sagittarius waits with drawn bow. He hears the IV marking time.

In keeping with the poet’s philosophy, he remarks upon the patient’s uniqueness, continuing the astronomical imagery from the poem’s beginning. He then asks a question, his rage emphasized by the words “cannibal” and “gorge,” words one would more closely connect to a pagan worldview than a deist one. It is a question vexing relatives and caregivers of the dying and it has many answers, some rooted in faith, some in angry despair and still others in acceptance.

Whether the poet completely rejected his God or just dismissed the notion of religious faith is as uncertain as the imagery of the last four lines. That the geese were called “pagan” is a further expression of the poet’s anger, but calling their cry “Eocene” is odd. The Eocene, a geologic period between 40 and 56 million years ago, enclosed the breakup of the Laurasian supercontinent, the Chesapeake Bay impact crater and the rise of mammals. The climate was generally hot. It is hard to associate with it today’s familiar sound of geese (the fossil record shows geese separating from ducks in the late Eocene14), more a “honk” than a “cry.” Taken alone, though, the two words “Eocene cry” convey a feeling of distant emptiness, a nebulous thing in which to trust. Acknowledging the Eocene itself contrasts with biblical timelines,15 and perhaps the poet is reframing his abandonment of godly faith in favor of a purely random universe.

In the end, we are left with nothing resembling the
warmth associated with good doctoring. Anger eclipses empathy, a hollow answer to Lisa Rosenbaum’s question, “what does empathy look like when it has been stripped of hope?” Ultimately, the poet is isolated in the room, silent except for the IV’s dripping and the honks of geese in flight.

As I conclude this brief essay, I find myself in a different place from where I started. I originally thought to see how poetry mirrored changing medical themes over the centuries (the fool’s errand), but lacking a truly comprehensive knowledge of either medical history or poetry, the task was beyond me. What came of my original ambition was a serendipitous understanding (in Seneca’s words, preparation meeting opportunity). Three poems in three centuries, on disparate topics and written by disparate people, unite about a central idea: the poetry of medicine reflects the physician’s simple humanity. While its stories and themes may be the stuff of literary criticism and analysis, poems influence us most through how they make us feel.

About the Author:
Henry Travers, MD, FACP, Clinical Professor of Pathology, Sanford School of Medicine of the University of South Dakota.

17. Two words borrowed from Alan Alda. In his commencement address at the Columbia College of Physicians and Surgeons in May 1979, Alda, well known for his role as Hawkeye Pierce in television’s M*A*S*H series, urged the graduates, “Be skilled, be learned, be aware of the dignity of your calling…but please don’t ever lose sight of your own simple humanity.”
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What is Intimate Partner Violence?

Intimate partner violence (IPV), per the Centers for Disease Control and Prevention (CDC), is physical, sexual or psychological harm by a current or former partner. It affects both male and female victims regardless of sexual orientation, race, and socioeconomic status. The violence in IPV is often repeated and used as a form of control and/or punishment. IPV is often confused with domestic violence. While IPV refers to violence by a current or former partner, domestic violence refers to any violence within the home including child abuse, partner abuse, sibling abuse, and elder abuse.

IPV often involves physical violence – hitting, kicking, punching, choking, stabbing, etc. About one in four women and one in seven men report a history of severe physical abuse by a partner. About 1.3 million women and 835,000 men are physically assaulted by an intimate partner each year in the U.S. Physical IPV results in 2 million injuries, over 500,000 of which require medical attention each year. In South Dakota, seven of the 15 homicides in 2012 were due to some form of domestic violence including IPV.

IPV also includes sexual and psychological violence. Sexual violence can result in pregnancy, pregnancy loss, sexually transmitted infections, and negative mental health effects. Ten percent of women report being sexually assaulted by a partner in their lifetime. Psychological violence includes humiliation, name calling, isolation, and threats. In one study, nearly half of all men and women surveyed identified some sort of psychological aggression by a partner.

While IPV is not something medical providers often think about, it does affect a significant number of our patients and can affect all aspects of their physical, sexual, and mental health. Victims of IPV have statistically higher rates of asthma, irritable bowel syndrome, diabetes, poor sleep, chronic pain, frequent headaches and report worse physical and mental health. Medical and mental health costs associated with IPV and its effects are about $4.1 billion each year.

The other victims of IPV that are often overlooked are the children who on a regular basis see or hear the abuse of a parent.

Intimate Partner Violence and Children

Millions of children are affected by IPV each year. At the Children’s Advocacy Center in Sioux Falls, South Dakota, hundreds of children are evaluated who have witnessed IPV ranging from verbal threats to homicides. They disclose intervening to protect their parent, hiding until it is over, and being fearful that their parent may die. Witnessing IPV can have a significant effect on children’s physical health, mental health, and their choices regarding future relationships.

Children can be affected or injured by IPV even before they are born. Studies suggest one of the most at risk times for women is during pregnancy. It is estimated that between 3 and 19 percent of pregnant women are the victims of IPV. IPV during pregnancy can have negative health effects on the fetus including preterm labor, low birth weight, and death. This can occur even without the medical provider being aware of IPV in the relationship. After a child is born, the risk for IPV is still increased due to stressors in the home including a crying infant, less sleep for parents, and more financial strains. When violence occurs between parents, infants are frequently hurt during the struggle.

There is a significant co-occurrence of IPV and child physical abuse, ranging from 30 to 60 percent. The American Academy of Pediatrics has identified IPV as a huge precursor to child abuse. When an adult uses violence to punish or control their partner, it should not be surprising that the same would occur with their children, placing the children at risk of excessive or violent discipline. Children can also be hurt “accidentally” during episodes of IPV. During evaluations for child
maltreatment, children disclose intervening to help a parent during an episode of IPV and as a result get injured. Parents describe dropping an infant during IPV, using children as a shield, or trying to hit their partner and hitting the child by mistake. While the adults may not have been trying to hurt the child, it is still physical abuse.

When young children see or hear IPV, it negatively affects their mental health. These children have increased risk of anxiety, depression, poor attention, worse school performance, lower self-esteem, and more aggression than those children without exposure to IPV. They are also more likely to engage in at risk behaviors as adults which negatively affect their physical health including smoking, obesity, physical inactivity and depression.\textsuperscript{14-17} It is also suggested that the effects of seeing a parent physically assaulted can be more traumatic for a child than if they were being physically abused themselves.

The Adverse Childhood Experience study looked at how negative experiences during childhood can affect your adult health. It was identified that children exposed to IPV had 1.4 times the risk of heart disease even after correcting for other risk factors. They were more likely to have substance abuse, alcohol abuse, and depression. The study also found that exposure to one adverse childhood experience (like IPV) gives the child an 87 percent chance of having a second adverse childhood experience and a 50 percent chance of having three additional adverse childhood experiences such as physical abuse, parental mental illness, parental incarceration, neglect, emotional abuse, or sexual abuse.\textsuperscript{18}

**Should we Screen for Intimate Partner Violence?**

When it comes to screening for intimate partner violence, very few physicians do it on a regular basis. Barriers frequently mentioned to screening include a limited amount of time, inadequate training about intimate partner violence, lack of resources when IPV is disclosed, and fear of offending families.\textsuperscript{19} Screening for a health issue is important when the following criteria are met: 1) There must be serious consequences from the problem 2) The risk of screening must be minimal 3) The screen should be sensitive 4) The screen should be specific, and 5) There should be effective interventions available.

We know that IPV has serious consequences not just to the adult victims but also to the children who are affected by it. We know that IPV results in half a million injuries requiring medical attention each year, over a thousand deaths each year in the U.S., reproductive health complications, and increased rates of mental illness in the victims and their children. So IPV has serious medical, social, and economic consequences.

Medical providers have expressed concerns regarding the risks to screening adults for IPV including worsening the violence in the home and/or offending patients. In 2013, the U.S. Preventative Service Task Force (USPSTF) identified that the risk of screening for IPV was small.\textsuperscript{20} In addition, despite the concerns of offending patients, most individuals welcome screening for IPV. Therefore the risk of screening should not be a barrier.

The sensitivity of IPV screening has long been an issue. Even when providers do screen for IPV, most victims will not disclose. Some are not ready to disclose, some will minimize their disclosure, some are embarrassed and some are afraid of repercussions of disclosing including worsening violence, losing their partner, losing their home, and losing their children. Despite the low sensitivity of screening for IPV, a Cochran Review found that if providers screen for IPV, they will identify twice the number of victims.\textsuperscript{21} While the number of total cases identified is a small proportion of those affected, it is a significant improvement.

The next issue with screening is specificity. The specificity of IPV screening depends on how the questions are asked. Vague questions such as “do you feel safe at home?” may elicit positive responses from individuals worried about local crime, lead paint, mold, etc. and may not refer to IPV. This issue can be addressed by follow up questions or more specific screening questions such as “has your partner ever forced you to do something sexually which you did not want to do?” The key in any questioning is to be open, information gathering, and ask appropriate follow up questions until you understand the situation.

Finally and most challenging for IPV screening to be worthwhile, is identifying that effective interventions and treatment exist. There are multiple resources across South Dakota and the country offering services to male and female victims of IPV. That being said, while some adults are able to acknowledge IPV in the home, fewer are ready for interventions such as counseling, shelters or protection orders. The Cochran Review in 2013, found that screening for IPV did not affect the health and safety of those individuals identified three and 18 months later.\textsuperscript{21} Also in 2013, USPSTF stated that there is not sufficient evidence to advocate for universal screening for IPV in the health-
care setting. These findings may indicate that more research is needed, that more/better resources need to be available, or that providers need to focus on case-specific screening.

Universal screening involves asking every patient or parent in your office about IPV. This type of screening typically works well for providers who see patients or parents at high risk. For example, every family evaluated for child abuse at Child's Voice in Sioux Falls is screened for IPV due to the high co-occurrence. The other type of screening is case finding, which involves identifying patients/parents who are at higher risk and screening them. While the USPSTF did not endorse universal screening, they did identify that there is evidence of benefit of screening women of childbearing age.

Case finding would include not only young women, but any individual with concerning injuries, previous violent relationships or mental illness. Both methods are acceptable and which you utilize may depend upon your patient population.

**Screening Recommendations from Professional Societies:**

- **The American Academy of Pediatrics (AAP):** Pediatricians should use targeted screening of high risk families or universal screening.
- **American Family Medicine (AFP):** Routine screening during periodic health encounters (well exams, prenatal appointments, postnatal appointments) and when signs or symptoms are present.
- **American College of Obstetrics and Gynecology:** Screening at periodic visits can improve the lives of women who experience IPV.

While screening for IPV may feel as if providers are identifying a problem that cannot be fixed, it is similar to smoking, drinking, obesity, and physical activity. Providers screen for these issues, provide education, provide resources and are available when patients need help or support. The same should be true regarding family violence. The other incredibly important part of screening for intimate partner violence is to identify and help the children at risk.

**How to Ask about Intimate Partner Violence**

There are two basic methods for screening for IPV – written questionnaires and verbal screening. The benefit to written questionnaires is that it can be filled out while the patient is waiting for the medical provider and may take up less clinic time for negative screens. There is also belief that written questionnaires may result in more positive screens due to not having to verbally disclose to a provider or nurse. It is important that questionnaires, especially positive ones, be reviewed with the respondent prior to their leaving the clinic.

The most studied example of an IPV questionnaire is the HITS. Patients or their parent are asked how often their partner has physically hurt them, insulted them, threatened them, or screamed/cursed at them. It has them rate the frequency of each of these behaviors and has a scoring method.

The benefit for directly asking about IPV allows for the questions to be better tailored to the patient or parent. New mothers, for example, the provider can discuss how stressful having a baby can be and then ask about how the parents are coping and their relationship. If a parent has previously discussed IPV or has injuries, those issues can be used to initiate a dialogue.

If you do verbally screen patients/parents for IPV, start by normalizing the questions. For example, “Because intimate partner violence (or violence against women) is so common, I always ask my patients about it.” Example follow up questions include:

- “Has your partner ever hit, kicked, or choked you?”
- “Has your partner ever threatened you?”
- “Has your partner ever forced you to do something sexually that you did not want to do?”

With either method of screening, finding an appropriate time to discuss IPV is important. If there are other family members or children (3 years of age or older), have them step out of the room or go with the nurse. If the partner is at the appointment, then either make note to ask when the patient/parent is alone at an appointment or arrange a time to speak privately with the patient/parent when you both know the partner will not interrupt or come into the room. This also gives you an opportunity to discuss other important topics such as sexual health and mental health.

When discussing IPV, the provider needs to be comfortable with the questions he/she is asking. They must be mindful of their responses and their non-verbal cues so that patients/parents do not feel that the provider is surprised, upset, or uncomfortable. Keep in mind that there may be violence in the home and your patients may not tell their provider. The key is to be open to any answer, don’t have preconceived notions, and keep asking at different
appointments so they know they can tell you when they are ready.

**When They Answer “Yes”**

Speaking with medical professionals, one significant fear when asking about IPV is having no idea what to do when they say that there is IPV in the home. Just like any other medical condition, one starts by getting more information. There are many forms of IPV – physical, sexual, and emotional, which often co-occur. Start by figuring out what type(s) of violence are being experienced, the frequency and the severity. Ask about weapons used and if the violence is escalating, lessening or staying the same. Ask about the children. Where are the children when this occurs? Do the children see it, do they hear it, do they intervene? Have the children been hurt? Find out what the adult does when it starts, where does he/she go, what do the children do. Finally, ask if they feel safe going home today. Often even when patients/parents feel comfortable enough to acknowledge IPV with their health care provider, they still are not ready or planning to leave. Leave your judgments and opinions out of the room, our job as medical professionals is to educate, support, and provide resources.

Most victims will not be interested in leaving. There are multiple barriers to leaving a violent relationship which we don’t always realize from the outside. They may really love this person and the children may love him/her with the exception of the IPV. Leaving the relationship may mean losing the home, losing the financial support, losing friends/family, and potentially losing custody of the children. There is also a high co-occurrence of IPV victimization and depression/anxiety which makes leaving even more difficult. There is also an understood threat of violence with the decision to leave which often is not just implied but often stated clearly by the abuser.

If they are not interested or ready to leave, there are several safety tips that you can provide.26

1. Go to a public place and avoid areas like the kitchen where there may be more dangerous weapons.
2. Determine a safe place for children to be able to immediately go if there is signs of violence. This can be a neighbor’s house or the back of their closet.
3. Have a code word which signals the children to leave and go to the safe place and make sure they know not to come out until they are told that it is safe.
4. Teach children to dial 9-1-1 so that if they can’t get away or a serious injury occurs, they can phone for help.
5. The whole family, adults and children, should be in counseling.
6. There should also be a plan to be able to leave the home immediately if the need arises. A spare set of keys, cash, and credit cards can be stored at a safe friend’s house.

If he/she is ready to leave, there are some basic tips that you can provide in addition to resources. They will need a new place to go, such as a shelter. They should bring the children with them and not go to a place where the abuser would immediately look for them. Be careful of leaving a trail on the computer or phone history which might identify where they are going. Have cash available if possible in case something happens to the bank account or credit cards. Get a restraining order so that he/she cannot contact you. Do not contact him/her. Change your passwords, change your phone number or get a new phone. Notify the school and daycare about who can and can’t pick up the children. Finally, they should be put in contact with an advocacy agency that has more time, information and resources than yourself.

**Documentation of IPV**

When law enforcement is trying to make a case of a history of IPV or when a victim is seeking a protection order, medical records can be helpful. Medical records documenting IPV also allow the medical provider to remember what was discussed previously and follow up with the patient/parent at the next visit. It is very important especially for pediatricians to be careful what is documented in the medical record since parents can request those records. In order to document appropriately while maintaining confidentiality and safety for patients consider the following options:

1. Ask permission prior to documenting about IPV. If you do document, try to use direct quotes.
2. Consider using a shadow chart which would not be sent with a regular records request
3. Use acronyms such as MIPV (for maternal intimate partner violence). Then document that you discussed MIPV and safety education was provided.
Reporting IPV

In South Dakota, anyone treating a wound from a gunshot or firearm must report it to law enforcement. There is no mandatory requirement for reporting other forms of IPV unless children are involved.

When children are involved, our duty as mandatory reporters trumps patient confidentiality. When children witness (see or hear) intimate partner violence, it is considered a form of emotional abuse/neglect and places them at risk. All medical professionals are mandatory reporters of child maltreatment and should report children witnessing IPV to Child Protective Services (877.244.0864). If children are injured during an episode of IPV (for example, father pushes mother who is holding the baby and the baby gets dropped and there is a bruise) that is physical abuse to the child and must also be reported.

When you do report IPV to Child Protective Services, consider having the parent make a separate call or call with you so that they are being protective of their children.

South Dakota Coalition to End Domestic and Sexual Violence 800.572.9196

The Compass Center – Crisis Hotline 877.In-CRISIS

Children’s Inn, Sioux Falls 409 N. Western Ave, Sioux Falls, SD 57104 605.338.0116

National Domestic Violence Hotline 800.799.7233

South Dakota Child Protective Services 877.244.0864

Safe Harbor – Aberdeen Shelter 888.290.2935 or 605.226.1212

Missouri Shores Domestic Violence Shelter – Pierre 800.696.7187 or 605.224.7187

Working Against Violence – Rapid City 888.716.9284 or 605.341.3292

About the Author:
Brett Slingby, M.D., Child Abuse Pediatrician, Child’s Voice, Sanford Health, Sioux Falls, South Dakota; Assistant Professor of Pediatrics, University of South Dakota Sanford School of Medicine.

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Preoperative Chest Radiography in Elective Surgery: Review and Update

By Ethan M. Young, BS, MS IV; and Joel D. Farmer, MD

Abstract

Introduction: The preoperative evaluation is designed to identify factors that may predispose a patient to perioperative complications in an effort to ensure patient safety. The use of chest radiography in the preoperative evaluation has progressed from routine testing to a more selective approach based on evidence that routine testing is low yield. However, preoperative chest radiography (POCR) may still be utilized more frequently than necessary as guidelines provide varying recommendations and providers continue to order the test by convention. The literature is reviewed to update providers on the indications for POCR and encourage more selective use.

Methods: Articles related to POCR were retrieved via PubMed search and subsequent cited reference search. Effort was made to analyze primarily meta-analysis, systematic reviews and current guidelines and secondarily larger observational studies. No randomized controlled trials related to use of POCR were identified.

Findings: POCR frequently detects abnormalities; however, a majority of abnormalities detected are in patients with a history of cardiopulmonary disease or signs and symptoms indicative of cardiopulmonary disease. The frequency with which detected abnormalities influence perioperative management is low and evidence suggests that the clinical examination alone provides sufficient information to dictate any necessary changes in management in a majority of cases. Current evidence does not support the ability of POCR to reliably predict postoperative pulmonary complications.

Conclusions: Selective use of POCR is recommended. Emphasis on a thorough preoperative clinical examination is usually sufficient to make decisions on perioperative management as POCR rarely provides significant additional information. POCR is generally indicated in patients with signs or symptoms of acute or unstable cardiopulmonary disease. The relationship between POCR and patient outcomes, morbidity and mortality is not known.

Introduction

The preoperative evaluation has long been considered an important component of a patient’s preparation for elective surgery. This evaluation is designed to identify potential risk factors that may predispose a patient to perioperative complications. If possible, patient risk factors and perioperative management are optimized to better surgical outcomes.

Historically, the preoperative evaluation consisted of routine tests obtained in otherwise healthy patients preparing for elective surgery. Over time, the methodology of preoperative testing has been modified to a more selective approach. Evidence shows that most routine testing is low yield in asymptomatic patients or patients undergoing minimal risk surgical procedures. However, recommendations for preoperative testing often vary depending on the guideline used, creating confusion among medical providers. Despite numerous guidelines recommending the limited use of preoperative testing, routine testing is often continued by convention today. This is true when examining the preoperative chest radiograph (POCR). Despite limited evidence, POCRs continue to be ordered as part of a comprehensive
preoperative evaluation for patients undergoing elective surgery.

This review serves as an update on the diagnostic yield and indications of the POCR as well as its ability to influence perioperative management and predict postoperative complications. Current and past evidence on the use of POCR is presented to update providers involved in the preoperative care of patients and encourage a more selective approach based on current guidelines.

Background

The routine use of POCR began around World War II as a screening tool for detecting asymptomatic pulmonary tuberculosis at a time when disease prevalence was high. This practice came into question in the 1970s when research began to demonstrate that the routine use of POCRs was of low diagnostic yield, particularly when the risk of radiation exposure and cost were factored. This information was supported by a large study involving 10,619 patients conducted by the Royal College of Radiologists in 1979, which concluded that the use of POCR did not significantly influence anesthetic management nor the ability to predict postoperative pulmonary complications. Despite variations in study design and opinion, these conclusions have been upheld in many subsequent analyses of the use of POCR.

Chest radiography continues to be one of the most common radiologic studies ordered. An estimated 112 million chest radiographs were ordered in the U.S. in the year 2000. In a study of 3,812 chest radiographs obtained in a primary care clinic in 2004, it was determined that just over one-third (1,282) were ordered as routine or screening exams. The portion ordered as part of a preoperative examination was not reported.

When examining current costs for POCR within the Sioux Falls area, it is estimated that initial clinic/hospital charges for standard chest radiography (PA/lateral views) range from approximately $100 to $500. Therefore, more selective ordering of POCR based on current guidelines may represent an opportunity for health care cost savings in this area.

Methods

Initial retrieval of articles related to preoperative chest radiography was completed via PubMed search with keywords “Preoperative, Chest, Radiography, X-rays, Elective, Surgery.” Subsequent retrieval of relevant articles was completed via cited reference searching of initial articles.

The primary literature on POCR consists mainly of low-level evidence in the form of retrospective and prospective observational studies. There are no randomized controlled trials to date related to the use of POCR. Evidence is supported in the form of secondary sources that include meta-analysis and systematic reviews. Effort was made to analyze information primarily from meta-analysis, systematic and clinical reviews, and evidence-based clinical guidelines and secondarily from select review of larger observational studies.

Utilizing the Strength of Recommendation Taxonomy (SORT) system endorsed by the American Academy of Family Physicians, the body of evidence analyzed in this report is consistent with Level 2- limited-quality patient-oriented evidence resulting in conclusions with strength of recommendation grade B (grading scale A through C).

Abnormalities on Preoperative chest Radiographs

Abnormalities are often detected on POCR. However, evidence has demonstrated that a majority of the abnormalities detected may be identified via patient history or physical examination. In a meta-analysis by Archer et al. of 21 studies involving 14,390 patients who received routine POCR, 10 percent of preoperative chest films detected an abnormality broadly defined as any variation from normal. In 14 of the 21 studies analyzed, sufficient information to determine whether those abnormalities were already known based on previous history of cardiopulmonary disease or were suspected by clinical examination revealed that 1.3 percent of abnormalities were unsuspected. In other words, 1.3 percent of the abnormalities detected would likely not have been identified or known of if routine POCR was not obtained. Based on this evidence, Archer et al concluded that the clinical value of routine POCR does not outweigh the cost or potential harm associated with irradiation and further work-up of benign abnormalities. The authors recommended use of POCR only for select patient populations with increased prevalence of pulmonary disease or in situations where the medical history or examination is unreliable (senility, dementia, linguistic or cultural barriers).

In subsequent studies, the prevalence of abnormalities detected by POCR in asymptomatic patients varied widely. Joo et al. conducted a systematic review of 14 studies between 1966 and 2004 which concluded that the diagnostic yield of POCR increased with age and number of risk factors. Detection of abnormalities ranged from 3 to 16 percent for patients age less than 50 years old and 47 to
61 percent for patients age greater than 70 years old. In all studies examined, the prevalence of abnormalities increased in patients with risk factors. However, classification of risk factors varied significantly across studies. For many, risk factors included broad categories that involved a medical history of any cardiac or pulmonary disease or any clinical findings attributable to cardiac or pulmonary disease. Other studies utilized multivariate analysis to determine the association between specific risk factors and abnormal POCRs. In a large prospective study of 6,111 patients, Silvestri et al. determined that male gender, age greater than 60 years, American Society of Anesthesiologists (ASA) class greater than or equal to 3, respiratory illness, and two or more coexisting diseases were associated with an increased probability of a useful POCR. In this study, the patient’s anesthesia provider made the determination of a POCR’s usefulness. With this analysis, the authors determined 1.4 percent of POCRs were clinically useful in a subgroup that included men age less than 60 with ASA class less than 2 and no comorbidities in comparison with 48 percent of clinically useful POCRs in a subgroup that included age greater than 60 with ASA class greater than 3 and pre-existing pulmonary disease.

In two studies that reported whether abnormalities found on POCR were considered a new finding, 56 to 64 percent were determined to be chronic or previously known. Cardiomegaly and chronic obstructive pulmonary disease were among the most commonly reported chronic entities. These values can be compared to a study by Gagner and Chiasson that concluded that 92 percent of the abnormalities detected on POCR were in patients with a history or symptoms of cardiopulmonary disease.

**Significance of Abnormalities Detected**

A majority of the literature to date has attempted to determine the frequency with which abnormalities detected on POCR lead to further investigation or a change in perioperative management. POCR abnormalities have been reported to result in further investigation 2.4 to 47 percent of the time. Of significance, 90 percent of further investigations did not lead to any change in management. It could not be determined whether further investigations influenced post-operative morbidity or mortality.

In the meta-analysis by Archer et al. it was determined that only one in 10 patients with unsuspected abnormalities led to some change in patient management. Therefore, the frequency in which routine POCR resulted in an unsuspected abnormality (1.3 percent) that then led to a change in the preoperative management plan was approximately 0.1 percent. Definitions of what constituted a change in management varied throughout the studies but usually involved a change in the mode or type of anesthesia delivery, a postponement or cancellation of surgery or another medical intervention to optimize patient health status prior to surgery (i.e., antibiotics for suspected pneumonia or diuretics for evidence of pulmonary edema). In an influential study, the Royal College of Radiologists determined that POCR did not have a significant role in determining whether or not patients received inhalational anesthesia. Conversely, Silvestri et al. determined that 5.1 percent of abnormal POCRs influenced the anesthesia plan by causing either a change in anesthetic management or need for further investigation.

In a systematic review by Munro et al. it was determined that POCR in otherwise healthy patients was determined to be abnormal in 2.5 to 37 percent of cases and led to changes in management in 0 to 2.1 percent of cases. When expanding their search to include studies that involved both routine and indicated testing, abnormal POCR ranged from 1.4 to 60.1 percent but only increased the range of resultant changes in management to 5.9 percent. A review by Smetana and Macpherson similarly concluded that 3 percent of abnormal POCRs results in a change in perioperative management.

In a large prospective study by Bouillot et al. of 3,959 patients who underwent general or gastrointestinal operations, abnormalities were detected in 23 percent of POCRs obtained. The POCR was considered more informative than the clinical examination in 14 percent of cases. A change in surgical or anesthetic management occurred in 5 percent of cases when clinical examination and POCR were considered but only 0.5 percent when POCR was considered alone, which indicates that clinical examination alone provided sufficient information to influence perioperative management approximately 90 percent of the time. When stratifying patients by number of risk factors present, the ability of the POCR to identify an abnormality that led to a change in management was ten-fold when comparing the lowest risk group (0.1 percent) to the highest risk group (1 percent).

In a review by the American Society of Anesthesiologists Task Force on Preanesthesia Evaluation, POCRs were abnormal in 0.3 to 60.1 percent of cases in asymptomatic patients and led to postponement, cancellation or changes
in management in 0.6 to 20 percent of cases. When selective ordering of POCR was utilized based on history of cardiopulmonary disease or related findings on clinical examination, abnormalities on POCR were detected in 7.7 to 86 percent and influenced management in 0.5 to 17 percent.\textsuperscript{11} Interpretation of this data suggests that, although selective ordering of POCR detects relatively more abnormalities, it is unclear whether there is a significant difference in the ability of selective ordering of POCR to influence perioperative management when compared to routine.

\textbf{Postoperative Pulmonary Complications}

In addition to its ability to influence perioperative management, the ability of POCR to predict postoperative pulmonary complications has been examined. The list of potential pulmonary complications is extensive, but serious complications often include bronchospasm, atelectasis, pneumonia, respiratory failure or exacerbation of chronic pulmonary disease. Pulmonary complications are among the most common postoperative complications and are associated with poorer outcomes, longer hospital stays, increased rates of readmission and increased mortality.\textsuperscript{16-19}

Evidence indicates that risk factors associated with postoperative pulmonary complications can be separated into two categories – those inherent to the patient and those associated with the type of procedure being performed. In a pair of systematic reviews, chronic obstructive pulmonary disease (COPD), age older than 60 years, ASA class greater than or equal to 2, functional dependence, and congestive heart failure were determined to be significant risk factors for postoperative pulmonary complications. In relation to the procedure being performed, prolonged surgery greater than three hours, abdominal surgery, thoracic surgery, neurosurgery, head and neck surgery, vascular surgery, aortic aneurysm repair, emergency surgery and general anesthesia were all associated with increased risk of postoperative pulmonary complications.\textsuperscript{10,21}

The use of POCR to predict or help diagnose postoperative pulmonary complications has been suggested. However, current evidence does not support this attribution. Fritsch et al.\textsuperscript{21} determined that age, type of surgery and medical history are strong predictors of perioperative complications and preoperative testing has only limited ability to predict adverse outcomes. It was recommended that more selective ordering be done. In a large multicenter prospective study, Bouilliot et al.\textsuperscript{9} concluded that POCR may have contributed to the diagnosis of postoperative pulmonary complications via comparison of pre and post-films in 5 percent of cases. The authors recommended routine use of POCR only in patients undergoing general or gastrointestinal surgery with three or more risk factors and selective ordering of POCR in patients with one or two risk factors. The study by the Royal College of Radiologists\textsuperscript{1} determined that incidence of postoperative pulmonary complications was not significantly different in patients who received POCR to those who did not (12.8 percent and 16 percent, respectively). Similar results were obtained in two subsequent studies that determined that postoperative complications were only slightly more common in patients with abnormal POCR results compared to normal POCR, resulting in an increased incidence of 1 to 4 percent.\textsuperscript{12,21}

\textbf{Patient Outcomes, Morbidity, and Mortality}

No reports were identified that attempted to analyze the effect of POCR on patient outcomes, morbidity or mortality. This information would be important for further delineating the indications for select use of POCR.

\textbf{Current Guidelines}

Guidelines on use of preoperative chest radiography have been established by five separate organizations (Table I). Common to all guidelines is a recommendation against routine use of POCR in elective surgery. Three of the five guidelines make recommendations that POCR is usually appropriate in patients with acute, new or unstable signs or symptoms of cardiac or pulmonary disease.\textsuperscript{15,25,26}

Guidelines by the American College of Physicians\textsuperscript{24} published in 2006 are largely focused on the ability to predict perioperative pulmonary complications. In summary, it is recommended that providers rely more on identification of patient risk factors (COPD, CHF, ASA class, and level of functional dependence) and procedural risk factors (prolonged surgery, emergency surgery, use of general anesthesia, etc.) for risk stratification. It concludes by noting that for the prediction of perioperative pulmonary complications, POCR may be appropriate in patients with a previous history of COPD or asthma.\textsuperscript{24}

The American College of Radiology (ACR) Appropriateness Criteria\textsuperscript{25} in 2008 makes recommendations based upon review of 47 references that vary in quality and strength of evidence. Per the ACR, it is suggested that there is some evidence to support that POCR may provide value to perioperative management in patients of
advanced age (greater than 70 years old), those with a history of cardiopulmonary disease, those with an unreliable clinical examination, and in certain high-risk operations. It recommends that select ordering of POCR be based primarily on a clinical suspicion of acute or unstable cardiopulmonary disease that has potential to influence patient management. It concludes that POCR has a low potential to reliably predict postoperative pulmonary complications.

The guidelines produced by the American Society of Anesthesiologists Task Force on Preanesthesia Evaluation updated in 2012 indicate that selective preoperative testing, including POCR, based on parameters that include review of patient history, clinical examination, invasiveness of procedure, and type of anesthesia being utilized may assist the anesthesia provider with perioperative management. However, the guidelines note that decision-making parameters for specific preoperative testing cannot be unequivocally determined based on current literature and should be individualized based upon patient information. In reference to POCR, it is recommended that the decision to obtain POCR should involve consideration of patient status on smoking, recent upper respiratory infection, COPD, and cardiac disease, especially when acute or unstable. The task force notes that while the frequency of radiography abnormalities may be higher in patients associated with smoking, extremes of age, stable cardiopulmonary disease and resolved upper respiratory infection, it does not support these factors as unequivocal indications for POCR.

The Institute for Clinical Systems Improvement guidelines on perioperative protocol were released in 2012 and updated in 2014. Relating to POCR, the guidelines suggest that POCR be considered in patients with evidence of signs or symptoms of acute or unstable cardiopulmonary disease.

The National Institute for Health and Care Excellence released updated guidelines in 2014 on perioperative testing. In reference to POCR, the guidelines state that routine use of POCR is not recommended.

Recommendations

1. Routine use of preoperative chest radiography is not recommended.
2. Quality preoperative clinical examinations are essential as preoperative chest radiography rarely provides information that is not already obtained via patient history and physical examination.
3. Preoperative chest radiography is usually indicated in patients with new or unstable signs or symptoms of cardiac or pulmonary disease.
4. The use of preoperative chest radiography rarely contributes to changes in perioperative anesthetic

<table>
<thead>
<tr>
<th>Organization</th>
<th>Recommendations</th>
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<tbody>
<tr>
<td>American College of Physicians, 2006</td>
<td>Preoperative chest radiography may help predict perioperative pulmonary complications in patients with a history of COPD or asthma.</td>
</tr>
<tr>
<td>American College of Radiology, 2008</td>
<td>Preoperative chest radiography may provide value to perioperative management in patients of advanced age (&gt;70 years old), those with a history of cardiopulmonary disease, those with an unreliable clinical examination, and in certain high-risk operations. Select ordering of POCR should focus on clinical suspicion of acute or unstable cardiopulmonary disease with potential to affect preoperative management.</td>
</tr>
<tr>
<td>American Society of Anesthesiologists, 2012</td>
<td>Decision to obtain preoperative chest radiography should involve consideration of patient status on smoking, recent upper respiratory infection, COPD, and cardiac disease, especially when acute or unstable.</td>
</tr>
<tr>
<td>Institute for Clinical Systems Improvement, 2014</td>
<td>Preoperative chest radiography may be considered in patients with evidence of signs or symptoms of acute or unstable cardiopulmonary disease.</td>
</tr>
<tr>
<td>National Institute for Health and Care Excellence, 2016</td>
<td>Routine use of preoperative chest radiography is not recommended.*</td>
</tr>
</tbody>
</table>

*Adapted from Feely et al eAppendix B: Guideline Summary for Preoperative Chest Radiography.*
or surgical management.
5. Preoperative chest radiography has not been proven to reliably predict postoperative pulmonary complications.
6. The role of preoperative chest radiography on patient outcomes, morbidity, and mortality has not been studied effectively.

Acknowledgement
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REFERENCES

About the Author:
Ethan M. Young, BS, MSIV, MD Candidate, Class of 2017, University of South Dakota Sanford School of Medicine.
Joel D. Farmer, MD, Clinical Associate Professor, Department of Surgery, University of South Dakota Sanford School of Medicine; Anesthesiology Associates Inc., Sioux Falls, South Dakota.
Everyone remembers being asked what they wanted to be when they grew up. Often, children say a police officer, astronaut, doctor, maybe an archeologist, construction worker, or something else people are fascinated by as a youngster. As children grow up, they graduate from high school, enter college, and try to decide on a professional path that will bring them personal and professional satisfaction for years to come. For many, choosing a major can be a very difficult decision, while others land on a major rather quickly. When it comes to students choosing a career in health care, numbers show the demand for most fields is getting stronger and the application process remains competitive.

The most recent data released by the Association of American Medical Colleges (AAMC) shows that 52,550 students applied to medical school in 2015, with 38,460 of those being first-time applicants, and the total number of applicants has steadily increased over the years (Figure 1). In all, medical schools accepted 20,630 applicants in 2015, a 16.2 percent increase since 2007 (Figure 1). Signs indicate that enrollment is going to need to continue to increase to meet future demand. In 2015, AAMC estimated that the U.S. will face a shortage of 46,000 to 90,000 physicians by the year 2025, with 12,000 to 31,000 of those being primary care physicians. Due to this projected shortage, the AAMC is calling for medical schools to train 3,000 additional physicians every year. With strong interest in the profession (high number of first-time applicants) and an increasing applicant to accepted student ratio (2.29 applicants for every one medical school seat in 2010, the ratio was 2.55 in 2015), medical schools have the applicant numbers needed to meet this demand but other obstacles may stand in the way (i.e., number of medical residency training positions available).

Future demand for dentists is quite similar to that of physicians. In fact, the U.S. Bureau of Labor Statistics estimates a 18 percent job growth for dentists from 2014 to 2024. To help meet this demand, dental schools accepted 5,943 applicants in 2015, a 20.1 percent increase.
While still strong, the applicant to accepted student ratio is decreasing (2.4 applicants for every one dental school seat in 2010, the ratio was 1.98 in 2015), and the number of students applying to dental school has been a bit flat since 2008 (figure 2). With demand projected to be so high and the number of applicants becoming stagnant, it will be important for the profession of dentistry to increase its outreach and further develop pipeline programs to increase student interest.

Like dentistry, pharmacy faces a stagnation, if not a decline, in its applicant pool. While PharmCAS is used by the majority of pharmacy schools, there is not one single centralized application service used by all pharmacy programs. As a result, all applicant data for pharmacy is reported in application numbers instead of applicants. The most recent data released by the American Association of Colleges of Pharmacy (AACP) shows that schools of pharmacy received 76,525 applications in 2015, a sharp decline from 2014 and part of a negative trend since 2010 (Figure 3). In response to a shortage of pharmacists seen nationwide prior to 2010, the total number of students accepted to schools of pharmacy increased by 21.5 percent from 2007 to 2012. That shortage of pharmacists has leveled off though and now the trend of increasing seat numbers has flattened (14,190 students accepted in 2015, a 1.3 percent increase since 2012). Certainly the numbers show that there are enough applications to fill the total number of seats available in schools of pharmacy, but the ratio of applications received to students is decreasing (8.6 applications received for every one pharmacy school seat in 2010, that ratio was 5.39 in 2015) and that ratio can even be a bit misleading since you do not know how many applicants are represented in that application number (i.e., if every applicant is applying to four schools of pharmacy, then there were 19,131 applicants for 14,190 total seats in 2015).

At the end of the day, interest in health care careers is quite strong and future demand for graduates by and large is projected to grow. Despite that fact, all health care practitioners need to do their part to ensure that continues on into the future. Whether that means allowing a student to shadow you, attending a local high school job fair, assisting your alma mater in a recruitment activity, or just being a positive role model out in the public, we owe it to our profession to step up and do what is needed to ensure that the future health of each respective health care profession is stronger than ever.
Board News

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

SDBMOE Announces New Administrative Rules Affecting the Practice of Medicine

- The medical documentation rules are provided in this article and can be viewed on the Board website using the New Rules link on the homepage, or by clicking on the Statutes and Rules tab in the right hand menu on the homepage.
- Medical Documentation Rules (commonly referred to as the “opioid prescriber rules”). However, this documentation rule covers more than just opioids in that it is for any controlled substances (including tramadol).
- More accurately described as the medical documentation rules “when prescribing controlled substances for the treatment of chronic, non-cancer pain”
  - When treating chronic, non-cancer pain as defined in the second rule
  - Provides a definition of chronic pain

The South Dakota State Medical Association (SDSMA) provided input and recommendations
- The SDSMA created an ad hoc committee to study the issue.
- Board member Dr. Laurie Landeen was the Board’s liaison to the ad hoc committee.

Dr. Landeen would like to provide this guidance on the new rules:
- The intent of this rule is for providers to have a sense of what is expected in the medical chart.
- This will be a tool for investigators to use when there is a complaint about over-prescribing controlled substances.
- The board will not be utilizing this new rule to randomly screen the medical records of providers who prescribe controlled substances.
- Please remember that this rule applies to the use of controlled substances for chronic, non-cancer pain, and does not apply when treating acute or post-operative pain!

The New Administrative Rules

20:47:07:01. Standards for medical records when prescribing controlled substances for the treatment of chronic, non-cancer pain. The standards for medical records when a physician prescribes controlled substances for the treatment of chronic non-cancer pain include each of the following listed items:
  (1) Copies of the signed informed consent and any treatment agreement required by the physician;
  (2) The patient’s medical and psychosocial history;
  (3) The results of all physical examinations and all laboratory tests;
  (4) Confirmation that the appropriate state prescription drug monitoring programs have been accessed, and the date of that access, or an explanation why they were not accessed;
  (5) The results of all risk assessments, including results of any screening instruments used;
  (6) A description of the treatments provided, including all medications prescribed or administered, with the date of prescription or administration, the name and type of the medication, and the dosage and quantity of medication prescribed or administered. The medical records must include all prescription orders for opioid analgesics and other controlled substances, whether written, telephoned, faxed, or electronically transmitted;
  (7) Instructions to the patient, including discussions with the patient and, if appropriate, significant others of the risks and benefits of opioid analgesics, including the risks of addiction, overdose, and death; proper use and storage of medication; proper disposal of unused medications; and the use of naloxone products to reverse overdose;
  (8) Results of ongoing assessments, including, when appropriate, urine drug tests, of patient progress or lack of progress in terms of pain management and functional improvement;
  (9) Notes on any evaluations by and consultations with specialists;
  (10) Any other information used to support the initiation, continuation, revision, or termination of treatment. Any steps taken in response to aberrant medication use by a patient and aberrant behaviors related to a prescription for an opioid analgesic;
  (11) Medical records of past hospitalizations or treatments by other providers, to the extent obtained by the physician;
  (12) Authorization for release of information to other treatment providers; and
  (13) Name, address, and telephone number of the patient’s pharmacy.

General Authority: SDCL 36-4-35.
Law Implemented: SDCL 36-4-29, 36-4-30.
References: Federation of State Medical Boards Model Policy for the Use of Opioid Analgesics in the Treatment of Chronic Pain; Federation of State Medical Boards Model Policy on Data 2000 and Treatment of Opioid Addiction in the Medical Office.
20:47:07:02. Definition of chronic pain. For the purposes of section 20:47:07:01, the term, chronic pain, means ongoing, recurrent, or persistent pain lasting beyond the usual course of an acute illness or injury or that is three months or longer in duration.
General Authority: SDCL 36-4-35.
Law Implemented: SDCL 36-4-29, 36-4-30.

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

Improving Cardiac Care and Reducing Cardiac Healthcare Disparities

By Stephan D. Schroeder, MD
Medical Director, South Dakota Foundation for Medical Care

February is American Heart Month as sponsored by the American Heart Association. Heart disease is the leading cause of death for both men and women in the U.S. The Million Hearts project is a joint effort by the Centers for Disease Control (CDC) and Centers for Medicare and Medicaid Services (CMS) to reduce and prevent myocardial infarction and stroke. The initial phase began in 2012 involving numerous organizations and emphasized clinical factors known as ABCS: Aspirin when appropriate, Blood pressure control, Cholesterol management and Smoking cessation.

A major task of the Great Plains Quality Innovation Network is improving cardiovascular care and supporting the Million Hearts initiative which fosters adoption of clinical quality measures for the ABCS program and alignment of data across public and private reporting initiatives. So far efforts have been made to focus on cardiac disparities potentially affected by culture, literacy, race or gender. Home health agencies have played a part in in providing information and encouraging family engagement.

Seventy-five million American adults have hypertension and nearly 11 million are unaware of it. There are 57 million patients undergoing treatment but only 72 percent are adequately treated. The current national rate of blood pressure control of 56 percent is an improvement from 46 percent of five years ago, according to the CDC. Smoking has also made good progress with 10 million fewer smokers since 2009. Continued efforts are needed to maintain that decrease.

High blood pressure can result in heart disease, stroke, kidney disease and increased mortality. Approximately 70 percent of American adults over age 65 have hypertension with only about half adequately controlled. The American Medical Association has a program aimed at ensuring accurate blood pressure measurement in the office and outpatient setting by those monitoring the values.

Antihypertensive medication requires good compliance. Based on Medicare Part D data at least 25 percent of those Medicare patients are not taking their medication as directed. Providers, pharmacists, home health agencies and community health workers can assist in improving medication adherence and provide patient reminders and support. Using generic medications, home blood pressure monitoring and following effective treatment protocols may help as well. Social determinants that contribute include low income, poor nutrition (by choice or affordability) and social or emotional issues. Health literacy is also a major factor in medication compliance and adherence. Basic instructions need to be given along with documenting the patient or caregiver understands how prescriptions are to be taken.

The Million Hearts 2022 program has been released with the continued aim to accelerate toward one million fewer heart and stroke events in the next five years. This target will have the additional public health elements of encouraging dietary sodium reduction and emphasizing increased physical activity. Dietary fat restrictions will also be stressed. This new 2022 update aims to accelerate the program and while ambitious is hopefully realistic in helping reduce cardiovascular disease.

The four Great Plains QIN states are working to identify evidence-based strategies to improve cardiovascular health. Many strategies cross into other programs such as diabetes management, care transition and medication safety. Factors such as stress management, gender variation in how the disease presents and adequate screening will also need attention. We hope to facilitate new and existing best practices, resources and protocols and offer opportunities to align efforts across providers, patients and stakeholders. Poor cardiac health has a great impact on public health and overall patient wellness. The significance of this disease is a reminder or all of us to take this effort to heart.

For more information, please review the www.greatplain-sqin.org website or contact Stephan Schroeder, MD, at Stephan.schroeder@area-a.hcqis.org or Holly Arends, CHSP, CMQP, at Holly.Arends@area-a.hcqis.org.

Resources

This material was prepared the Great Plains Quality Innovation Network, the Medicare Quality Improvement Organization for Kansas, Nebraska, North Dakota and South Dakota, under contract with the Centers for Medicare & Medicaid Services (CMS), an agency of the U.S. Department of Health and Human Services. The contents presented do not necessarily reflect CMS policy. 11S00-W-GPQIN-SD-B1-193/0217
The first day I met Amiel Redfish, a physician assistant, we discussed the overuse and over-reliance on medicine in our modern society, how great changes in longevity, through the years, came instead with proper sanitation, clean water, and the discovery of antibiotics. Although there have been great strides in health care through the years, none of them have resulted in such significant drops in overall death rate as presented by Redfish, the wise medicine-man.

Amiel also expressed the value of the vigorous lifestyle of the traditional American Indians and eating non-processed foods, closer to what was found in a hunter-gatherer’s world, like roots, vegetables, berries and fruit, eggs, and wild game meat.

My colleague is a true Sioux Indian medicine-man, a class act and a dear friend. But despite the sagacity, insight, and traditional perspective he represents, I dare say there are those who, not knowing him, would look at his original American Indian features and prejudice him.

Prejudice is a word that means prejudging or making an opinion about an individual using preconceived notions, coming to an opinion before one has the facts. Typical prejudices arise out of attitudes, mostly parentally taught, about perceived differences in race, gender, gender identity, nationality, social status, sexual orientation, religious affiliation or non-affiliation, age, disability, height, and weight.

Anthropologists speculate that stereotyping and acting on prejudice, at one time, provided a survival advantage. In unpoliced societies, people are safer, trusting their family and their community, while being careful with outsiders. Ten thousand years ago, those looking different than our tribe, had a higher chance of causing us harm. Thus, all this is hard wired into our middle brain. But distrust and hating others who are different can also come out of self-doubt and jealousy. Destruction not protection comes with all that hatred going on. As they say, “If you want to destroy your enemy, make him hate.”

Other research suggests that treating people with respect, not prejudging them by appearance, allows an openness to operate, which in turn churns the wheels of commerce, community, and communication. Indeed, Martin Luther King Jr.’s words ring positive and beneficial for all good people when he said, “I have a dream that my four little children will one day live in a nation where they will not be judged by the color of their skin but by the content of their character.” That should go for all children of every color, and since our daughter is of Asian heritage, King’s statement has great meaning and power to me.

It is nice to find research that proves those who can break free of prejudicial stereotyping are better able to make new friends, and find success.

And it is a great joy, and to my great advantage, to have friends like Amiel Redfish.
The South Dakota State Legislature began its 2017 session on Tuesday, Jan. 10 with Gov. Dennis Daugaard’s State of the State address in which he outlined his top priorities.

At the top of Gov. Daugaard’s list was the issue of declining state revenues. Gov. Daugaard announced that since his budget address in December, state revenues have not strengthened, and that state sales tax revenue continues to run below projections. Overall state revenue is down another $5.8 million – with the largest contributors to the decline being the depressed agricultural economy and continued growth in online sales.

In addition to the topic of fiscal management, Gov. Daugaard also spoke on the accomplishments and continued efforts across the state to improve the areas of K-12 education, higher education, and the criminal justice system.

In speaking on the topic of the criminal justice system, the governor stated that the total prison population today is lower than it would have been without the reforms that have been made over the last few years – to include expanding alternative sentencing options such as drug and DUI courts and HOPE probation. However, the overall prison population in South Dakota is higher than predicted it would be after passing the Public Safety Improvement Act because of meth. According to the governor, South Dakota – similar to our neighboring states – has seen a big increase in the number of meth-related arrests and convictions. For the most part, meth is no longer manufactured in homegrown labs but rather is produced on an industrial scale and trafficked into South Dakota.

To help combat the issue of meth, a number of steps will be taken to include efforts to increase public education regarding the harms of meth use and addiction, and incentives to include the reduction of drug possession charges for those who successfully complete treatment and remain clean for one year.

The governor also spoke on Medicaid expansion and reform. President Trump and the Republican Congress are both interested in reforming Medicaid, and there is a strong possibility that Medicaid reform efforts could mean a per capita or block grant allocation. Regardless, Gov. Daugaard feels it is important that he and the state advocate for an equitable federal allocation, and for the federal government to live up to its obligation to provide health care for the Native American people no matter where services are provided.

Source: SDSMA staff
DeadlineApproachingforSDSMAAwardsNominations

Nominationsforthe2017SDSMAAwardsarenowbeingaccept-
ed. Each year the SDSMA recognizes physician members and sup-
porters for their work to improve the practice of medicine in South
Dakota by presenting five distinguished awards. Please consider
nominating a colleague or supporter who is deserving of recogni-
tion for his or her work. They may work right alongside of you, or
serve on a committee with you, or volunteer in your organization or
community, or maybe they are your mentor. Through these awards,
the SDSMA strives to encourage and recognize the highest stan-
dards of service, and give recognition to the accomplishments and
dedication of our members and supporters to the medical profes-
sion and citizens of South Dakota.

The SDSMA is seeking nominations for the following awards:
Distinguished Service Award, Community Service Award, Young at
Heart Award, Outstanding Young Physician Award, and Media
Award.

Visit www.sdsma.org for a nomination form, and to review the
award categories and past recipients. Those with questions may
contact Laura Olson at 605.336.1965 or lolson@sdsma.org.
Nominate someone today and help your colleagues and supporters
get the recognition they deserve!

Source: SDSMA staff

Legal Brief Highlight: Investigational Treatments

Investigational treatments may be available for certain patients, but
only if all the requirements of both federal and state law are met.
Patients with serious or immediately life-threatening diseases or
conditions may be eligible to be given drugs or treatments not yet
approved for the general public if certain conditions are met and if
the U.S. Food and Drug Administration approves.
The South Dakota Board of Medical and Osteopathic Examiners is
prohibited from revoking, failing to renew, suspending, or taking
any action against a health care provider’s license based solely on
the health care provider’s recommendations regarding access to or
treatment with an investigational drug, biological product, or device.
A physician considering a recommendation of investigational
treatment is strongly encouraged to consult with persons with
expertise relating to compliance with the federal law requirements
before commencing any course of investigational treatment.

For more information, download the SDSMA legal brief
Investigational Treatments at www.sdsma.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 and programs for
members in the area of practice management, leadership and health
and wellness.

Source: SDSMA staff

Read InSession for Legislative News

The SDSMA’s weekly email InSession keeps you informed about
the SDSMA’s legislative activities and key health-related bills and
action alerts.

InSession is emailed to all members once a week during the
legislative session, providing a timely look at the actions of the
legislature.

Source: SDSMA staff
**For Your Benefit:**

**SDSMA is Your Communications Link**

Information is essential to your continuing success and viability. You can stay up-to-date with key issues and events by logging on to www.sdsm.org. As a member you also receive *South Dakota Medicine* every month and have online access to full issues. We also produce the monthly *E-News*, weekly *InSession* during the state legislative session, and public awareness campaigns to communicate health issues of importance to the media and the public.

If you’d like more information about our communications programs give us a call at 605.336.1965, visit www.sdsm.org, or email Elizabeth Reiss at ereiss@sdsm.org. As always, thank you for your membership in SDSMA.

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

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**Save the Date! 2017 SDSMA Annual Leadership Conference is June 2**

The 2017 SDSMA Annual Leadership Conference heads to SpringHill Suites & Cadillac Jacks in Deadwood in the beautiful Black Hills Friday, June 2.

**WHAT:** 2017 SDSMA Annual Leadership Conference  
**WHEN:** Friday, June 2  
**WHERE:** SpringHill Suites & Cadillac Jacks, Deadwood

With presentations, discussions, networking opportunities and social events, the Annual Leadership Conference is a great time to share ideas and learn from fellow members.

Check out the schedule and events, and check back soon at www.sdsm.org for more information and registration.

The Annual Leadership Conference is a benefit of your membership. Stay tuned for more details about exciting events taking place during the 2017 SDSMA Annual Leadership Conference!

**Schedule & Events**

- Sanford School of Medicine Update
- American Medical Association Update
- Panel Discussion & Membership Open Forum
- Council of Physicians Meeting
- SDSMA PAC Lunch
- Membership Mixer
- Awards Banquet & Scholarship Recognition

Source: SDSMA staff

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Elizabeth Reiss, South Dakota Medicine  
PO Box 7406, 2600 W. 49th Street, Suite 200  
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E-mail: ereiss@sdsm.org

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