Good thing his back is as **strong** as his love.

When your family looks at you, they see “strong” — strong voice, strong drive and strong values. When back and neck pain interrupts your life, the Avera Spine Center is your destination with a team offering patient-focused care. Our spine navigator guides you every step of the way. You might not need surgery, but if you do, our advanced techniques result in less hospital time — making your back as strong as your love.

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NEW CLINICAL TRIAL USES GENETIC CODE TO ATTACK CANCER
Cancer trial puts Sanford Health on par with the best treatment centers in the world.

THE NEW GEMMA CLINICAL TRIAL BRINGS THE FUTURE OF MEDICINE TO SANFORD CANCER CENTER AND THE MIDWEST. OPEN TO ADULT PATIENTS WITH ADVANCED CANCER THAT HAS PROGRESSED AFTER THE FIRST LINE OF TREATMENT, THIS TRIAL WILL FURTHER EXPLORE THE DNA OF EACH PERSON.

- The genetic code of every participant will be thoroughly examined.
- It will be delivered by the Sanford Cancer Center team that you know and trust.
- The team of experts at Sanford will develop a personalized treatment plan based on the DNA information.
- This will be the most individualized approach to cancer care available.

CANCER CARE IS EVER EVOLVING. AS TECHNOLOGY IMPROVES AND MORE IS DISCOVERED ABOUT THE HUMAN BODY, THE WAY CANCER IS TARGETED WILL CHANGE. IT WILL BECOME MORE PRECISE AND MORE EFFECTIVE.

Blueprint of the body
The GEMMA trial is specifically for adult Sanford patients who have been diagnosed with incurable metastatic cancer or any rare cancer that has no standard of treatment. The trial will involve 50 patients and focus on finding the best treatment for them based on their DNA.

Once enrolled, patients will have blood and tumor samples taken. DNA will be extracted and genetic testing done. Each person’s DNA is like a blueprint. It has all the information that determines everything from how we look to how our bodies operate. However, sometimes that code of information gets muddled and mutations occur. These slight variations can lead to a variety of diseases. But there are so many different possibilities and combinations for genetic variance that scientists do not know all of them.

Through the GEMMA trial, the team of experts at Sanford will be able to study the participants’ DNA and develop a better understanding as to what mutations caused the cancer to occur.

Forming a plan
Once the results are in, they will be brought before a panel of cancer and cancer genomic experts. The Genomic Tumor Board will discuss the information with the patient’s oncologist and the team will begin to formulate a treatment plan that will work best with each patient’s particular results. The patient will then meet with their doctor to review the results and go over what they mean. It will be up to the doctor and patient whether or not to proceed with the recommended course of treatment based on the test results.

If the treatment plan is implemented, the patient will continue to meet with a research coordinator who will monitor and log the results. Even after the course of treatment has ended, patients will be checked on, either through phone calls or medical records, for the next two years.

Call Sanford Cancer Center at (605) 328-8000 to learn more and to see if you qualify for the GEMMA trial.
cancer.sanfordhealth.org
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The American Medical Association (AMA) Interim Meeting was recently held in Dallas and I was fortunate to be able to attend. The days were packed with North Central Medical Conference meetings, section meetings, and reference committees debating policy issues before presenting their recommendations to the AMA House of Delegates for debate and the ultimate vote to approve, not approve or refer for further study. I was impressed with the wide range of topics and the delegates’ deep commitment to high-quality patient care and the profession of medicine. In addition, there was a plethora of CME sessions on a wide range of topics. Many were occurring simultaneously, making it impossible to attend everything. I was able to attend the “Human Microbiome,” “In Flight Emergencies – Attention, this is your captain speaking, is there a physician on board?”, an update on the AMA physician satisfaction/practice sustainability initiative, Ebola, and the Surgical Caucus with military physicians presenting on emergency medical treatment of injured soldiers in Iraq and Afghanistan. I was also impressed by the many diverse aspects in which the AMA works for physicians – from physician satisfaction and leadership training, to practice improvement, to the litigation center, to CME, to advocacy, just to name a few. If you are not a member of the AMA, I strongly encourage you to join the organization that works hard for patients and physicians.

One set of presentations that I found particularly inspiring was “Transforming Healthcare into a High Reliability Organization through Physician-led Quality Improvement Initiatives.” Reliability was defined by the R. Resar Institute of Healthcare Improvement as “failure free operation over time from the viewpoint of the patient” and held up as examples were the high reliability industries of commercial aviation, air traffic control and nuclear power aircraft carriers. Dr. Erin S. Dupree and Dr. M. Michael Shabot presented patient safety as a goal that can be best met by physician-led initiatives. We as health care providers all vow and intend to “do no harm” but the reality of health care in the U.S. is that too many patients experience harm, and in many hospitals, the unacceptable has become an “accepted” normal consequence of care. Physicians must assume leadership roles to affect the essential changes that will make health care safer for our patients. This begins with the recognition that this is not something that we have to do because external forces such as the Centers for Medicare and Medicaid Services insist that we do, but with the internal realization that it is the right thing to do. We must make safety our core value and begin with a commitment to zero harm in all aspects of patient care. We must then work to create a safety culture that includes robust process improvement with a systematic data-driven approach to solving complex problems. We must empower staff to “CUS” (I am Concerned, I am Uncomfortable, This is for Safety) whenever patient safety concerns arise. Safety culture training is a three-step process that begins with setting behavioral expectations, educating staff and physicians and then reinforcing to make the safe behaviors everyone’s personal work habits.

Dr. Shabot shared his experience with the quality and safety journey of the 12-hospital Memorial Hermann Health System. It embarked on a quality and safety journey and looked at diverse patient safety indicators such as central line associated bloodstream infection, ventilator associated pneumonia, surgical site infection, retained foreign bodies, iatrogenic pneumothorax, accidental puncture and lacerations, pressure ulcers, hospital associated injuries, DVT and/or PE, death among surgical inpatients with serious treatable complications, birth trauma and all serious safety events. He shared a number of success stories and highlighted iatrogenic pneumothorax and noted that by requiring real time ultrasound guidance and user training in ultrasound for central line placement they were able to drop and sustain their pneumothorax rate to zero. While their primary goal was safety, they were also selected as the 2013 John M. Eisenberg Patient Safety and Quality Award winner, recognized in numerous publications and were named the number one highest savings Accountable Care Organization in the U.S. It wasn’t just the right thing to do; it made strong business sense. If they can do it so successfully, shouldn’t we all make patient safety our number one core value?

On another note, the 2014 elections are over. The SDSMA felt strongly that yes on Initiated Measure (IM) 17 was an important issue in maintaining patient choice and preserving the patient-physician relationship. Your SDSMA worked hard to support yes on IM 17 and we were pleased the voters supported yes on 17 with a 62-38 margin.

Best wishes for the upcoming holidays!
Celebrating Excellence

Outstanding Honors

Dr. Eric A. Larson from the Department of Internal Medicine was inducted into the Alpha Omega Alpha Medical Honors Society as Alumnus in May 2014.

Alpha Omega Alpha, founded in 1902, is the national medical honor society. Its mission statement is:

Alpha Omega Alpha — dedicated to the belief that in the profession of medicine we will improve care for all by
• recognizing high educational achievement
• honoring gifted teaching
• encouraging the development of leaders in academia and the community
• supporting the ideals of humanism
• promoting service to others.

Election to Alpha Omega Alpha is an honor signifying a lasting commitment to scholarship, leadership, professionalism, and service. A lifelong honor, membership in the society confers recognition for a physician’s dedication to the profession and art of healing.

From www.alphaomegaalpha.org

Paid for by private donations to the Department of Internal Medicine
Hello, our names are Stephanie Lehmann and Cathie Calhoon and we are the SDSMA Alliance Health Promotion co-coordinators for 2014-15. We are excited to let you know of this great program called *Pills are not a Party* that has been developed by the Missouri Alliance at the approximate cost of $70,000. It is an educational DVD regarding the dangers of taking unknown and unprescribed pills in conjunction with others at a “pharm” party.

The DVD was made in response to some of the statistics published in the Centers for Disease Control and Prevention (CDC) and the National Institute of Health (NIH) survey of young people. Here are some of the facts about youth behaviors related to abusing prescription drugs that parents and caregivers should know:

In 2009, it was reported by the NIH survey that nearly one in 10 teens in grades nine through 12 reported abusing prescription pain relievers to get high. One in 13 teens reported abusing cough medicine to get high. Also, more teens were reported abusing prescription drugs than any illegal drug except marijuana. Eight of the top 13 drugs abused by 12th graders in 2008 (excluding tobacco and alcohol) were prescription medications or over the counter medications; *over half of these were given to them or purchased from friends*. Teens believe that prescription medicines are much safer to use than illegal drugs even if a physician does not prescribe the drugs for them (*Monitoring the Future*, national survey results on drug use, 1975-2013).

Then, if we feel safe in thinking these national statistics don’t relate to us, here are some statistics about high-risk behaviors our youth in South Dakota have reported. According to the Youth Risk Behavioral Survey given in South Dakota in 2013; our youth are experiencing some very risky behaviors. Behaviors relating to drug use are stated here: 16.5 percent currently smoke cigarettes, 11.5 percent used smokeless tobacco in the past 30 days, 30.8 percent drank alcohol at least one day of the past 30 days, 16.1 percent currently used marijuana during past 30 days, 10.7 percent used inhalants, 4.2 percent used methamphetamines. 12.8 percent, used prescription drugs without a doctor’s prescription, 15.4 percent were offered, sold or given an illegal drug on school property during last 12 months.

Please check out the South Dakota Youth Risk Behavior Survey to see the range of other risky behaviors in which our children are engaged at nccd.cdc.gov/youthonline/.

So, we have much to do in the area of health education with our youth. The SDSMA Alliance is primarily concentrating on the use of prescription drugs by ones for whom they were not prescribed. Perhaps in your district you can work with your youth groups and churches and schools to develop more programs for the other risky behaviors in which our students participate.

The DVD *Pills are not a Party* has four animated students that are involved in the process. One steals the pills from her parents or grandparents and then distributes these pills to three other animated students at school for $5 per pill. All three of these students take some pills, however, one takes more than the others or a different combination, which significantly raises his blood pressure, and he ultimately has a stroke as a result of the pills he took. He has serious ongoing health consequences as a result. The point is very clear about the possible consequences of mixing drugs that are not prescribed as well as some of the legal consequences that could occur. It does not go into a lot of detail regarding the legal consequences, as states may have different laws regarding this. It really is well done and gets the point across in 15 minutes. The DVD is meant to be distributed to any high-risk group or parents. It would be excellent to use at a school – either elementary or middle school. Community groups such as church youth groups, organizations with high-risk kids such as a juvenile detention centers, Job Corps, youth and family services or YMCA groups could also use it. It would be good to show to your own kids so they are aware.

We have some monies in the state coffers that can be used to buy some DVD’s, however; we would like to know how many would be needed. So, if you think this program would be useful in your district, let us know by Jan. 15 so we can order the appropriate number of DVDs. If you have any further questions about the program or how to get some DVDs, please contact Cathie Calhoon at 605.484.3105 or Stephanie Lehmann at 605.381.1567.
One Avera Cancer Institute.
Six major locations. Forty clinics.
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If you’re cared for at the Avera Cancer Institute, you won’t have to travel far to receive your treatment. We know patients diagnosed with cancer will average 100 visits per year for care — and travel is the last thing you need to worry about. We’ve placed our growing network of cancer services around the region with that in mind. Our state-of-the-art technology is enhanced by more clinics in rural areas using telehealth services to offer the same high level of care wherever you are. That’s cancer care done differently.
Osteoporosis is often considered a “woman’s disease;” however, it is a disease of the human skeleton affecting both men and women. One out of five men over the age of 50 have a fracture related to osteoporosis and during his lifetime; a male is more likely to have an osteoporotic-related fracture than to develop prostate cancer. One-third of all hip fractures occur in men, and these fractures have double the risk of death when compared to the same fracture in women. Following a hip fracture, 10 to 20 percent of men will require long-term nursing home care. As osteoporosis is a disease of both men and women, combined with the aging of our population, the need for prevention and diagnosis becomes even more important.

Each year World Osteoporosis Day is celebrated on Oct. 20. This year the primary goal of World Osteoporosis Day was to bring attention to the burden of osteoporosis in males and the importance of prevention, diagnosis and treatment in this group.

Osteoporosis is a silent disease characterized by deterioration of bone strength by loss of bone density as well as microarchitectural deterioration. Osteoporosis, like many chronic diseases, is silent until a devastating event occurs such as a fragility fracture, which can result in significant morbidity and mortality. Osteoporosis can be diagnosed by the judicious use of Dual-Energy X-ray Absorptiometry (DEXA) scans. Osteopenia is defined as a bone mineral density between 1 and 2.5 standard deviations below the adult, mean peak bone density. The World Health Organization (WHO) has defined osteoporosis as a bone mineral density that is 2.5 standard deviations below the adult, mean peak bone density. Primary osteoporosis can occur in both women and men due to aging. However, there is an accelerated loss of bone in women with the loss of estrogen at the time of menopause that contributes to this condition and makes primary osteoporosis more common in women. Secondary osteoporosis is caused by an underlying medical condition, either a disease or from a medication that has an impact on bone health. Secondary osteoporosis impacts both men and women at any age.

There are a number of factors, both modifiable and not, that can influence bone health and impact the occurrence of osteoporosis. Non-modifiable risk factors include aging, heredity, race, and small stature. Modifiable factors can be changed and have a significant impact upon bone health including smoking tobacco, excess alcohol use, malnutrition, high protein diet, soft drinks, heavy metal exposure, immobilization, vitamin D deficiency, and lack of weight bearing exercise. There are also a number of medical illnesses and medications that can have an impact on bone health. Medications that can influence bone health include steroids, some anti-seizure medications that induce cytochrome P450 enzymes, over-replacement with levo-thyroxine, chronic use of heparin, proton pump inhibitors, thiazolidinediones, lithium, and medications like depo-medroxyprogesterone acetate that induce hypogonadism. When caring for patients on these medications, it is important to remember the impact they can have on bone density.

When should a man be screened for osteoporosis? Men should be screened with a DEXA scan at age 70 years or older, or between the ages of 50-69 if they have risk factors. The International Osteoporosis Foundation has developed an online risk factor survey which can easily be completed by patients and brought to their physician for evaluation. This risk factor survey is available at www.iofbonehealth.org/iof-one-minute-osteoporosis-risk-test. The WHO has also developed a fracture risk assessment tool known as the FRAXR calculator that is available at www.shef.ac.uk/FRAX/tool.jsp. When using the FRAXR calculator there is a link to the National Osteoporosis guidelines group which will determine low, intermediate or high fracture risk and give current recommendations. Men with low vitamin D levels should be treated with vitamin D, and those at risk should be started on 1,000-1,200 milligrams of calcium daily. Males over 50 years of age who are high risk for fracture, have a low bone mineral density or those who are over the age of 50 and have suffered from a hip or spinal fracture should be considered for pharmacological therapy and monitored with DEXA annually or every two years.

Osteoporosis is a potentially debilitating disease which can significantly reduce quality of life as well as increase risk of death. It is a disease which affects both males and females, and with our aging population, will become more prevalent. Prevention, early diagnosis and treatment can have a significant impact on the development and severity of osteoporosis and its associated fractures. Remember osteoporosis is not just a disease of women.
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A Rare Association of Acute Bacterial Endocarditis with Henoch-Schönlein Purpura (HSP) in an Adult Patient

By Shahid Ilyas, MD; and Sumera Salim, MD

Abstract
Henoch-Schönlein purpura (HSP) is a systemic, small vessel vasculitic disorder that mainly affects joint, skin, gastrointestinal tract and kidneys. It is primarily a disease of children that is typically self-limited, but 10 percent of cases occur in adults where features and outcomes may vary. The underlying pathogenesis of HSP remains unknown. We report a case of HSP that occurred with the onset of acute bacterial endocarditis (ABE) in an otherwise healthy 37-year-old Native American male. The patient presented with fevers, fatigue, abdominal pain and renal failure and was found to have acute left-sided staphylococcal endocarditis. He subsequently developed small bowel perforation and purpuric rash. Initially he was treated with broad spectrum antibiotics and small bowel resection. However, resolution of HSP and the associated signs and symptoms was only achieved after treatment with oral steroids and plasmapheresis.

Introduction
Henoch-Schönlein purpura (HSP) is a systemic, small-vessel vasculitic syndrome. It is a multisystem disorder mainly affecting joint, skin, gastrointestinal tract and kidneys. It is primarily a disease of children that is typically self-limited, but 10 percent of cases occur in adults where features and outcomes may vary. When compared with children, HSP in adults have lower frequency of abdominal pain and fever, a higher frequency of joint symptoms, and more frequent and severe renal involvement. Adults are thereby more likely to require aggressive therapy including steroids or cytotoxic drugs. The underlying pathogenesis of HSP remains unknown. Streptococcal infections, staphylococcal infections, vaccinations, medications and even insect bites have all been implicated as possible triggers, although some cases lack a clear precipitating event. Histological evidence of granulocytes in the walls of small arterioles or venules plus IgA-dominant immune deposits confirms the diagnosis in appropriate clinical setting. In this article, we report a rare occurrence of HSP during an episode of acute bacterial endocarditis in an adult patient.

Case Report
The patient is a 37-year-old Native American male with history of hypertension who presented with one week of fevers, progressive fatigue, reduced oral intake, abdominal pain and diminished level of consciousness. There was no history of recent infection, travel, sick contacts and drug or alcohol intake.

On physical exam he looked fatigued and ill appearing with dry mucous membranes. Cardiovascular exam was notable for tachycardia and diastolic murmur best heard over the left sternal border. Abdomen was mildly tender to palpation with no rigidity or guarding. Both lower extremities had diffuse petechial rash. Rest of the physical exam was unremarkable including respiratory and gross neurological exam. Laboratory data at time of admission is provided in Table 1.

Blood cultures were positive for methicillin sensitive staphylococcus aureus (MSSA). A transesophageal echocardiogram (TEE) was obtained showing bicuspid aortic valve with large vegetation and severe aortic regurgitation. Computed tomography (CT) of the abdomen showed mild enteritis and trace ascites. Magnetic resonance imaging (MRI) of the brain showed innumerable foci of restricted diffusion consistent with embolic disease. Treatment was begun with intravenous vancomycin 1.5 g every 12 hours and meropenem 1 g every eight hours for acute bacterial endocarditis. Hemodialysis was also initiated for acute non-oliguric renal failure. Later during hospital stay, the patient developed severe abdominal pain and distention. Patient was diagnosed with bowel...
perforation secondary to ischemia and he underwent urgent laparotomy with small bowel resection. Intravenous levofloxacin 750 mg daily, micafungin 100 mg daily and metronidazole 500 mg every eight hours were added to his antibiotic regimen and discontinued after abdominal drain was removed.

Despite antibiotics and hemodialysis, he continued to have low grade fevers and renal insufficiency. Around seventh day of admission, he developed diffuse tender, purple, raised rash extending over both lower extremities. The trunk, face and upper extremities were spared. Skin (Figures 1 and 2) and kidney (Figures 3 and 4) biopsy were performed. Treatment with plasmapheresis and 60 mg oral prednisone was initiated for biopsy proven HSP following which he had a dramatic improvement in rash and renal functions. Renal functions stabilized (serum creatinine 0.9 mg/dL) after seven cycles of plasmapheresis. Hemodialysis was eventually stopped and patient underwent successful prosthetic aortic valve replacement. He continued six weeks of antibiotics post valve replacement. Oral prednisone dose was gradually tapered down over the next three months.

Histology/Immunofluorescence

Skin: Biopsy showed spongiotic epidermis with dermal vascular and perivascular infiltration by mixed acute and chronic inflammatory cells of neutrophils and lymphocytes with vascular damage, extravasated red cells, focal fibrinoid necrosis and prominent leukocytoclasis. Immunofluorescence testing revealed presence of IgA, C3 and Fibrinogen within the walls of many superficial dermal vessels consistent with IgA vasculitis (Figures 1 and 2).

Renal: Biopsy showed diffuse extensive endocapillary proliferation with prominent neutrophilic infiltrate. The capillary loops contained rare sub endothelial deposits and very rare sub epithelial deposits with no hump-like deposits. Severe foot process effacement and markedly expanded mesangium with numerous electron dense deposits was seen. Immunofluorescence testing revealed three plus amounts of IgA in mesangial regions extending into the capillary loops. Three plus amounts of C3, kappa and lambda chains was also seen in similar fashion. Remaining stains were negative. Findings were concluded as IgA-dominant acute proliferative and exudative glomerulonephritis (Figures 3 and 4).

Discussion

In our case the infecting organism was staphylococcus aureus and the apparent entry point of infection was bicuspid aortic valve. From the literature, drugs that have already been associated with HSP are clarithromycin, carbipoda, cytarabine, enalapril/lisinopril, ciprofloxacin, levofloxacin 750 mg daily, micafungin 100 mg daily and metronidazole 500 mg every eight hours were added to his antibiotic regimen and discontinued after abdominal drain was removed.

Table 1. Laboratory data upon admission

<table>
<thead>
<tr>
<th>Test</th>
<th>Patient Value</th>
<th>Normal Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>WBC (K/µL)</td>
<td>21.74</td>
<td>8-10.8</td>
</tr>
<tr>
<td>Hemoglobin (g/dL)</td>
<td>15.0</td>
<td>14.0-18.0</td>
</tr>
<tr>
<td>Hematocrit (%)</td>
<td>43.1</td>
<td>36.0-48.0</td>
</tr>
<tr>
<td>Platelet (K/µL)</td>
<td>38</td>
<td>137-400</td>
</tr>
<tr>
<td>Creatinine (mg/dL)</td>
<td>6.90</td>
<td>0.80-1.50</td>
</tr>
<tr>
<td>Albumin (g/dL)</td>
<td>3.1</td>
<td>3.5-5.0</td>
</tr>
<tr>
<td>CRP (mg/dL)</td>
<td>37.4</td>
<td>0.0-9.9</td>
</tr>
<tr>
<td>ESR (mm/hr)</td>
<td>36</td>
<td>0-22</td>
</tr>
<tr>
<td>C3 (mg/dL)</td>
<td>65</td>
<td>90-180</td>
</tr>
<tr>
<td>C4 (mg/dL)</td>
<td>13.7</td>
<td>10-40.0</td>
</tr>
<tr>
<td>IgA (mg/dL)</td>
<td>408</td>
<td>70-400</td>
</tr>
<tr>
<td>c-ANCA</td>
<td>Negative</td>
<td></td>
</tr>
<tr>
<td>p-ANCA</td>
<td>Negative</td>
<td></td>
</tr>
<tr>
<td>Cryoglobulin</td>
<td>Negative</td>
<td></td>
</tr>
<tr>
<td>ANA</td>
<td>&lt;1:40 titer, no identifiable pattern</td>
<td></td>
</tr>
<tr>
<td>HIV 1 and 2 antibody</td>
<td>Negative</td>
<td></td>
</tr>
<tr>
<td>Hepatitis B surface antigen</td>
<td>Negative</td>
<td></td>
</tr>
<tr>
<td>Hepatitis C antibody</td>
<td>Negative</td>
<td></td>
</tr>
<tr>
<td>Urinalysis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RBC (11-30 / hpf)</td>
<td>11-30 / hpf</td>
<td>Negative, 0.3</td>
</tr>
<tr>
<td>WBC (51-200 /hpf)</td>
<td>51-200 /hpf</td>
<td>Negative, 0.5</td>
</tr>
<tr>
<td>Protein/creatinine ratio</td>
<td>0.46</td>
<td>&lt; 0.2</td>
</tr>
</tbody>
</table>

WBC = white blood count; CRP = C-reactive protein; ESR = erythrocyte sedimentation rate; C3 = complement component 3; C4 = complement component 4; ANCA = anti-neutrophilic cytoplasmic antibody; ANA = anti-neutrophilic antibody.

Table 2. Causes of kidney disease in infective endocarditis

| Immune-Complex-Mediated | Post streptococcal |
| Glomerulonephritis       | Other post infectious |
|                          | Cryoglobulinemia   |
| Drug-induced             | Acute interstitial nephritis (e.g., penicillin) |
|                          | Acute tubular necrosis (e.g., aminoglycosides) |
| Embolic disease          | Renal infarction   |
|                          | Renal abscess      |
| Primary vasculitis       | Henoch-Schönlein Purpura |
|                          | ANCA-associated vasculitis |
acetylsalicylic acid, cocaine, acetyl cholinesterase inhibitors, carbamazepine and streptokinase. Also there are two reported cases of vancomycin associated HSP. Although our patient received vancomycin and levofoxacin prior to the appearance of rash, they were less likely felt to be the cause of HSP as rash and renal functions improved dramatically with steroids and plasmapheresis rather than change or discontinuation of antibiotics. Also, no eosinophils were found in skin biopsy to support drug related phenomenon. Renal failure and vasculitic skin lesions may accompany one third of endocarditis cases and pathology is often imperative to make diagnosis and guide therapy (Table 2). Characteristic biopsy findings along with presence of IgA immune deposits on direct immunofluorescence (DIF) testing was instrumental in our case to unify the skin pathology, renal disease and reach a definitive HSP diagnosis.

Corticosteroids and/or cytotoxic medications are mainstay of treatment for severe renal disease or other systemic involvement in HSP. Plasmapheresis is a possible alternative to corticosteroids and immunosuppressive agents in patients with underlying severe infection. To our knowledge, so far three cases of HSP in association with subacute bacterial endocarditis (SBE) have been reported in English literature. The first case report described skin and renal biopsy proven HSP in a 21-year-old male with history of intravenous drug use (IVDU) appearing during treatment of subacute right-sided staphylococcal endocarditis with cloxacillin and netilmicin. Although
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*All characters appearing in this work are fictitious. Any resemblance to real persons is purely coincidental. Take Care Health Systems is an equal opportunity employer of nice people M/F/D/V. Take Care Health Services is an independent professional corporation managed by a subsidiary of Walgreens. Patient care services provided by Take Care Health Services, an independently owned corporation whose licensed healthcare professionals are not employed by or agents of Walgreen Co., or its subsidiaries, including Take Care Health Systems LLC.*
the bacterial endocarditis was presumed to be the most likely cause of HSP, there were concerns that HSP may have been brought on by cloxacillin. The cloxacillin was changed to vancomycin and treatment continued with resolution of the SBE, HSP and all associated symptoms. At discharge that patient had mild proteinuria, but did not require steroids.10 The second report described a 41-year-old female patient with left-sided streptococcus sanguis sub acute bacterial endocarditis who presented with a purpuric rash prior to the diagnosis of endocarditis. The rash was biopsy proven to be consistent with HSP. She was started on ampicillin and gentamicin, and eventually underwent mitral valve replacement. Due to renal failure, she received methylprednisolone, although a kidney biopsy was not performed. Renal recovery status was not reported.11 Furthermore, a case of HSP with recurrent MSSA sub-acute endocarditis in a 36-year-old male with IVDU has been described. The patient went on to develop more severe renal failure and required a short course of hemodialysis and a prolonged steroid taper, but subsequently regained renal functions. He received a prolonged course of antibiotics and his tricuspid valve was replaced successfully.12

Conclusion

Our case was unique given HSP was associated with acute left sided staphylococcal infective endocarditis in an otherwise healthy male. In conclusion, HSP should always be kept in differential diagnosis of patients presenting with endocarditis associated with skin rash and renal failure as timely diagnosis and treatment can lead to dramatic clinical recovery.
In 1986, the physicians of our state created DAKOTACARE because they believed a health care plan should be locally owned and directed. Today, DAKOTACARE continues to improve on making healthcare coverage and services provided by South Dakota physicians a seamless process.

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

Your ownership and insight puts the “care” into DAKOTACARE.
High-grade Pancreatic Trauma in Pediatric Patients: Two Cases of Successful Non-Operative Management

By Derek Gearman, BA, MSIV; and Adela T. Casas-Melley, MD

Abstract

Introduction: Pancreatic injury secondary to blunt abdominal trauma is a rare finding compared to other solid organ injuries. Diagnosis is difficult because of vague clinical presentation, quality of screening radiography and laboratory testing, and experience of practitioners. Furthermore, a lack of consensus on treatment modalities based on the organ injury scale (OIS) can further confuse management of pediatric patients.

Case Report: We report two cases of pediatric pancreatic trauma. Both involved ductal injury demonstrated on imaging. Both patients qualify as grade III injuries according to the OIS as developed by the American Association for the Surgery of Trauma. Both patients were managed non-operatively using nasogastric suction, NPO, and total parenteral nutrition (TPN). Both patients had complete resolution of their pancreatic injury without pseudocyst formation or need for any operative intervention.

Conclusion: The two cases presented illustrate severe pediatric pancreatic trauma resolving after a non-operative course. A lack of consensus exists on whether severe pancreatic trauma should be addressed operatively or non-operatively, owing to differences in hospital stay and cost to the patient, time to resolution, and need for TPN. The pediatric surgery community is equally divided between early operative intervention and non-operative management. Inexperience with pancreatic trauma diagnosis and work-up can lead to delayed treatment and poor clinical outcomes. These cases show successful early diagnosis with non-operative treatment and good long-term clinical results.

Introduction/Epidemiology

Pancreatic injuries are the fourth most common type of pediatric solid organ injury identified in abdominal trauma. They compromise 3-12 percent of all traumatic abdominal injuries. Blunt abdominal trauma, such as motor vehicle or bicycle handlebar accidents, is the most common mechanism to precipitate disruption of the pancreas, although cases involving non-accidental trauma and falls have been identified. Pediatric populations are thinner and possess little subcutaneous adipose tissue compared to adults, making compression of the pancreas against the spinal vertebrae more common. Less than 0.3 percent of all traumatic pancreatic injuries contain ductal disruption or transection, designating the injury as high-grade (grade III-V) according to the Organ Injury Scaling Committee of the American Association for the Surgery of Trauma (AAST). Refer to Figure 1.

Debate still exists over proper pancreatic injury management in pediatric populations. Non-operative management has been established as the standard of care for low-grade injury (grade I-II). Management of high-grade injury, however, remains controversial given the amount of conflicting evidence when comparing operative versus non-operative outcomes, cost, and morbidity. We will present two cases of grade III pancreatic injury secondary to blunt abdominal trauma, both of which were managed non-operatively with good short-term outcomes and minimal complications.

Case Presentation

Patient number one is a 2-year-old male transferred to Sanford Children’s hospital after a two-day history of abdominal pain and vomiting. He was admitted for dehydration at the outside facility. Laboratory investigation performed upon admission revealed elevated pancreatic enzymes while the computerized tomography (CT) scan without contrast failed to yield evidence of abdominal
pathology. Relevant past medical, family, and social history include a recent arrest of the parents on possession of illegal drugs and subsequent incarceration. The patient and his younger brother were placed into foster care. The mother regained custody four days prior to the original admission. Physical examination revealed an afebrile, alert, and cooperative child with a wet cough, decreased breath sounds on the right lower lung field, and a round, tender abdomen with ascites. Repeat CT scan (Figure 2) with contrast at Sanford Children’s showed a necrotic pancreas with peripancreatic fluid and complete transection of the pancreatic duct left of the superior mesenteric artery, making this a grade III pancreatic injury (Figure 1). It also showed right lower lobe pneumonia.

At this point, non-operative management was decided upon. The patient’s diet was changed to nothing by mouth, a nasogastric (NG) tube and peripherally inserted central catheter (PICC) line were placed, and he was started on meropenem and total parenteral nutrition (TPN). The patient required three days in the pediatric intensive care unit (PICU) before being transferred to the general pediatric ward. During day six of his hospital stay, the patient underwent abdominal ultrasound (US) to evaluate the pancreas. A large (7.7 cm X 4.5 cm X 9.5 cm), well-defined fluid collection was noted and deemed consistent with a large pseudocyst. Also on day six, a nasojejunal (NJ) tube was placed and enteral drip feeds were started. Feeds slowly increased over the next three days at which time the patient tolerated full enteral feeds without issue. On day 11 of his stay, a low fat diet was started. Magnetic resonance cholangiopancreatography (MRCP) was performed on day 12 to assess pancreatic duct healing and pseudocyst resolution. Ductal disruption was still present at this time but pseudocyst appeared smaller (4.2 cm X 1.8 cm X 2.8 cm.) than previous US examination. The NJ tube was removed on day 14 and the patient remained stable with minimal pain. Prior to discharge, the family met with Child’s Voice to ascertain the events surrounding the abdominal trauma as the presence of non-accidental trauma could not be ruled out. No clear trauma etiology was found and the patient was discharged to foster care on day 15.

Throughout the hospital stay, serum amylase, lipase, and blood glucose were followed. The highest lipase (normal = 23-300 U/L) was on day one at 723 U/L while the highest amylase level was 336 U/L. Figure 3 shows trends of amylase and lipase throughout the patient’s hospitalization. Blood glucose levels stayed within an acceptable range.

Immediate post-hospital follow-up included decreased appetite and occasional abdominal pain.
Abdominal magnetic resonance imaging (MRI) three months after discharge demonstrated pseudocyst resolution and no ductal obstruction (Figure 4). The parenchymal disruption had not healed completely, but the patient had increased appetite and displayed minimal abdominal pain on examination.

Patient number two was a 16-month-old male who presented after being struck in the abdomen by a horse. Initial CT scan showed a liver laceration. The patient was stabilized and transferred to Sanford Children’s. Laboratory studies showed a stable hemoglobin but elevated amylase and lipase levels. Repeat CT scan (Figure 5) with contrast revealed grade III pancreatic laceration. Non-operative management was employed. His hospital course was somewhat longer than the previous patient at four weeks total because of ongoing pancreatitis. The patient remained nothing by mouth for three weeks.

After clinical resolution of abdominal tenderness, NJ tube feeds and octreotide were started. The patient developed increased distension 36 hours later, which prompted further laboratory investigation. Serum amylase and lipase were elevated leading to evaluation by diagnostic ultrasound. Pseudocyst formation was noted and ultrasound guided percutaneous drainage undertaken. Twenty-four hours after drainage, the patient was able to restart NJ tube feeds, which were advanced to low fat without problems. Long-term follow-up for the patient was unremarkable.

**Diagnosis**

Physical assessment of the abdomen following trauma yields nonspecific findings including abdominal ecchymosis, rib fractures, diffuse abdominal tenderness to palpation, back pain, peritoneal signs, hypotension, and tachycardia. Further compounding the lack of specificity is that pancreatic insults often present with concomitant solid organ injury. Liver, spleen, and kidney co-injuries were found at a rate of 25 percent in one series while others have found much higher rates at 43 percent and 55 percent.
The imaging study of choice for abdominal trauma is the CT abdomen/pelvis. Intravenous and oral contrast remains essential for delineation of abdominal fluid collections from surrounding visceral organs. Pancreatic hematoma and peripancreatic fluid collections are specific for pancreatic injury but cannot speak to extent of injury. Other imaging modalities, such as ultrasound and MRI, are not often utilized in the acute traumatic setting. As the pancreas resides retro-peritoneally, ultrasound remains insensitive at identifying injury. MRI and magnetic resonance cholangio-pancreatography (MRCP) provide superior soft tissue differentiation and an opportunity to evaluate the biliary system, respectively. They also eliminate the exposure to ionizing radiation, which is important in pediatric populations. Yet, MRI and MRCP are far more expensive than CT and often require patient sedation, which in the pediatric population could add increased risk.

Endoscopic retrograde cholangiopancreatography (ERCP) can be employed if the CT scan is equivocal and pancreatic duct continuity is in question. ERCP, in addition to providing diagnostic information, provides the advantage of immediate therapeutic stent placement as a treatment option, allowing the avoidance of surgical options. Yet, short- and long-term complications, such as exacerbation of current pancreatic injury, pancreatic duct stricture, and increased pseudocyst formation have decreased utilization and left the role of ERCP in high-grade injury largely undefined.

The diagnostic value of amylase and lipase is highly debated. It has been shown that serum amylase levels do not rise until approximately three hours post-traumatic episode. It appears that lipase levels follow the same trend. Therefore, a normal amylase level may lead to a premature and false dismissal of pancreatic injury especially if not seen on imaging.

On the other hand, Adamson et al. showed high amylase and lipase levels in a trauma scenario lead to unnecessary CT scanning and added cost to the patient and system. Five hundred seven pediatric trauma patients were evaluated with screening amylase and lipase. Twenty-three percent (116) of the patients had elevated levels. Of the 116 patients, 74 underwent a CT scan and 51 percent (38) had a completely normal scan. Furthermore, only seven patients who underwent serum amylase/lipase screening, followed by CT scan, were ultimately found to have a pancreatic injury (1.3 percent). It should be noted that CT scans were not performed on patients based solely on elevated serum amylase/lipase levels. Had they been, an additional 42 patients would have undergone unnecessary CT scan. It has been suggested that delayed serum amylase/lipase measurements may be more sensitive for injury detection and may lead to fewer unnecessary diagnostic CT scans.

It is also unclear whether routine serum amylase/lipase levels are indicative of injury grade, hospital outcome, or length of stay. Herman et al. showed amylase/lipase levels did not correlate with AAST grade or length of stay. Maximal amylase level (greater than 1100 U/L) was predictive of complications such as pseudocyst.

Discussion

Currently treatment regimens for proven acute pancreatic trauma can range from non-operative observation, endoscopic procedures including pancreatic duct stenting, or surgical interventions such as omental pancreateorrhaphy, distal pancreatectomy, Roux-en-Y distal pancreateojejunostomy, or pancreateoduodenectomy. Recently, with the increased use of advanced endoscopy in children, the possibility of endoscopic trans-gastric internal drainage is also a possible operative solution to a persistent pseudocyst. Indication for surgery is based on the AAST classification outlined above. Grade I or II injuries are often managed non-operatively. Occasionally, if laparotomy is performed due to hemodynamic instability or coexisting solid organ injury and the pancreas has significant parenchymal bleeding, an omental plug may be applied directly to the laceration. This approach helps control bleeding without requiring significant oversewing of pancreatic tissue, which can lead to post-operative complications such as fistulas and pseudocysts.

Controversy exists over the best management of grade III or higher pancreatic injury. Advocates for operative management cite shorter hospital stay, decreased need for long-term TPN, and lower complication rates. Beres et al. retrospectively looked at 39 patients with high-grade pancreatic injury; 24 underwent planned operative management within 48 hours, while the others were managed non-operatively. The primary outcome was rate of complications, with length of stay and duration of TPN administration also measured. Complication rates were higher in non-operative management. More specifically, the rate of pseudocyst formation was significantly higher; 13 of 24 patients formed pseudocysts in the non-operative cohort compared to no pseudocyst formation in the operative group. Yet, only four patients who formed pseudocysts required operative drainage (cyst-jejunostomy, percutaneous drainage, or ERCP with stent placement) meaning that over two-thirds saw spontaneous pseudocyst resolution. Length of stay (LOS) and time on TPN were greater in non-operative patients. When looking for clinical outcome predictors, non-operative management was only predictive of increased duration on TPN but not
LOS, suggesting that LOS is not always shorter with operative treatments.

A recent retrospective multi-institutional study\textsuperscript{11} assessed grade II and III injuries comparing different management modalities. One hundred sixty-seven patients were included in the study, however, only 80 of the patients possessed a grade III injury, including 54 who underwent operative management. Pseudocyst formation was high in patients managed non-operatively and spontaneous resolution was seen at a rate of 55 percent. Return time to oral feeds was faster in the operative group but LOS was similar. It appears that pseudocyst formation did not impact initial hospital LOS either. More hospital readmissions were noted with non-operative treatment but seem to be associated with pseudocyst drainage. Also, an increase rate of pseudocyst formation was found when non-operative patients were assessed with ERCP or MRCP as compared to contrast CT. It should be noted that all patients assessed with ERCP/MRCP were found to have a grade III pancreatic injury.

Non-operative management has been shown to have successful outcomes. de Blaauw and colleagues\textsuperscript{10} retrospectively studied 34 children between 3 - 14 years of age. Only 17 patients had CT classification of their injury and the majority of these injuries were grade I or II. Thirty-one patients were managed non-operatively. No difference was seen in total hospital LOS. Sixteen non-operative patients required TPN compared to all three operative patients but differences in total duration of TPN therapy was not recorded. Fourteen non-operative patients developed clinically significant pseudocyst compared to two in the operative group. Only six pseudocysts required intervention, mainly via percutaneous drainage. Very few actually required pancreatic resection or operative drainage. No statistical difference in pancreatic insufficiency, nutritional disorders, or abdominal complaints was seen at 24 months of follow-up.

Wales et al.\textsuperscript{12} explored long term follow-up in nine patients who underwent non-operative treatment following grade III or higher injury. Patients had a mean follow-up of 47 months and eight of nine had repeat CT scan after completion of follow-up. Four of the nine patients developed pseudocyst with one spontaneous resolution and three requiring percutaneous drainage. Only one patient required reinsertion of the drainage catheter secondary to dislodgement. Average LOS was 24 days with return to full oral feeds by an average of two months. Patients had a mean follow-up of 47 months and eight of nine had repeat CT scan after completion of follow-up. CT showed atrophied pancreatic parenchyma distal to the site of ductal transection in six of eight patients. No patients experienced exocrine or endocrine insufficiency.

**Conclusion**

Pediatric pancreatic injury is a rare phenomenon that often co-exists with other solid organ injuries following blunt abdominal trauma. We have outlined successful non-operative treatment of two patients following proven grade III pancreatic injuries. The cases differed in hospital course, development and subsequent resolution of pseudocyst, emphasizing the variability in non-operative management. Yet, given the lack of strong evidence in favor of operative treatment and the inherent risks associated with surgery, including post-resection diabetes and need for pancreatic enzymatic replacement, suggests that non-operative may be superior to operative management. Many of the articles reviewed cite complication rates, more specifically pseudocyst formation, as the main evidence for operative treatment. Pseudocyst formation occurs normally at a rate of 40 percent.\textsuperscript{2} Yet, patients often see a spontaneous resolution, which requires no operative intervention. Furthermore, minimally invasive percutaneous approaches to pseudocyst drainage may be more favorable in pediatric patients.

Further studies are needed to investigate differences in management. Limitations in the current literature include the lack of prospective studies comparing patients with similar injury grade. Given the relatively rare nature of the injury, especially high-grade injury, this is very difficult. Long-term follow-up (greater than five to 10 years) is also lacking. Development of pancreatic insufficiency following either management option would provide addition information on treatment efficacy.

### REFERENCES


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

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Introduction
Respiratory tract infections (RTIs) are the leading cause of hospitalization in the pediatric population. They account for approximately 300,000 hospitalizations and contribute nearly one billion dollars to health care costs each year. The most common causes of RTIs are human respiratory syncytial virus (RSV), influenza A or B, parainfluenza 1, 2, 3, and 4, adenovirus, enterovirus and rhinovirus. In general, respiratory viruses have a short incubation period and are spread by direct contact and aerosolized droplets. Respiratory viral infections can lead to acute otitis media, asthma exacerbations, bronchiolitis, and pneumonia. Testing for these infections can be challenging due to their common clinical picture, emergence of new respiratory viruses, and the mutations viral isolates undergo over time.

RSV is the most common cause of lower RTIs among young children. Most infants are infected by one year of age, and virtually all by age 2. Worldwide, RSV accounts for 66,000 to 199,000 deaths annually. Every year 75,000 to 125,000 children in the U.S. are hospitalized due to an RSV infection. RSV is a member of the family Paramyxoviridae and there are two strains (subgroups A and B) of the enveloped RNA virus. The incubation period for RSV infection is four to six days and patients are contagious for about three to eight days after the initial infection. The most common symptoms are copious amounts of nasal secretions, tachypnea and decreased appetite. Influenza affects all age groups but children younger than 5, and/or with asthma, diabetes, heart disease, weakened immune systems and neurodevelopmental disorders, as well as the elderly are at greater risk to have complications with influenza. Patients with influenza are thought to be contagious one day before the onset of symptoms and up to five to seven days after becoming ill. Children actually can pass the virus for longer than seven days. Symptoms generally start within one to four days after the virus has entered the body. Signs and symptoms reported are fever, cough, sore throat, runny or stuffy nose, muscle or body aches, headaches, fatigue and some even have vomiting and diarrhea. During the 2013-2014 influenza season there were 9,632 patients hospitalized in all age groups in the U.S. with a diagnosis of influenza. In South Dakota, there were 220 patients hospitalized and 12 reported deaths due to influenza in 2013-1014. Seventeen percent of those hospitalized were under the age of 18. In the 2013-2014 influenza season in South Dakota there were 34,944 rapid antigen tests for influenza ordered in all age groups. Interestingly, of those tests ordered only 14 percent returned positive.

Human parainfluenza and metapneumoviruses are also part of the Paramyxoviridae family. The parainfluenza viruses consist of four types, 1 through 4, and two subtypes (4a and 4b). These viruses commonly infect infants and young children; however, anyone can become infected with these viruses at any age. The incubation period is typically two to seven days and patients can present with both upper and lower respiratory tract illnesses. Human metapneumoviruses are known to present clinically in a manner similar to RSV.

Adenoviruses are non-enveloped with double-stranded DNA. There are over 50 types that can cause infection in
Humans. These viruses not only cause respiratory illness but can also result in conjunctivitis, diarrhea, cystitis, fever, and rash.\(^2\) Particular types of this virus can be shed in children for up to six weeks, making diagnosis sometimes difficult when the viral load is low in the patient.\(^2\)

Human enteroviruses result in infection in 30-50 million people each year in the U.S. The viruses are transmitted not only via respiratory secretions but also fecal-oral, perinatal and transplacental routes. These viruses are responsible for poliomyelitis, aseptic meningitis, hemorrhagic conjunctivitis, hand-foot-and-mouth disease, herpangina, Bornholm disease, and pleurodynia.\(^1\)

Human rhinoviruses are a member of the family Picornaviridae. They are responsible for about two-thirds of upper RTI cases. These viruses can also cause sinusitis, otitis media, and wheezing. The virus replicates in the nasal passages and can cause symptoms for one to three weeks.\(^1\)

Respiratory pathogen testing can play an important role in the diagnosis and management of patients thought to have RTIs. Definitive diagnosis of a respiratory viral illness can contribute to antibiotic stewardship. Reports show that as many as 10 million prescriptions are given for antibiotics directed toward respiratory illnesses each year.\(^9\) Other studies evaluating physician prescribing patterns have noted that almost 50 percent of office visits are for upper RTIs, and 80 percent of those visits are treated with antibacterial agents.\(^10\) Pediatricians prescribed antibiotics in 20 percent of cases of upper RTI, 40 percent of cases of bronchiolitis, and as many as 100 percent of pneumonia cases despite the fact that these illnesses are typically caused by viruses.\(^9\) One study of hospitalized infants and children who had direct fluorescent antibody (DFA) testing found that those who had a negative viral screen were 2.3 times more likely to be treated with intravenous antibiotics than patients who had a documented positive viral screen.\(^11\) Another recently published article was a retrospective study of 182 million patients who visited the emergency department across three influenza seasons and were diagnosed with influenza either clinically or by rapid diagnostic testing.\(^12\) When providers used a rapid diagnostic test they were 12 percent less likely to prescribe antibiotics versus clinically diagnosing influenza, which translated into 84,000 less antibiotic prescriptions over a three year period.\(^12\) The authors argue that even with an imperfect test such as the rapid influenza test, diagnostic testing can greatly affect clinical decision making and as advancements in testing modalities are made the impact will likely be even greater.\(^12\)

Another reason for viral testing in the pediatric population is specific for those infants where fever would result in a sepsis evaluation. The actual incidence of concomitant serious bacterial infection is relatively low and the most common secondary bacterial infection is of the urinary tract. One study found that in children ages 0-3 years with a diagnosis of RSV only 2 percent had a serious concomitant bacterial infection.\(^13\) Respiratory viral testing is also important for infection control to prevent nosocomial infections and when cohorting of patients is needed e.g., during pandemics.\(^3\) Accurate diagnosis can also aid in the use of anti-viral drugs which can decrease severity and duration of illness for patients.

**Rapid Antigen Tests**

The rapid antigen test using nasopharyngeal secretions is the most widely used diagnostic test for influenza and RSV. This test is done at the bedside, easy to perform and a qualitative positive or negative result is obtained in 10-30 minutes.\(^1\) There are three technologies utilized for rapid testing including enzyme immunoassay (EIA), immunochromatographic (ICR) test and optical immunoassay (OIA). Although each test differs, the main outcome is a macroscopic color change indicating that the sample contains viral proteins. The assay usually targets the fusion surface glycoprotein, with the color change being mediated by the binding of viral protein in the sample to specific antibodies. It is important to note that some rapid influenza tests only detect influenza in general, while others differentiate influenza A versus B which is significant as influenza A tends to be a more virulent strain than influenza B.\(^14\)

The rapid antigen test is widely used because it is simple to use, low cost and results are available rapidly. However, there are a number of disadvantages to this test as well. A negative result should be confirmed by cell culture, which is the gold standard. A false negative result can occur due to inadequate specimen collection or low levels of viral shedding in the patient. The test detects both viable and non-viable viral particles so a positive result does not always represent an active infection or that the patient is contagious. The sensitivity of the test, which is the ability to rule out disease, is only about 70-75 percent for influenza and 80-85 percent for RSV whereas the specificity, the ability to rule in a disease, ranges from 90-95 percent.\(^2\) The rapid antigen tests are also based on isolates which mutate over several years (particularly for influenza) resulting in decreased validity of the test. One concept that is important to understand when discussing rapid antigen tests is positive predictive value. Positive predictive value is dependent on the level of the disease in the community. When the disease level is low in the community the positive predictive value of the test is also low and the incidence of false positives is high. However when the disease is high in the community or during the peak of respiratory season the positive predictive value is higher.
but the rate of false negatives is also high (see Figure 1). Each rapid test is checked for cross reactivity for numerous commensal and pathogenic bacteria and viruses typically found in the nasopharyngeal cavity. Therefore, cross reactivity with these tests is very low and concomitant infections can be detected with rapid antigen tests. However, patients who receive the nasal influenza vaccine may test positive on rapid tests for up to three days after vaccination. Therefore, in general, rapid antigen tests are not the tests of choice at the start and end of the season and during the peak of season a negative result should be interpreted with caution and confirmed with cell culture. Some centers have actually discontinued the rapid antigen test for respiratory viruses as new technology develops that provides more accurate results in a more reasonable amount of time.

**Direct Fluorescent Antibody (DFA) Test**

The DFA tests detect the presence of a particular antigen, usually a protein on the surface of the virus. The fluorescent chemicals are attached to a specific region of an antibody and the antibody will bind to the antigen in the sample, if present. This test uses a nasal aspirate and the sample is fixed to a slide, the fluorescein-labeled antibody is added and then placed under a fluorescent microscope. If the sample contains the antigen it will emit light that is interpreted by the technician. The disadvantages of this test are that it typically takes two to three hours to achieve results and in some laboratories samples are batched and not run upon arrival, delaying results even longer. The test is also user-dependent, and it may not detect new strains of a virus. This test is also dependent on the level of activity in the community and negative results should be confirmed by culture. Additionally, mixed respiratory viral infections are poorly detected by DFA tests. This is a clinically important issue with this test since we know dual or triple infections can account for up to 8-11 percent of all positive results. The sensitivity and specificity of the DFA tests are dependent on the virus being tested for and the institution it is run in since it is user-dependent. Literature has shown that adenovirus has a particularly low sensitivity on DFA testing. Table 1 lists the sensitivities and specificities for a variety of common viruses based on Sanford USD Medical Center’s laboratory data.

<table>
<thead>
<tr>
<th>Virus</th>
<th>Sensitivity</th>
<th>Specificity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Influenza A</td>
<td>97%</td>
<td>97%</td>
</tr>
<tr>
<td>Influenza B</td>
<td>86%</td>
<td>99%</td>
</tr>
<tr>
<td>Para 1</td>
<td>94%</td>
<td>95%</td>
</tr>
<tr>
<td>Para 2</td>
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</tr>
<tr>
<td>Para 4</td>
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<td>74%</td>
</tr>
<tr>
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<td>100%</td>
</tr>
<tr>
<td>Adeno</td>
<td>86%</td>
<td>100%</td>
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<tr>
<td>HMPV</td>
<td>95%</td>
<td>100%</td>
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**Nucleic Acid Amplification Tests**

Polymerase chain reaction (PCR) and nucleic acid-sequence based amplification have been developed over the past 10 years. These tests are more sensitive and specific than all other testing modalities and the results are less impacted by the level of the virus in the community. This type of test is able to detect the virus in a patient for a longer duration than the antigen tests and they have a low rate of false negatives and false positives. The main disadvantage to these types of tests is the length of time to run the test. In some centers the technology may not yet be available and the test may need to be sent to an outside laboratory, delaying results. In these cases, the results may not be available in a clinically relevant time frame to inform clinical management decisions. In those hospitals were nucleic acid detection tests are available, the time for results may be anywhere from three to eight hours. However, recent advances in technology have led to multiplex PCR assays that can detect up to 20 different respiratory pathogens including viruses and bacteria in less than an hour. These assays are FDA-approved and use the technology of nucleic acid detection combined with real time PCR. The main advantages are that it is very simple to use and only takes two minutes to set up the test. In general this test detects 30-40 percent more viral infections than DFA and culture. Molecular tests are generally more expensive than other tests, however studies have shown that overall, these tests are more cost-effective when used
independent of other testing modalities. The cost savings with the multiplex assay occurs when this technology is used in place of the DFA plus reflex to culture for negative results. One disadvantage is that these tests may also result in positives in patients with no or few symptoms due to the high sensitivities of these tests which can make clinical relevance difficult to determine in such cases.

In summary, respiratory viral testing can play a vital role in the appropriate management of patients with RTIs. Each test has its own advantages and disadvantages. It is important to understand the limitations of each test when interpreting results and making cost-effective decisions when ordering testing. With the emergence of multiplex PCR tests, antigen detection tests are likely to soon be replaced in both the inpatient and outpatient setting.

REFERENCES


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The authors have no relevant financial relationships with the manufacturer(s) of any commercial product(s) and/or provider of commercial services discussed in this manuscript. The authors do not intend to discuss an unapproved/investigative use of a commercial product/device in this manuscript.
Patient care checklist for patients under investigation for Ebola virus disease

☐ Isolate the patient in a separate room with a private bathroom.
☐ Activate the hospital preparedness plan for Ebola.
☐ Ensure standardized protocols are in place for PPE use and disposal.
☐ Wear appropriate PPE when in physical contact with the patient.
☐ Attend to the patient’s medical needs.
☐ Consider and evaluate patient for alternative diagnoses.
☐ Obtain detailed information about symptoms, contacts, and travel history.
☐ Perform only necessary tests and procedures.
☐ Ensure patient has the ability to communicate with family.
☐ Allow visitors only if they are wearing appropriate PPE.

For more information on how to care for a person under investigation for Ebola, please visit: http://www.cdc.gov/ebola
Identify, Isolate, Inform: Emergency Department Evaluation and Management of Patients with Possible Ebola Virus Disease

1. Identify exposure history:
   Has patient lived in or traveled to a country with widespread Ebola transmission or had contact with an individual with confirmed Ebola Virus Disease within the previous 21 days?

   NO
   Continue with usual triage and assessment

   YES

2. Identify signs and symptoms:
   Fever (subjective or $\geq 100.4^\circ F$ or $\geq 38.0^\circ C$) or Ebola-compatible symptoms: headache, weakness, muscle pain, vomiting, diarrhea, abdominal pain, or hemorrhage

   NO
   A. Continue with usual triage and assessment
   B. Notify relevant health department
   C. Monitor for fever and symptoms for 21 days after last exposure in consultation with the relevant health department

   YES

3. Isolate and determine personal protective equipment (PPE) needed
   Place patient in private room or separate enclosed area with private bathroom or covered, bedside commode. Only essential personnel with designated roles should evaluate patient and provide care to minimize transmission risk. The use of PPE should be determined based on the patient’s clinical status:
   - Is the patient exhibiting obvious bleeding, vomiting, copious diarrhea or a clinical condition that warrants invasive or aerosol-generating procedures (e.g., intubation, suctioning, active resuscitation)?

   NO
   For clinically stable patients, healthcare worker should at a minimum wear:
   A. Face shield & surgical face mask
   B. Impermeable gown
   C. 2 pairs of gloves
   If patient’s condition changes, reevaluate PPE

   YES
   A. Use PPE designated for the care of hospitalized patients
      http://www.cdc.gov/vhf/ebola/hcp/procedures-for-ppe.html
   B. If the patient requires active resuscitation, this should be done in a pre-designated area using pre-designated equipment.

4. Inform
   A. IMMEDIATELY notify the hospital infection control program and other appropriate staff
   B. IMMEDIATELY report to the health department

5. Further evaluation and management
   A. Complete history and physical examination; decision to test for Ebola should be made in consultation with relevant health department
   B. Perform routine interventions (e.g., placement of peripheral IV, phlebotomy for diagnosis) as indicated by clinical status
   C. Evaluate patient with dedicated equipment (e.g., stethoscope)
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I

nalbavancin is not well established but dose adjustments of each drug may provide activity against certain vancomycin-resistant and/or intermediate-resistant bacteria, which allow for fast track approval and a five-year patent extension in an effort to stimulate antibiotic development.

Dalbavancin (Dalvance) was approved May 23, 2014 and oritavancin (Orbactiv) followed shortly thereafter on Aug. 6, 2014. Both agents are lipoglycopeptide antimicrobials approved for gram positive organisms commonly causing skin infections, including methicillin-resistant *Staphylococcus aureus* (MRSA) and a variety of *Streptococcus* species. They are derivatives of glycopeptide antibiotics, vancomycin and teicoplanin, and thus share a similar bactericidal mechanism of cell wall activity. In vitro testing demonstrates the additional lipid component of each drug may provide activity against certain vancomycin-resistant and/or intermediate-resistant bacteria, however, currently no in vivo clinical trials have evaluated efficacy against these types of resistant infections.

The pharmacokinetics, primarily prolonged duration, of dalbavancin and oritavancin is the major difference compared to other antimicrobials currently used for ABSSSI. Dalbavancin and oritavancin have a terminal half-life of approximately 14 days and 10 days, respectively, which allows for extended dosing intervals. Oritavancin is eliminated by the reticuloendothelial system, consequently no adjustment is indicated for mild to moderate renal or hepatic impairment. There is limited data in patients with severe liver or renal impairment, therefore caution is advised in these populations. The metabolism of dalbavancin is not well established but dose adjustments are required for patients with renal impairment not undergoing dialysis. Both agents appear well-tolerated although, similar to vancomycin, must be given as a slow intravenous (IV) infusion to minimize infusion-related reactions. No data currently exists regarding cross-reactivity in patients with a hypersensitivity to glycopeptides, however avoiding these agents in this population is prudent, especially given the long half-lives. A unique effect with oritavancin is an elevation of activated partial thromboplastin time (aPTT) for 48 hours and prothrombin time (PT) for 24 hours after administration. This effect does not reflect an increased risk of bleeding but rather an interaction with the phospholipid reagents utilized in these tests. It is important to recognize the false elevation in these tests especially when used to evaluate dosing of anticoagulants.

The Discover 1 and 2 trials evaluated the clinical efficacy of dalbavancin for ABSSSI compared to an IV regimen of vancomycin for a minimum of three days with the option of changing to oral linezolid to complete a 10-14 day course of treatment. Dalbavancin was administered as a 1,000 mg infusion at baseline followed by 500 mg on day eight. The primary endpoint was early clinical response rate 48-72 hours after the initiation of treatment, specifically defined as no further spread of erythema, no requirement of additional antibiotics, and temperature of less than 37.6 degrees Celsius for 18 consecutive hours. The outcome was similar between the two groups at 79.7 percent for dalbavancin and 79.8 percent for the comparator group (95 percent CI -0.6 to 0.2), thus establishing non-inferiority of dalbavancin.

The Solo 1 and 2 trials evaluated oritavancin as a single 1,200 mg dose given as a 3h infusion compared to IV vancomycin for seven to 10 days. The primary outcome was identical to the previously described dalbavancin trials. The clinical response rates in the Solo 1 trial at 48-72 hours were similar for the oritavancin and vancomycin at 82.3 and 78.9 percent, respectively (95 percent CI -1.6 to 8.4 percent). The Solo 2 trial revealed similar response rates of 80.1 percent for oritavancin and 82 percent for vancomycin (95 percent CI 80.1 to 82.9 percent).

The third antibiotic, tedizolid (Sivextro™) was approved June 20 and is an oxazolidinone antibiotic with a bacteriostatic mechanism of action. Tedizolid is in the
same pharmacologic class as linezolid, however there are several differences and potential advantages of tedizolid compared to linezolid. The first major difference results from the increased antimicrobial activity associated with tedizolid. Doses of tedizolid that achieve antimicrobial effects are low enough to avoid clinically significant monoamine oxidase inhibition. This minimizes the risk of serotonin syndrome in a patient on a serotonergic agent (i.e., fluoxetine), which is a potential concern with linezolid. Another difference is tedizolid has a longer half-life, 12 hours, which allows for once daily dosing. Furthermore, in phase 3 clinical trials, similar outcomes were shown with six days of tedizolid compared to 10 days of linezolid thus allowing for a shorter course of treatment. Similar to linezolid it is available as an IV or oral formulation with the same dose for both routes of administration. Side effects between the two agents in the clinical trials appeared similar.

The question of how these new agents will be utilized in the treatment of resistant gram positive infections remains to be determined. The utilization of tedizolid will likely be similar to linezolid with several advantages: once daily dosing, shorter course of treatment for ABSSSI, and lack of monoamine oxidase inhibition. Additional studies evaluating efficacy in infections such as osteomyelitis would further define its use, as well as identify side effects in a longer-term use setting. Cost is also a potential concern and while current cost is similar or less than linezolid due to a shorter course of treatment, this may change when generic versions of linezolid become available, which is forecasted for late 2016.

The new lipoglycopeptides, dalbavancin and oritavancin, offer alternatives to vancomycin with an extended half-life. Utilization in an emergency room or urgent care setting may avoid a hospital admission and serve as a potential niche for these agents. The one-time infusion may be an attractive option for a patient where compliance with an oral agent such as linezolid is of concern. Currently dalbavancin is approved as a 2-dose regimen and oritavancin as a 1-dose regimen, despite dalbavancin having a longer terminal half-life. The approved regimens were based on respective clinical trial designs and the repeat dosing of dalbavancin is likely based on the clinically effective half-life of 8.5 days. Of the patients in the dalbavancin trials, approximately 51 percent met systemic inflammatory response syndrome (SIRS) criteria vs. approximately 18% in the oritavancin trials, perhaps further warranting the repeat dosing of dalbavancin in a more severely ill population. The utility of dalbavancin as a one-time dose for ABSSSI in a population with fewer systemic signs of infection appears possible but remains unestablished in clinical trials. Additional data demonstrating efficacy against infections such as osteomyelitis that require long-term treatment would enhance the potential utility of these extended duration antibiotics.

In summary, the recent approval of three new antimicrobials provides additional options in the fight against MRSA and other resistant gram-positive cocci infections. Currently all three agents are approved for ABSSSI. The evaluation of these agents for other long term infections is desired to further define their role in clinical practice.
Physician Assistants

The physician assistant (PA) is a health professional who may, with appropriate licensure, supervision, and compliance with other legal and ethical requirements, provide certain types of direct patient care. In order to practice in South Dakota as a PA, a person must be licensed by the South Dakota Board of Medical and Osteopathic Examiners (SDBM OE) and have in place a written practice agreement approved by the SDBM OE.

In order to be licensed as a PA, the person must be of good moral character, complete an accredited training program, pass the Physician Assistant National Certification Examination administered by the National Committee on Education for Physician Assistants, and provide proof he or she is not subject to any disciplinary proceeding or pending complaint before any licensing board.

Applicants must also submit to a criminal background check. The SDBM OE has denied licensure for lack of moral character based on the results of a criminal background check.

A written practice agreement between the supervising physician and the PA must exist. The practice agreement must be in the form required by the SDBM OE and approved by that board. It must include the following:
1. A description of the duties delegated by the supervising physician to the PA;
2. A description of the PA's professional skill level and scope of practice;
3. A plan of supervision for the PA, including the frequency and nature of direct contact between the supervising physician and the PA;
4. A list of any and all practice locations of the PA; and
5. Any other information as the SDBM OE may require.

Of note, changes to the scope of practice or other terms of the practice agreement must be submitted to the SDBM OE and approved before the changes take effect.

Assuming it is within the terms of the practice agreement and the PA's professional skill level, the PA may perform initial diagnosis and formulation of a plan of treatment or referral, prescribe medication, respond to emergencies and institute emergency treatment, complete and sign official documents such as birth and death certificates, take X-rays, and perform athletic physicals. The PA should not provide any treatment which cannot safely be undertaken by the PA. Because of patient safety concerns and possible liability on the part of the supervising physician, the South Dakota State Medical Association (SDSMA) advises the PAs practice should not exceed the nature of the supervising physician's practice and area of expertise.

The supervising physician must be available for consultation at all times while the PA is involved in patient care. The supervising physician must provide continuous supervision, monitoring, and evaluation. This supervision and monitoring may be via direct personal contact or a combination of direct personal contact and contact via telecommunication. The supervising physician and PA must meet in person at least twice a month, provided, however, the SDBOME may, if it deems it appropriate, substitute a phone meeting for one of the monthly in-person meetings. If the PAs practice location is remote from the supervising physician, on-site supervision at the PAs practice location is required as directed by the SDBOME, but in any event at least once every 90 days. If the PA has more than one practice location, the supervising physician must conduct an on-site visit at each location; this requirement does not apply to special or occasional practice locations such as patient homes and school health screening events.

Regardless of the terms of the practice agreement, the physician remains ultimately responsible for the care provided by a PA under the physicians supervision. Accordingly, as a matter of good patient care and to limit exposure to malpractice and other liability claims, the supervising physician and PA should jointly develop and agree upon the terms of treatment protocols and guidelines including the duties and responsibilities of the PA and care the PA may and may not provide.

It is strongly recommended the supervising physician make appropriate arrangements for insurance covering the potential liability of both the physician and the PA.

In the next issue, we'll take a closer look at working with certified nurse practitioners.

This article includes material originally published by MMIC. MMIC is the largest policyholder-owned medical liability insurance company in the Midwest and is always thinking ahead to find ways to protect clients through risk financing, improving patient safety and physician well-being, and reducing the risks associated with information technology.
1 IN 8 WOMEN WILL BE DIAGNOSED WITH BREAST CANCER, but early detection increases survival. With each mammogram, and each patient who takes better care of herself, we’re that much closer to sending Cancer packing. Talk to your patients about the importance of screening tests and let’s give Cancer something to be scared about.
South Dakota Health Professionals Assistance Program

Since 1996, the South Dakota Health Professionals Assistance Program (HPAP) has assisted with the recovery and return to work of hundreds of health care providers. HPAP is a confidential program designed for regulated health professionals who hold, or are eligible to hold, licensure with the South Dakota boards of Dentistry, Nursing, Medical and Osteopathic Examiners, and Pharmacy.

Philosophy
HPAP recognizes that mental illness and substance use disorders are diseases that may negatively impact an individual’s physical, mental, social, vocational, intellectual, emotional, and spiritual well-being. HPAP believes these illnesses can be successfully managed and treated. Compassionate intervention can help save an individual’s career and possibly his or her life. HPAP recognizes that health professionals who are experiencing these illnesses are individuals who have dedicated their lives to helping others, and are now in need of care themselves.

Mission
HPAP is dedicated to enhancing public safety and support for professionals by facilitating the early intervention, treatment, continued care, and monitoring of the safe return to practice for professionals who may be unable to practice with reasonable skill and safety if their mental health or substance use illness symptoms are not adequately managed.

HPAP acknowledges a primary concern for public safety. The program attempts to ensure public safety by providing voluntary, confidential alternatives which support health professionals’ recovery efforts. A vibrant assistance program will enhance public safety by reducing risk associated with potentially impairing health conditions, and early intervention and referrals may, over time, decrease licensing board discipline.

Program Services
HPAP is a statewide program, and is confidential and professionally staffed.

Services include:
- General outreach;
- Crisis intervention;
- Informal assessment;
- Treatment monitoring; and
- Support for providers who need assistance.

HPAP develops individualized participation agreements with input from many sources including the participant and the HPAP staff physician and evaluation committees. These agreements support adherence to the prescribed treatment plan, and provide opportunity to document sustained recovery.

Ongoing documented recovery through HPAP can provide the basis for HPAP advocacy on behalf of participants.

In addition to voluntary referrals, HPAP provides non-disciplinary options, as well as mandated/disciplinary options for licensing boards when regulated health professionals whose illness of a mental health or substance use disorder requires monitoring and practice limitations. The program follows a non-punitive approach, in which the program staff works in conjunction with, or as an alternative to, other sanctions which a health related board might impose upon the regulated health professional.

HPAP is available to assist – contact Craig Utze, MD, or Maria Eining directly at 605.275.4711.

Eligibility and Referrals
Anyone can make a referral to HPAP. Most referrals come from employers and licensing boards; however, in an effort to encourage early intervention and improved outcomes, HPAP encourages self-referrals, referrals from families or peers, or referrals from medical or treatment agencies. If you call HPAP about a colleague, your contact will be held in the strictest confidence. HPAP will serve as a resource to help determine appropriate next steps.

Per SDCL 36-2A, HPAP is available to any individual who, at the time of application:
- Holds a license as a healthcare professional from a participating board in South Dakota;
- Is eligible for and in the process of applying for licensure from a participating board in South Dakota;
- Has not diverted controlled substances for other than personal use;
- Has not been accused of sexual misconduct;
- Has not been terminated from a similar program in this or another state for noncompliance; and
- Does not create too great a risk for the healthcare consumer through continued practice.

Red Flag Signs that a Health Care Professional May Be Diverting Drugs
- Volunteers to care for patients with regular pain medications;
- Always volunteers to give medications;
- Excessive amount of narcotics signed out to patients;
- Always gives IM, PRN, & maximum doses when others do not;
- Patients complain of no pain relief from medications given;
- Selected patients will only receive sleeping pills and narcotics when this individual is on duty;
- Discrepancies on medication administration records;
- Narcotics signed off the controlled substance record but not recorded on patient record;
- Borrows narcotics from other units;
- Has frequent wastage, like spilling drugs or breaking vials;
- Unobserved wastage – no co-signature;
- Abnormal number of syringes used or missing;
- Evidence of broken syringes in employee restroom;
- Frequently volunteers for extra shifts and/or other units; or
- Works in an area where drugs are tampered with or missing.

REFERENCES
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Great Plains Quality Innovation Network (QIN) is the Medicare Quality Innovation Network-Quality Improvement Organization (QIN-QIO) for South Dakota. Under contract with the Centers for Medicare & Medicaid Services (CMS) 11th Scope of Work, Great Plains QIN invites nursing homes to participate in a combined state and national collaborative designed to ensure that every nursing home resident receives the highest quality of care.

Specifically, the South Dakota Nursing Home Quality Care Collaborative will strive to instill quality and performance improvement practices, eliminate Healthcare-Acquired Conditions (HACs) and improve resident satisfaction. The overall collaborative will actually run in two 18 month collaborative time periods, with the first collaborative starting in early 2015. Currently, Great Plains QIN is recruiting participants and has a target goal that at least 75 percent of South Dakota nursing homes will participate over the course of the two collaborative periods.

The collaborative offers an exciting opportunity to learn from high performing nursing homes on both a national level and a state level regarding their processes as they pertain to consistent/permanent staff assignment, teamwork and communications, leadership, regulatory compliance, clinical models and quality of life indicators. The collaborative aligns national nursing home quality initiatives and partnerships such as the Advancing Excellence in America’s Nursing Homes Campaign, Partnership to Improve Dementia Care and Quality Assurance Performance Improvement (QAPI). Targeted focus areas will include increasing mobility, decreasing unnecessary use of antipsychotics in residents with dementia, decreasing potentially avoidable hospitalizations and decreasing Healthcare-Acquired Infections (HAIs) and conditions.

The Nursing Home Quality Care Collaborative will provide the foundation for a nursing home to be focused on quality, data-driven, resident-centered care and will support the development of strategies for overall quality. Learning how to identify opportunities for improvement and addressing gaps in systems through planned interventions will also be encouraged.

Nursing homes choosing to be active participants in the Nursing Home Quality Care Collaborative are expected to benefit from:
- Educational learning sessions - together with other participating homes in their state and nationally for networking, learning and sharing;
- Access to best practices and strategies of high-performing nursing homes;
- QAPI tools and resources;
- Intervention development ideas and assistance; and
- National and local calls and webinars focused on specific topics for improvement.

While there is no fee to participate in the collaborative, participating nursing homes are expected to commit to the following:
- A team consisting of four people, including senior leaders, direct care staff and support service staff that provide resident care and services;
- Participation in collaborative events being hosted by Great Plains QIN, Advancing Excellence LANE, SD Culture Change Coalition and other partners and stakeholders such as the South Dakota Healthcare Association (SDHCA) and South Dakota Association of Healthcare Organizations (SDAHO);
- Participation in conference calls/webinars;
- During action periods between collaborative events, test and implement changes and collect data to measure the impact of those changes; and
- Submit requested data and progress reports during the collaborative such as a QAPI Facility Self-Assessment and examples of quality improvement strategies used.

For further information, please contact Lori Hintz, RN, South Dakota Foundation for Medical Care Nursing Home Program Manager at lori.hintz@hcqis.org or 605.354.3187.

“Quality Focus” is a monthly feature presented by SDFM, South Dakota’s Quality Improvement Organization. For more information about the SDFM, visit their website at www.sdfm.org.
Worldwide, more than 1 million people will get colon cancer this year and about one-third of them will eventually die from it. Unless something changes, five percent of all babies born today will get colon cancer in their lifetime. It is the second most common cancer in women, and third in men. So how can we prevent or discover colon cancer early enough for a cure?

When I started my training, to examine the colon we ordered a barium enema and often followed by advancing a rigid one-foot-long steel tube, without anesthesia, into the patient positioned over a bent table with his or her bottom high in the air. It was an uncomfortable experience for the patient and the doctor, and it missed too many cancers.

But things have changed with the development of fiber-optic flexible scopes. Now it’s almost like cave spelunking, where, after running down to the end of a long cave, one backs out slowly, searching by powerful flashlight for stalactites and stalagmites. In reality, we explore the whole five foot colon while the image is exploded upon a large television screen, allowing the team to find even subtle and small yet potentially dangerous lesions.

Still, a vigorous somewhat uncomfortable cleansing of the bowel is required and then there are risks from the colonoscopy that follows. On the other hand, a gentle very comfortable anesthesia is provided during the procedure, and the risks are overwhelmed by the reward of discovering cancer early.

In a four-year review of 352 colonoscopies that I performed between 1999 and 2003, I found 164 people (47 percent) had polyps and eight people (2.3 percent) had cancer. Other studies have found that when a polyp measuring greater than four-tenths of an inch is removed, and is of a particular common type of polyp, then that colonoscopy reduces cancer-death-risk by 40 times.

Although it is important to have a colonoscopy when there are symptoms like blood in the stool or change in bowel habit; screening colonoscopy can discover cancers before they cause symptoms, and thus has a better chance of catching cancer early, before it’s spread.

I lost my father to colon cancer and I have had three polyps removed from my own colon so far, so I am sensitive to this issue. My next colonoscopy is in December. When is yours scheduled?
DAKOTACARE Update:


By Kirk J. Zimmer, CEO

As 2014 draws to a close, it is clearly evident that this was a year of major transition for health plans across the U.S. The Affordable Care Act has now been in place for over four years, but with the advent of the Health Insurance Marketplace (exchanges) in 2014, we have witnessed the most significant change in the health insurance industry in decades. While polls are now indicating that health care reform of any kind has become a secondary concern during mid-term elections in relation to other political topics, it is certainly a primary concern for health insurers, and DAKOTACARE is no exception.

Nationally, around 8 million people signed up for coverage through the Marketplace in the first year, and the Obama administration hopes to add 5.7 million more to those who enrolled in 2014. A preliminary Health and Human Services (HHS) report shows that the number of insurers wanting to join the federal exchanges and offer their products in this second year will increase by 30 percent. New insurers in state-based exchanges are expected to increase by 10 percent, although some insurers who participated in the first year are dropping out this year. Of note, the insurer in the Minnesota state-based exchange which wrote the largest percentage of business in the first year is dropping out in year two, citing rising administrative costs and an inability to achieve an acceptable profit margin.

As insurers near their year-end, it will be interesting to compare financial results. Importantly, if the actual claims experience regarding the risk profile of 2014 enrollees differs from assumptions used in setting prices for the first year, and losses occur in 2014, insurers cannot recoup past losses through higher premiums in 2015. Instead, assumptions for 2015 rate-setting will be reset incorporating available 2014 experience, as well as increased taxes and fees that must be built into premiums. This is all part of the ongoing funding of health care reform. We expect this pattern to continue for three to five years as the risk profiles of newly insured and those moving from group to individual coverage become more predictable, resulting in a flatter claims trend and less variation in member premium levels.

As the first year of the exchanges drew to a close last spring, the DAKOTACARE Board of Directors carried out a strategic planning retreat which culminated in the development of a document outlining long-term plans for the company’s future, characterized by the retreat facilitator stating that he enjoyed watching the board “create an exciting and compelling future for DAKOTACARE.” The resultant document contains the board’s thoughts on the company’s core ideology as well as its vision for the future, including an assessment of the current environment, thoughts on the next one to five years, and strategic assumptions and initiatives – no small task in today’s extremely challenging, fast-moving, and complex environment in which we operate.

Specifically, DAKOTACARE is taking an aggressive approach to enrollment in both group and individual plans in 2015, with particular emphasis on sales of individual policies through both direct sales and sales through the exchange. This follows our more conservative approach in year one, which allowed us to participate in the fledgling exchange market, yet monitor and study the member participation trends and profitability with an eye toward the second and future years. For 2015, major changes have been made such as significantly lower premium levels, new benefit structures, a focus on wellness, increased quality measurement, use of technology for member and provider communication, and transparency of information. We expect to see dramatically increased sales levels in 2015.

Because of our special relationship with the physicians of South Dakota, we are also the plan that is known for working with and welcoming the input and cooperation of physicians in managing the care of our members. Never has the need to work together with physicians to efficiently deliver high quality care to members been more important than at a time when many new members, many of who have been uninsured for some length of time, are joining the ranks of the insured. Unique opportunities will exist for us to improve the health and well-being of South Dakotans while offering maximum freedom of choice of providers.

As another year comes to a conclusion, I would be remiss if I didn’t recognize and thank the South Dakota physician community for supporting your company and its mission. Without the DAKOTACARE Board of Directors, the Pharmacy and Therapeutics Committee, the Clinical Oversight Committee, the Physician Advisory Committee, the Credentialing Committee, and the numerous peer review and other work groups giving of their time and talents, DAKOTACARE would not be the successful leader in South Dakota health care that it is today.
See the effect in South Dakota.

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

Check the effect physicians have on the U.S. economy by viewing the national report from the AMA, as well as highlights from the South Dakota study, at ama-assn.org/go/eis.
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Jeremy P. Peppin
Meredith A. Reynolds

Your SDSMA PAC membership is very important in order to elect political candidates who share our vision. To donate to SDSMA PAC, visit www.sdmsa.org.

December 2014 523
**New Members 2014**

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Welcome to the new SDSMA members who joined in 2014. This list includes new members from November 2013-October 2014.
Standing Orders for Immunizations

The South Dakota Board of Medical and Osteopathic Examiners (SDBMOE) issued a declaratory ruling in September 2013 concerning the use of standing, non-patient-specific orders for vaccinations. It authorizes the issuance of standing orders for vaccinations under certain circumstances and may only be issued to licensed healthcare professionals who are authorized by their scope of practice to administer vaccinations.

The ruling places the burden on the issuing physician to ensure that there is not undue risk to patient health resulting from the vaccinations authorized. The physician should take into account the possible side effects and other impact on the health of the patient resulting from the vaccination, including the availability of appropriate response personnel and equipment in the place where the vaccination will be given, and the ability of the person administering the vaccination to recognize and provide an appropriate response in the event of an adverse reaction.

For more information, download the SDSMA legal brief *Standing Orders for Immunizations* at www.sdsmoa.org. Through the SDSMA Center for Physician Resources, the SDSMA develops and delivers programs for members in the area of practice management, leadership and health and wellness.

Source: SDSMA staff
AMA Sends Advocacy Letters on Meaningful Use and Value Based Penalty

The American Medical Association (AMA) has sent two letters to the Obama Administration regarding Meaningful Use and value based penalties. The details of the letter are as follows:

• The AMA sent a letter to the Centers for Medicare and Medicaid Services (CMS) outlining the multiple overlapping reporting programs which carry several penalties for non-compliance, and calls on the agency to synchronize and simplify the requirements for avoiding these penalties, and to reverse its proposals to raise total penalties from these programs to 10 percent or more in the foreseeable future.

• The AMA sent a second letter to CMS outlining ideas for implementation of Stage 3 of the Meaningful Use program, while also offering a significant number of proposed changes to the current stages. The SDSMA and other state medical and specialty societies have shared concerns with the AMA regarding the program and the challenges members have faced. Much of this feedback was included in their letter.

The day to attest for a 2014 incentive is Feb. 28, 2015.

Visit www.ama-assn.org for more information on the MU program and to read the letters in their entirety.

Source: AMA

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

Sign up to be Doctor of the Day at the State Capitol!

The SDSMA’s Doctor of the Day program is a huge success every legislative session. During the legislative session, the SDSMA commits to providing a physician member to serve as Doctor of the Day for the State Legislature in Pierre. This volunteer commitment involves one day of service at the State Capitol by providing basic medical assistance to legislators and staff as needed.

As Doctor of the Day, you’ll have the unique opportunity to interact with legislators on the House and Senate floors and get a first-hand look at the legislative process and how it affects the practice of medicine. Your presence at the Capitol shows legislators not only your expertise but also your concern for the health of South Dakotans.

The SDSMA is in need of volunteers willing to spend a day to serve as Doctor of the Day. Each year we receive requests from physician assistants and advanced practice nurse practitioners who wish to participate in the program; it is critical that volunteer physicians are serving each day of session.

South Dakota’s 2015 Legislative Session opens on Jan. 13. If you are interested and available to volunteer, please contact SDSMA Vice President Mark East at 605.336.1965 or meast@sdsmaw.org. Dates are filling quickly – please sign up today!

Source: SDSMA staff

Renew Your 2015 Membership Dues Now!

The 2015 dues renewal process is now available on the SDSMA website. SDSMA members must renew their membership on an annual basis to continue to receive many great membership benefits. Payment of membership dues will take place on the SDSMA website.

Log in today and renew your membership for 2015:

2. Select Member Login in the upper right-hand corner.
   a. Your Username is the email address used for SDSMA communication;
   b. If you do not remember your pass word, you may have a new one emailed to you. SDSMA members already have an account. Do not “create a new account” or you will not be able to complete the online renewal process.
3. Click on Pay My Dues at the top of the page.
4. Review your state and district dues; select Add to Cart.
5. Please consider supporting the SDSMA beyond your dues through a donation to the SDSMA Foundation, a contribution to the SDSMA PAC, and sponsoring the membership of medical students in our state.

For step-by-step instructions and screen views, you may download an instructional document on the Membership & Renewal page.

If you have any questions as you complete the dues renewal process, please contact Laura Olson, Director of Administrative & Member Services, at 605.336.1965 or membership@sdsmaw.org.

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<td>Science</td>
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... (continued)
Even without medication, QuitLine coaches make the difference.

Thanks to you, it's working
More than ever before, South Dakota health professionals have been referring their patients who use tobacco to the South Dakota QuitLine. That's because it works... two times better than trying to quit alone. As the graph above shows, a significant number of QuitLine participants have been able to kick the habit using no medications at all, just coaching.

Here are the details.
From 2008 to 2013, SD QuitLine coaching participants had the option of self-selecting a cessation medication (Chantix or Zyban) or product (nicotine replacement therapy-NRT), if interested.

To determine the effectiveness of these services, a follow-up telephone survey was conducted 7 months after enrollment. Survey participants were asked if they had used tobacco in the past 30 days.

A total of 16,138 callers were reached and answered questions related to current tobacco use and use of a cessation product or medication in their effort to quit. QuitLine callers who responded to the survey were quite successful at quitting, with nearly one-half (46.2%) reporting no tobacco use. The majority had selected to use Chantix (59%), followed by NRT (27%), Zyban (6%), and no medication (5%).

The common factor shared between groups that selected various cessation medications or products was the coaching received.
Less than 10% variability in the quit rate (30 dpp) existed between the different types of medications, NRT, or coaching only (range 41.7% to 49.7%).

Coaching plus Chantix and coaching plus Zyban were at the top of the range, and coaching plus NRT and coaching alone were on the lower end.
CME Events

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

December 2014

Dec. 3
Internal Medicine Grand Rounds:
Colorectal Cancer Screening
AMA PRA Category 1Credit(s)” available
Register online:
usdssom.learningexpressce.com

Dec. 3
VA Tumor Conference
AMA PRA Category 1Credit(s)” available
Register online:
usdssom.learningexpressce.com

Dec. 10
Internal Medicine Grand Rounds:
Treatment for Bipolar, ADD, Depression, Anxiety
AMA PRA Category 1Credit(s)” available
Register online:
usdssom.learningexpressce.com

Dec. 17
Laparoscopic Colectomy for Colon Cancer
AMA PRA Category 1Credit(s)” available
Register online:
usdssom.learningexpressce.com

Dec. 17
VA Tumor Conference
AMA PRA Category 1Credit(s)” available
Register online:
usdssom.learningexpressce.com

Dec. 18
Trauma Case Review – Region 4
AMA PRA Category 1Credit(s)” available
Register online:
usdssom.learningexpressce.com

DO YOU HAVE A CME EVENT COMING UP? WOULD YOU LIKE TO HAVE IT LISTED HERE?
Contact: Elizabeth Reiss,
South Dakota Medicine,
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Phone: 605.336.1965
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- Leg fatigue
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- Itching and burning
- Skin discoloration
- Ulcers of the skin
- Eczema to the lower legs

Lornell Hansen, M.D., is Board Certified by the American Board of Venous and Lymphatic Medicine and has a background in family medicine. Dr. Hansen performs vein procedures in Sioux Falls, Sioux City, Sioux Center and Watertown.

Jeff Heier, M.D., is a Board Certified Internist specializing in Phlebology. Dr. Heier performs vein procedures in Sioux City, Sioux Center and Watertown.

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