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Medical Humanities

A Physician Exodus in South Carolina

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Medical Humanities

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The mission of The Journal is to advance the art and science of medicine to promote the ideals of the South Carolina Medical Association; to encourage scholarship and good will among South Carolina physicians; and to disseminate information specifically applicable to the health care of South Carolinians.
Editorial

Medical Humanities and Inhumanities

By: Joseph F. John, Jr., MD, Editor-in-Chief

Editor’s Note: This issue of The Journal has been delayed due to Hurricane Matthew. Our thoughts and prayers are with all of those who were affected by this storm.

We live in the kindest age. We live in the most brutal age. We practice medicine in American elegance. We physicians feel constant government and outside siege. Our work produces an endless pride; we bask in our success. Yet, burnout constantly threatens physicians facing the difficulty or dissatisfaction of modern patient care.

The world is, indeed, filled with paradox for today’s physicians. Yes, there is a certain safety and security in our American medical practices. Contrast that protection with a recent open letter to The New York Times from physicians in Syria to President Obama pleading for U.S. intervention to save the lives of these physicians and their patients from targeted bombings of Syrian hospitals. The killing of Syrian physicians and their patients within the sanctuary of hospitals should shake the very ethic of our profession.

Against this paradoxical backdrop of modern practice, physicians must pursue emotional and physical relief. This issue of The Journal begins a new effort to recruit and publish work in the medical humanities. We seek for publication diverse renderings from physicians in literature, poetry, art and photography. In this issue are several examples. The first, a poem from a practicing South Carolina psychiatrist, Joseph Zealberg, from his recent book of poetry. In his title poem, Covalence, Dr. Zealberg seeks help from Walt Whitman, touching as it were, on the paradox we feel.

I couldn’t find him beneath my work boots, or inside the avenue’s concrete sidewalks.

But his atoms advised that life is the covalence of lunacy and love.

The second, a touching, yet instructive, essay from a medical student in our midst, Brewer Eberly from USC School of Medicine, who discovers in Dante’s hell, a way for us to see, to mirror, ourselves in our patients.

Our intention in bringing the medical humanities to our readers is liberation, liberation from the pressure of caring for the sick. Liberation from the inevitable crush of chronic disease. Liberation from the confines of science, evidence and data.

Let me use an example of how a physician may seek and find liberation. Say you are paging through the short treatise, The Laws of Medicine, by Siddhartha Mukherjee. Law One: A strong intuition is much more powerful than a weak test. It is quite amazing. You discover how Dr. Mukherjee, a Boston oncologist, discovered this first law. Clearly it did NOT come from his medical acumen. It came from somewhere much deeper in his sense of the world and the ability to read patients beyond their tests.

How can physicians develop and nurture such intuition? Set against the terseness of Mukerjee’s three laws, the reader may consider larger philosophy, that of Martha Nussbaum, highlighted in a recent article, “Captain of Her Soul,” in The New Yorker. Nussbaum, one of our greatest living philosophers, studies the unusual field of the philosophy of emotion. A quick read of the article in question takes a reader to her most recent book, Anger and Forgiveness.

Paradox for today’s physicians can often result in anger, our own and that of our patients. Anger lies at the heart of burnout. Anger frames our personal relationships. We physicians will not cure the anger of the world but our delving into the humanities and into the philosophical world of the likes of Martha Nussbaum may help us free ourselves, and even our patients, of anger.

Nussbaum writes, “Anger is hard. But so are many other things in life. Why do contemporary Americans tend to think that health, and learning, and fitness deserve tough personal effort, and anger does not? Why do we think that medical and economic research deserve our public political effort, and that the social disease of anger does not?”

It is not my argument nor Nussbaum’s that ridding oneself and the world of anger solves all of our problems. Still, it would be a huge step. My argument is that physicians can find liberation and solace in the humanities, thus reducing the risk of burnout. The humanities for physicians can become a balance, a buffer to the world of sickness, death, rage and contempt offering another world of forgiveness, peace and even happiness.
There is no easy “how to” for physicians who want to find exposure in the medical humanities. In a recent presentation to the South Carolina American College of Physicians meeting, October 2015, I offered some individual works that have expanded my horizon. In the attached Table 1 and Table 2, some of my favorites may offer a start—in no specific order—to some new horizons.

Life long medical learning has become a mandatory pursuit for modern physicians. We are lucky to have that ethos. As such, life long learning also allows us to take full advantage of the instruction and pedagogy in the medical humanities. Three of my experiences may serve to advise. The first was a course we constructed for our fellow health care workers at the Ralph H. Johnson VA Medical Center in Charleston: Literature and Medicine: Humanities at the heart of health care, initiated and funded by the State of Maine Humanities Council. Over four years we presented and jointly discussed literature, poetry, cinema and art that impacted medicine.

The second was a drawing course I took sponsored through The Gibbs Art Museum. My class was small. Flanked by some excellent artists, I suffered through several weeks of realization that my impression that I could not draw was indeed true. The course, however, gave me great appreciation for the art of drawing and did improve my perspective on drawing faces, which I still enjoy.

The third of these experiences relates in part to the essay by Mr. Eberly in this issue of The Journal. On a recent Saturday morning in Provincetown, Massachusetts, I took a course with other non physicians on the sound of poetry taught by the illustrious and former national Poet Laureate Robert Pinsky. Having sat through countless medical lectures, it was most interesting to see how a poetry master taught the course so that we would-be lyricists would benefit. Pinsky’s points on how to write good poetry were clear and intelligent. For example he said, provocatively, that the “words” of poetry were not the most important element of good poetry. It is the sound, the rhythm. Yes, get a good plot and make it build, but put the words to a music of their own.

The medical humanities for physicians is like physical exercise: you cannot afford to give the proper time but you cannot afford not to. We at The Journal will try to help by encouraging and publishing the work of our colleagues in the medical humanities. Please send us your submissions.

_I can scarcely wait till tomorrow when a new life begins for me, as it does each day, as it does each day._
—The Round. S. Kunitz 2005

**References**


---

**Table 1. Medical Humanities: Poetry**

- Jack Coulahan
- Billy Collins
- Bryan Turner
- Amy Clampitt
- Joseph Brodsky
- Wislawa Szymborska
- Stanley Kunitz
- Sam Hazo
- Robert Pinsky

**Table 2. Medical Humanities: Cinema**

- Dr. Strangelove
- Peggy Sue Got Married
- Ben Hur
- Showboat
- Star Wars
- Lord of the Rings
- Yojimbo
- 81/2
- Jules et Jim
- King Kong
- Annie Hall
- Birth of a Nation
- Dancing with Wolves
- Raisin in the Sun
- Gone with the Wind
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Now is a critical time in United States medicine. I believe we will see more changes in the next 10 years than the previous 30.

What part will organized medicine play in these changes? I doubt any new organization can develop the name/political power to significantly affect these actions so we need to understand that your national organization, the American Medical Association, and your state and county organizations speak for you. Even if you have disagreements with some policies, non participation only weakens your voice. Imagine if our organization could go to the table with 75-90% participation.

Our state delegation has worked hard with cooperation from the other southern state organizations to significantly impact thinking and actions at the AMA. But there have been years when some states had such poor participation that they weren’t represented at the meeting.

If you are not at the table, you are frequently on the table. If you don’t like what the AMA/SCMA is doing, join, participate, change the organization.

These are the bodies that speak for us. Your specialty society can tweak the message but they don’t have the voice of medicine and we have to guard from shooting into the circle when we circle the wagons.

This is particularly true in the employed section. You have to have a voice, even in the hospitals. In Columbia, the political power of the hospitals association and Blue Cross can trump our actions. I think the story would be different if we had most of the physicians in our state as members.

The value of organized medicine comes from your professionalism. We must fight to keep from becoming a commodity to the hospitals. Our healers frequently develop through our county, state, even national organizations.

So I ask you: give it a three-year trial. Join your county, state and national organizations. We need your vote for medicine and it is probably more important than any other vote this year.

Alexander Ramsay, MD
ARE YOU READY FOR THE TRANSFORMATION OF HEALTHCARE?

The Medicare Access and CHIP Reauthorization Act of 2015 (MACRA) is intended to rapidly push the transformation of the US healthcare system toward performance-based payment models across both government and commercial payers. The law provides strong incentives to physicians for participation in Medicare risk-sharing Alternative Payment Models (APMs). For physicians who choose not to become involved in APMs, they will be required to report and perform well on four categories – quality, resource use, advancing care information which includes patient engagement and health information technology, and clinical practice improvement - in the new Merit-based Incentive Payment System (MIPS).

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Tumors of the volar surface of the hand and digits are generally divided into those encompassing soft-tissue masses or those involving underlying structures such as tendon and bone. The vast majorities are benign, and the most common entities include giant-cell tumors of the flexor tendon sheath, ganglia, lipomas, and hemangioma/vascular malformations.

With the increasing incidence of solid organ transplantation taking place today, immunosuppressive therapy is becoming increasingly common. As a result, fungal species have emerged as important pathogens in transplant recipients.

Dematiaceous fungi, or dark-pigmented fungi, are characterized by the presence of melanin or melanin-like pigments in their cell walls, conidia, or both. They are widely distributed in the environment, especially in soil, wood, and plant matter. Infections secondary to these fungi include mycetoma, chromoblastomycosis, and phaeohyphomycosis.

Cases of dematiaceous fungal infections in solid organ transplant patients have been previously described in the literature. Most of these infections have appeared clinically as a papule, plaque, pustule, or nonhealing ulcer. We present a case of a transplant patient with a fungal infection of the volar aspect of the base of the index finger which clinically mimicked a giant-cell tumor of the tendon sheath.

Case Report

A thirty-six year-old, right-hand dominant African-American male with a history of a kidney and pancreas transplant five years prior, presented to the plastic surgery hand clinic with a three-month history of an increase in the size of a mass on the volar aspect of the base of the right index finger that had been stable in size for a few years. He denied a history of local, recent trauma or drainage from the area, and he did not report any respiratory or systemic illnesses, namely fever, chills, or other constitutional symptoms preceding the discovery of the mass. He denied any previous treatment to the area. He was at the time on immunosuppressive therapy for his solid organ transplants.

On physical exam, he was afebrile with vital signs within normal limits. Focused examination of the right hand demonstrated an approximately two centimeter subcutaneous mass on the volar aspect of the right index finger that was solid in nature, minimally mobile, nonfluctuant without drainage or crepitus, and with mild tenderness on palpation. The mass did not exhibit significant movement with excursion of the flexor tendon, but flexion of the digit was limited due to mass effect and associated discomfort. He otherwise had full range of motion of all digits and wrist, and was neurovascularly intact.

Labs were unremarkable with the exception of an elevated creatinine, which his baseline compared to prior months. White blood cell count was within normal limits. MRI of the hand demonstrated a 1.2 x 0.8 cm well-circumscribed lesion in the palmar aspect of the second metacarpal of the hand with intermediate T1 and T2 signals. There was no evidence of edema or invasion of surrounding structures and the osseous structures were unremarkable. Differential diagnoses based on radiographic characteristics included giant cell tumor of tendon sheath, giant cell reparative granuloma, amyloidosis, or less likely, gout. Findings were not representative of a nerve sheath tumor or ganglion.

The patient proceeded to surgery with a preoperative diagnosis of giant-cell tumor. Following incision, the lesion demonstrated purulent material draining from a region superficial to the lesion. Fluid and tissue cultures were taken and sent for analysis. Grossly, the lesion consisted of tan-white tissue with a central darkened area. After complete removal of the lesion, the A1 pulley was released, the cavity was irrigated, and the overlying skin closed. A splint was placed and he was discharged with outpatient follow-up.

On pathological analysis, the histological examination demonstrated a dermal...
multilocular granulomatous process with numerous multinucleated foreign body giant cells with pigmented fungal elements throughout. A Fontana Masson’s and a Grocott’s methenamine silver stain highlighted spores that demonstrated a copper penny configuration. The favored diagnosis was chromomycosis, but phaeohyphomycosis was in the differential. Fungal cultures were positive for *Wangiella (Exophiala) dermatitidis*. He was initially treated with fluconazole and then subsequently switched to voriconazole and referred to infectious disease for treatment guidance.

On postoperative follow-up, he was doing well with adequate healing of the incision site. He had regained full range of motion of the digit and activities of daily living were able to be performed without significant difficulty.

**Discussion**

Previous research has indicated that infections in transplant patients due to dematiaceous fungi are clinically distinct from the more commonly observed fungal infections after transplantation (i.e. candidiasis and aspergillosis). Fungal infections in transplant patients have a tendency to occur later, two years after transplantation on average, and present most frequently as skin and/or soft-tissue infections of the extremities. Traumatic inoculation of the fungus is the most likely mode of acquisition.1

The optimal treatment for dematiaceous fungi infections is controversial. Treatment options include antibiotic therapy alone, or surgical excision with or without a course of antibiotic therapy.7 In up to 20% of patients treated surgically, recurrences may occur, with relapse usually at the site of the earlier lesion.8 Early reports with variable results have been described using amphotericin B, flucytosine, or ketoconazole alone. Dematiaceous fungi are known to be highly susceptible to itraconazole treatment, both in transplant and nontransplant patients.7 However, relapse or recurrence following the cessation of itraconazole therapy may be observed.7

**Summary**

In summary, dematiaceous fungal infections are becoming increasingly more common in solid organ transplant recipients. Skin and soft-tissue infections in this patient population need to be considered as potentially more than just secondary to typical skin. In addition, physicians and hand surgeons must consider that hand masses in the transplant population may be of fungal etiology, even when the mass appears to resemble a common tumor such as giant cell, ganglion, etc. The case of our patient highlights the importance of a collaborative approach to treatment of these fungal infections by the surgeon, pathologist, transplant physician, and infectious disease specialist.

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**References**


**A Clinical Review for the Evaluation and Management of Restless Legs in Primary Care**

By Terrell L. Stone, MD

Restless Legs Syndrome (RLS), recently named Willis-Ekbom disease (WED), is a neurological disorder that is both common and under-recognized in primary care. Originally described by Thomas Willis in 1685, it was not until 1945 that Swedish neurologist Karl-Axel Ekbom identified the characteristic features of this disorder giving it the descriptive name of “restless legs syndrome.” To recognize their accomplishments, the nonprofit Restless Legs Syndrome Foundation recently renamed RLS as Willis-Ekbom disease.

A large multinational survey, REST, reported physicians only diagnosed 25% of patients presenting with RLS. Patients were misdiagnosed with neuropathy, leg cramps, edema, venous problems and arthritis. Unfortunately, misdiagnosis may result in a delay in treatment, seeing multiple physicians and undergoing additional testing procedures. The personal impact is such that half of all patients report disruption of everyday activities, personal relationships and job performance.

RLS is therefore a challenging diagnosis and provides primary care physicians an opportunity to improve diagnosis and implement early treatment.

**Epidemiology**

Prevalence rates in the general population can vary considerably. When frequency and severity of RLS symptoms are studied, prevalence rates in adults ranged from 2.7%-7.9% and once similar conditions were excluded, prevalence rates were reduced to 1.9%-4.6%. A pediatric population survey of patients seeking treatment revealed a prevalence rate of 1.9% for children and 2.0% for adolescents. Prevalence studies vary by gender but most studies show RLS to be twice as common in women as men. Risk factors include age, family history, pregnancy, iron deficiency, Periodic Limb Movement disorder (PMLS), End Stage Renal Disease (ESRD), medications, smoking and diabetes mellitus. A family history of RLS in first-degree relatives offers support for the diagnosis as prevalence rates approach 50%. Epidemiological studies have shown a two-fold increased risk of CAD and CVD in RLS patients.

**Pathophysiology**

The pathophysiology of RLS is complex and unclear, involving the central nervous system, neurotransmitters, the spinal cord and peripheral nervous system. A leading theory proposes RLS to result from dysregulation of iron transport across the blood-brain barrier, which results in lower CSF ferritin levels. Iron is a necessary cofactor for tyrosine hydroxylase, which is a critical enzyme in the production of dopamine. CSF nighttime ferritin levels

---

**Table 1. Essential Diagnostic Criteria for Restless Leg Syndrome**

*All must be present to make the diagnosis.*

1. An urge to move the legs usually but not always accompanied by, or felt to be caused by, uncomfortable and unpleasant sensations in the legs.
2. The urge to move the legs begins or worsens during rest or inactivity.
3. The urge to move the legs is partially or totally relieved by movement.
4. The urge to move the legs during rest only occurs or is worse in the evening or night.
5. The occurrence of the above features is not due to another medical or behavioral condition.
Table 2. Differential Diagnosis for RLS

- Venous stasis disease and DVT
- “Growing pains” in children
- Leg cramps
- Peripheral neuropathy
- Muscle fasciculation
- Drug induced akathisia
- Periodic Limb Movements of Sleep (PLMS)
- Arthritis of the lower extremities
- Leg edema
- Myalgia (including statin-induced myositis)
- Habitual foot tapping

are known to decrease which coincides with the diurnal reduction in dopamine and onset of RLS symptoms.6

Clinical Presentation

Restless Legs Syndrome is a common neurological disorder characterized by sensory and motor symptoms causing uncomfortable sensations that produce an urge to move the legs. Descriptions of the unpleasant sensations are reported as “restless,” “crawling,” “tingling,” “cramping,” “pulling,” and “painful.”7 Patients commonly present to physicians describing difficulty falling asleep, > 3 nighttime awakenings, depressed mood and chronic fatigue.

The International RLS Study Group (IRLSSG), a collective group of medical professionals interested in advancing RLS research, developed the following single question to screen for RLS:

“When you try to relax in the evening or sleep at night, do you ever have unpleasant, restless feelings in your legs that can be relieved by walking or movement?”

This question was found to have a sensitivity of 100% and a specificity of 96.8%, making it a reliable tool for primary care physicians.8 If a patient screens positive, then confirmation of the diagnosis should proceed with an evaluation for other RLS characteristics and secondary causes. In 2012, the IRLSSG reviewed symptoms and released consensus criteria to aid in the recognition and diagnosis of RLS (Table 1).9

Idiopathic or primary RLS is more common and likely to present earlier in life and to be hereditary. Secondary RLS refers to medical conditions which are known to have a higher incidence of RLS and include: end stage renal disease (20-30%), pregnancy (15-30%), iron deficiency anemia, Parkinson’s disease (20%) and akathisia associated with the use of dopamine antagonists. Common conditions that mimic RLS are listed in Table 2.

Evaluation

There is no specific laboratory or imaging study to diagnose RLS. Lab testing usually is undertaken to evaluate for secondary causes. The following blood tests are recommended in this regard: serum ferritin (iron deficiency), CBC (anemia), glucose and HbA1c (neuropathy), electrolytes, urea and creatinine (kidney disease and uremia). Optional testing might include serum albumin and thyroid testing if edema is present. Physical exam with a focused neurological exam is often normal and helpful to rule out secondary causes of RLS.

Medication side effects are another cause of RLS. The medical history should be evaluated for medications that can induce or worsen symptoms (see Table 3).

Nonpharmacological Therapy

The majority of RLS patients can be managed with non-pharmacological therapies and lifestyle changes. Factors known to worsen symptoms include: severe stress, shift work, physical activity before bedtime, and high caffeine and excessive alcohol consumption particularly in evening hours. Measures known to relieve or reduce RLS symptoms include: massage and hot baths, participation in aerobics and resistance training, treadmill walking 30 minutes three times a week and relaxation exercises. Since symptoms begin early in the sleep cycle, it is important to maintain good sleep hygiene by establishing a regular bedtime and avoiding daytime naps.

Iron deficiency continues to demand considerable attention in the treatment of RLS. Iron replacement is generally recommended if the ferritin level is < 50μg/L and should be continued until ferritin levels are > 75μg/L. A Cochrane review in 2012 evaluated effectiveness of iron therapy in RLS and concluded there was insufficient evidence to recommend iron replacement as beneficial in RLS. The review did acknowledge that the power of the review (n=139 subjects) might have affected their conclusions.10

Pharmacologic Therapy

Approach to treatment is based on the frequency and severity of symptoms. With this approach only 20% will have symptoms severe enough to require medical therapy. Medications are used to treat and reduce symptoms and are not preventative.

Table 3. Medications that May Cause or Worsen RLS

- Anti-histamines
- Antiemetics
- Anxiolytics (SSRI’s)
- Antidepressants (TCA’s, SNRI’s)
- Anticonvulsants
- Beta-blockers
- Lithium
- Neuroleptics (most, including atypical neuroleptics)
- L-thyroxin
- Proton pump inhibitors (inhibit absorption of Iron)
When RLS symptoms occur on average less than twice a week, medications including levodopa, clonazepam, tramadol and oxazepam can be used intermittently as monotherapy to control symptoms. Once symptoms progress to two or more days a week, continuous medical therapy is recommended.

Dopamine agonists have demonstrated effectiveness in symptom reduction and sleep improvement and are recommended as initial therapy. Doses for the treatment of RLS are typically lower than those used for Parkinson’s disease with fewer side effects. These agents should be administered in the evening two hours before bedtime to coincide with symptom onset. Common side effects include nausea, emesis, somnolence and fatigue and can be minimized by initiation of therapy with lower doses and titration to control of RLS symptoms. Patients will need to be informed of the possible development of augmentation and problems of impulse control associated with the long-term use of these agents.

Augmentation may affect from 36-70% on long-term therapy and is associated with higher doses of dopamine agonist. It is characterized by worsening of symptoms with symptom onset earlier in the day or morning and can spread to upper extremities and trunk. Patients describe symptoms as more severe than prior to initiation of treatment. Problems with impulse control can be expected to affect between 3-17% of patients and include problems associated with gambling, compulsive shopping, hypersexuality, binge eating and obsessive-compulsive behavior. Withdrawal symptoms with intensification of RLS symptoms occur with abrupt discontinuation of medication and should be avoided by gradual down titration.

Once dopamine agonists lose their effectiveness, or if augmentation and impulse control develop, then second line agents should be considered. These agents include: gabapentin or pregabalin, clonazepam, tramadol and oxycodone. Second line agents can be added in combination to dopamine agonists or can be used as single agents with slow withdrawal of the dopamine agonist.

<table>
<thead>
<tr>
<th>Table 4. Long-term pharmacologic treatment of RLS (9)(11)</th>
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<tbody>
<tr>
<td><strong>Medication</strong></td>
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<tr>
<td><strong>Dopamine agonists</strong></td>
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<tr>
<td>Levodopa (with Carbidopa)</td>
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<td>Pramipexole</td>
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<td>Ropinole</td>
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<td>Rotigotine</td>
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<td><strong>Calcium-channel Ligands</strong></td>
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<td>Gabapentin</td>
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<td>Pregabalin</td>
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<td>Gabapentin enacarbil</td>
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<td><strong>Sedative hypnotics</strong></td>
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<td>Clonazepam</td>
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</table>
Figure 1. Algorithm for the management of RLS

**Initial Diagnosis of RLS**
Does patient meet the 5 criteria for RLS (table1)?
Evaluate for other sleep disorders
Review differential diagnosis (table 2)
Determine the impact on patient's life i.e., work status, family, fatigue or depression

**Evaluation and Education**
Determine frequency and severity of sx’s.
Medications that may cause or exacerbate RLS (table 3)
CBC, ferritin, BMP and other considered labs

---

**Nonpharmacologic Therapy**
Treat iron deficiency if ferritin <50 mcg/dl
Good sleep hygiene with regular bedtime
Reduce or avoid caffeine and alcohol
Regular exercise 30 mins. 3x week
Reduce stress, relaxation exercises

---

**Intermittent RLS**
Meditations taken as needed
Levodopa, Clonazepam, Oxycodone

---

**Chronic RLS with moderate sx’s**
Daily Medications Needed With Monotherapy
Dopamine agonist, Calcium channel ligands

---

**If at any time, Augmentation or Impulse Control occurs, consider:**
Reduce or discontinue dopamine agonist, change to calcium channel ligand or opiate

---

**Severe RLS / Monotherapy**
Dopamine agonist, Calcium channel ligands

**Severe RLS / Combination therapy**
Dopamine agonist, Calcium channel ligands, Opiate

---

**Refactory RLS**
(Consider specialist consultation)
Methadone as mono or combination therapy
IV Iron even with low normal ferritin
Intrathecal Morphine
Two populations with RLS deserve special attention. RLS symptoms may develop in 15-30% of pregnant women with half of these reporting severe symptoms. First, iron deficiency should be corrected and, if symptoms continue, further medical management should commence. Consensus clinical practice guidelines developed by the International RLS Study Group recommend the following medications be used in pregnancy: carbidopa/levodopa ER, clonazepam, and if severe symptoms consider oxycodone. During lactation, low-dose clonazepam, gabapentin and tramadol (if very severe) are the preferred agents for RLS.

The diagnosis and treatment in children is more challenging. Symptoms may be confused with the more common “growing pains” leading to a delay in diagnosis. In addition to growing pains, other conditions that can present like RLS include bedtime resistance, night-awakenings and insomnia. Because RLS leads to poor quality sleep, there are concerns for its impact on the treatment of ADHD that is worsened by sleep disorders.

Dopamine agonists which are FDA approved for initial treatment of RLS in children and adolescents include ropinirole and pramipexole.

As with therapy in adults, there are concerns for both impulse control and augmentation associated with on-going dopamine agonist therapy. When RLS is suspected in children and adolescents it is recommended that a specialist be consulted to assist in evaluation and treatment.

Finally, one should consider referral to a specialist in the event any patient develops refractory RLS symptoms despite mono or combination therapy with recommended agents (Table 4) and if augmentation or impulse control problems develop with a dopamine agonist. If despite adequate control of RLS symptoms a patient continues to have sleep problems and daytime fatigue, the clinician should consider referral for polysomnography to evaluate for obstructive sleep apnea which has a higher prevalence in patients with RLS.

References

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INTERNAL MEDICINE

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Everyone knows the old adage of death and taxes, but we will argue that disaster preparedness should be placed on that list, too. Given enough time, catastrophe will be a part of you or your community’s life. With a relative certainty of occurrence, it is striking that we physicians feel so poorly prepared for the event. Scott et al1 reported that “overall knowledge” (regarding disaster management) was self reported as 49.3 out of 100 on a pretest prior to emergency preparedness training (EPT). There are many reasons why more emphasis is not placed on EPT and why those who will respond to these disasters feel inadequately prepared.

Perhaps most providers and facility or municipal leaders believe that the next crisis will not occur in their own community. We wonder if those in Boston hoped that a disaster would not occur in a major city again. Did the citizens of Sandy Hook and Graniteville observe metropolitan criminal and industrial disasters and presume that they were too small to suffer similar tragedies? Do those of us that live on US soil watch international events like the Sumatra–Andaman earthquake/tsunami or the Fukushima nuclear disaster, and believe that couldn’t happen to us?

How would you rate yourself, your practice, or your hospital at being able to respond to disaster? How about being ready for each of many types of disasters such as natural, biological, chemical, radioactive, or explosive?

The following is a list of excellent and reputable sources for emergency preparedness training. Each source has a description and contact information. This list is not comprehensive, but should serve as a jumping off point to find avenues for provider and facility appropriate training.

**FEMA Independent Study Program**

FEMA Independent Study Program offers online courses covering many emergency preparedness topics. Physicians should begin with IS-100.HCB titled Introduction to the Incident Command System (ICS) for Healthcare/Hospitals. It is a 3-hour online course that introduces ICS principles and provides the foundation for emergency management and higher level ICS training. This course describes the history, features and principles, and organizational structure of ICS. FEMA recommends that IS-100.HCB be completed by hospital personnel that would have a role in emergency preparedness, incident management, and/or emergency response during an incident. Additional beneficial courses are IS-200.HCA Applying ICS to Healthcare Organizations, IS-700 National Incident Management System, and IS-800 National Response Framework. The FEMA Independent Study course catalog is at [https://training.fema.gov/is/crslist.aspx](https://training.fema.gov/is/crslist.aspx).

**Disaster Management and Emergency Preparedness (DMEP)**

The Disaster Management and Emergency Preparedness (DMEP) course was developed by the American College of Surgeons Committee on Trauma to help surgeons and physicians develop the skills necessary for an effective response to a mass casualty event. This course was developed by physicians for physicians with an emphasis
on the hospital response. It is a one-day didactic and interactive scenario course. The major topics covered include planning, triage, incident command, injury patterns and pathophysiology, and consideration for special populations. More information can be found at www.facs.org/quality%20programs/trauma/education/dmep.

The National Disaster Life Support Foundation (NDLSF) has created a series of courses designed to prepare health professionals for the management of injuries and illnesses caused by disasters and public health emergencies. The target audience shares a common likelihood of providing clinical care and assistance to casualties during a disaster or public health emergency, including healthcare, public health and allied health professionals; emergency medical services personnel; and other medical first responders and receivers. The Basic Disaster Life Support (BDLS) course is a one day awareness-level course that focuses on an all-hazards approach to mass casualty management and population-based care across a broad range of disasters. The overarching aim of the BDLS course is to teach a common vocabulary and knowledge base for the clinical and public health management of all ages and populations affected by disasters and public health emergencies, through a standardized curriculum that is practical and relevant for all health professionals.

The Advanced Disaster Life Support (ADLS) course is a hands-on two-day course that allows participants to demonstrate competencies in mass casualty management. Essential training components include population scenarios discussion; mass casualty triage tabletop and situational training exercises; surge tabletop scenario for a healthcare facility; personal protective equipment skills performance and decontamination video review; casualty management in small groups with simulated scenarios; and emergency operations center situational training exercise. Successful completion of the BDLS course is a prerequisite for attendance at an ADLS course. Additional information is available at www.NDLSF.org.

The Advanced Hazmat Life Support (AHLS) course is a 2-day interactive program teaching healthcare professionals to medically manage patients exposed to hazardous materials. The covered materials include pesticides, corrosives, irritant gases, asphyxiants, hydrocarbons and substituted hydrocarbons and chemical, biological, radiological and nuclear agents. Participants learn to recognize the signs and symptoms of exposure in order to medically manage patients of hazmat incidents. Specific antidotes and their indications, contraindications, dosing and route are also included. Additional information is available at www.ahls.org.

The Center for Health Professional Training and Emergency Response (CHPTER) is a national collaborative of Emergency Preparedness Training professionals formed by the Division of Emergency Medicine at the Medical University of South Carolina (MUSC). CHPTER prepares health care providers—defined broadly as anyone who may care for a patient during a disaster—through a six-hour curriculum that combines team training during live, multi-patient clinical scenarios (i.e., a pre hospital or hospital-based patient surge). Additional information is available at www.musc.edu/chpter.

The CDC Emergency Preparedness and Response site is a national resource for clinical preparedness information. The site categorizes disasters as natural, bioterrorism, chemical, radiation, and recent incidents. Each category has an extensive library of links to multiple diseases and injuries with public and clinical information. The main page is located at www.emergency.cdc.gov.

Palmetto Health College of Emergency Preparedness provides a convenient resource of web based educational modules. The modules are designed to provide a quick update of common emergency preparedness conditions in trauma, chemical, biological, and radiation. Topics include blast injury, nerve agents, cyanide, chlorine, anthrax, viral hemorrhagic fevers, and more. Pathophysiology, diagnosis, and treatment of each condition are reviewed. The individual topics range in length from ten to twenty minutes each. Modules are found at http://residency.palmettohealth.org/body-residency-fellowship.cfm?id=340.

Physicians will need to play an active role in a medical catastrophe. However, few have the knowledge to integrate into the emergency management process. This lack of knowledge can increase the chaos within any healthcare facility. It is important that we prepare ourselves. That preparation should begin with a basic knowledge of the Incident Command System through FEMA IS-100. HCB. Expansion of your clinical knowledge and skills can be obtained through courses such at DMEP, BDLS, ADLS, AHLS, or CHPTER. Disaster specific online refreshers can be obtained at the CDC Emergency Preparedness website and the Response or the Palmetto Health’s College of Emergency Preparedness website. The next disaster cannot be predicted and may occur locally. Physicians need to have a basic knowledge of emergency preparedness and how to integrate into the disaster response without creating further chaos.

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References
Maximizing Statewide Stroke Care Coverage in South Carolina Utilizing Telemedicine

By: Abby Swanson Kazley, PhD; Shawn Valenta, MHA; Rebecca Wilkerson, MS; Ellen Debenham, MS; Christine Hokmstedt, MD; James T. McElligott, MD, MSCR

Stroke is a major cause of serious long-term disability in the United States and a leading cause of death with one American dying from stroke every four minutes. Stroke costs $36.5 billion annually in treatment and lost productivity. South Carolina is located in the “buckle” of the stroke belt and has had the highest or second highest stroke mortality rate in the United States from 1983 until 2005 and has recently dropped to the 5th highest mortality rate. In South Carolina, stroke is the third leading cause of death and claimed 2,387 lives in 2008.

An ischemic stroke occurs when a blood vessel supplying blood to the brain becomes obstructed. The recommended treatment for an acute ischemic stroke is to administer recombinant tissue plasminogen activator (rtPA) which can dissolve the clot and improve blood circulation to the brain. Treatment with rtPA can greatly reduce the long term impact in disability and death from Acute Ischemic Stroke (AIS), but smaller, community hospitals often struggle to maintain the resources and protocols necessary to treat patients with rtPA, and, given the time sensitive nature of treatment, transfer to a larger hospital for rtPA is not possible. Fortunately, treatment of an acute stroke patient within a telestroke network has been shown to be cost-saving and more effective when compared with routine stroke care in a hospital not in a network. In addition, the use of telemedicine to recommend rtPA administration has been shown to be a safe process.

Telestroke, or the treatment of patients with acute stroke using telemedicine, allows patients in clinically underserved areas to be treated using two-way video equipment and stroke expertise at another location. Telestroke allows for patients at hospitals without expert stroke care to be evaluated for and treated with rtPA in rural and community hospitals. In South Carolina, community hospitals receiving telestroke services are primarily supported by one of the following three health systems: MUSC Health, Greenville Health System, or Palmetto Health. On average, the responding stroke specialists are able to see the patient at the community hospital in less than 10 minutes. Utilizing image exchange and real-time video-conferencing software with far-end camera control capabilities, the stroke specialists can perform an immediate evaluation and provide timely treatment recommendations for one of the most time-sensitive medical conditions.

The purpose of this study is to quantify the impact of telemedicine on access to acute stroke care. Specifically, we are determining the impact of telemedicine on access to emergency treatment for AIS in South Carolina by calculating the percentage of the state’s population that is within thirty and sixty minute drive time windows of expert stroke care.

Methods

Using Geographic Information Systems (GIS), we estimate the number and percentage of South Carolinians who would have access to expert stroke care within thirty and sixty minute drive time windows. We define “expert stroke care” as a PSC or a hospital connected to a PSC via telemedicine. The drive times are calculated using Arc Map software and population estimates by zip code throughout the state. To further estimate the impact of stroke on vulnerable populations, we also estimate the percentage of South Carolinians with access to expert stroke care by age, race/ethnicity, gender, education level, rural residency, poverty level, and Medicaid recipient status.
used 5-year US Census Bureau’s ACS general population 2015 estimates and identified the PSCs and telemedicine hospitals treating stroke in SC in 2015. These are listed in Table 1 and are illustrated in Figure 1.

**Results**

According to this analysis, without the use of telemedicine, only 34.9% of South Carolinians have access to stroke care within thirty minutes, and only 56.2% within sixty minutes. However, with the addition of the telemedicine network in South Carolina, the percentage of residents with access to expert stroke care in thirty and sixty minutes are 71.5% and 96.2% respectively. The results of this analysis are listed in Table 1.

When considering groups that often face health disparities, we find that vulnerable groups can have improved access to care. For example, only 28.8% of African Americans have access to expert stroke care within thirty minutes compared to 36.6% of Caucasians, but with the telemedicine network, these numbers increase to 70.3% and 71.3% respectively. In other instances, such as for rural residents, the increase is present with telemedicine, but not as great. Without telemedicine only 15.2% of rural South Carolina residents have access to expert stroke care within thirty minutes, and this increases to 45.4% with telemedicine. Disparities persist for other groups as well. Only 32.1% of those without a high school diploma live within thirty minutes of expert stroke care compared to 37.6% with greater than a high school diploma, but these differences are much less profound when comparing with telemedicine expert stroke care within sixty minutes at 95.0% and 96.8% respectively. Medicaid recipients also may benefit from telemedicine to treat stroke as only 32.8% live within thirty minutes of a PSC, but 69.7%

---

**Table 1. Number and Percent of SC Population within 30 & 60 Minutes of Expert Stroke Care**

<table>
<thead>
<tr>
<th>Population Category</th>
<th>Total</th>
<th>30 Minute Service Areas</th>
<th>60 Minute Service Areas</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>TOTAL</td>
<td>4,630,351</td>
<td>1,615,946</td>
<td>3,312,263</td>
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<tr>
<td>AGE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 40</td>
<td>2,449,583</td>
<td>861,742</td>
<td>1,787,163</td>
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<tr>
<td>40-49</td>
<td>628,044</td>
<td>217,742</td>
<td>443,989</td>
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<tr>
<td>50-64</td>
<td>912,626</td>
<td>312,258</td>
<td>634,943</td>
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<tr>
<td>65+</td>
<td>640,098</td>
<td>224,204</td>
<td>446,168</td>
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<td>GENDER</td>
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<td></td>
<td></td>
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<tr>
<td>Male</td>
<td>2,251,898</td>
<td>780,890</td>
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<td>Female</td>
<td>2,378,453</td>
<td>835,056</td>
<td>1,711,448</td>
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<td>RACE/ETHNICITY</td>
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<tr>
<td>Hispanic</td>
<td>232,926</td>
<td>102,765</td>
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<tr>
<td>White (Non-Hispanic)</td>
<td>2,967,590</td>
<td>1,085,764</td>
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<td>Black or African American (Non-Hispanic)</td>
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<td>Other (Non-Hispanic)</td>
<td>148,541</td>
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<td>115,027</td>
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<td>EDUCATION, AGE ≥25</td>
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<td>&lt; High School Graduate</td>
<td>450,916</td>
<td>157,607</td>
<td>326,606</td>
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<tr>
<td>High School Graduate (or equivalent)</td>
<td>932,049</td>
<td>303,977</td>
<td>627,066</td>
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<td>&gt; High School Graduate</td>
<td>1,652,862</td>
<td>621,942</td>
<td>1,229,647</td>
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<td>URBAN/RURAL</td>
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<td></td>
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<td>Urban</td>
<td>3,060,751</td>
<td>1,380,092</td>
<td>2,608,632</td>
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<tr>
<td>Rural</td>
<td>1,549,600</td>
<td>235,854</td>
<td>703,631</td>
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<td>POVERTY (FOR WHOM POVERTY STATUS IS DETERMINED)</td>
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<td></td>
<td></td>
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<tr>
<td>Below Poverty</td>
<td>767,788</td>
<td>262,336</td>
<td>551,375</td>
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<tr>
<td>At or Above Poverty</td>
<td>3,700,654</td>
<td>1,315,680</td>
<td>2,674,947</td>
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<tr>
<td>MEDICAID RECIPIENTS</td>
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<td></td>
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<tr>
<td>Number of Medicaid Recipients</td>
<td>1,174,689</td>
<td>385,454</td>
<td>818,885</td>
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</tbody>
</table>

*Data Source: US Census Bureau ACS 2015 5-year estimates; US Census Bureau 2010 Census for Urban/Rural Designation; SC Medicaid Information System (MMIS), June 2014 as of September 2014 (for whom spatial location could be determined).*
live within thirty minutes of a PSC or a telemedicine stroke site. The differences by age and gender are less for both thirty minute and sixty minute drive times, yet these groups stand to gain access to care overall with the use of telemedicine to treat stroke.

Discussion

Telemedicine holds great potential for increasing access to expert stroke care. These differences are especially important for those who might face disparities in care related to age, gender, race/ethnicity, education level, rural residency, poverty, or those on Medicaid. In 2012, it was revealed that only 76% of the state’s population was within 60 minutes of expert stroke care. Our estimates now show that the currently developed telestroke network in South Carolina provides access to expert stroke care within sixty minutes drive time to more than 96% of the population. Without telemedicine, those with expert stroke care at PSCs within sixty minutes drive time is only 56.2%. To our knowledge, only the state of Ohio has demonstrated stroke coverage to this level, and we would recommend that all states initiate an assessment of their current coverage capabilities and implement a plan to maximize statewide stroke care coverage. Telemedicine requires organizational cooperation and investment in resources, careful planning and coordination, and awareness from providers and patients, but it has potential to reduce many of the barriers to access to care that exist.

The South Carolina telestroke system demonstrates the potential that exists for telemedicine to improve decision-making at the point of triage and maximize access capabilities at a statewide level. Expert health care providers can treat patients when needed and reduce barriers to care that exist based on geography and other factors. The outcomes of care, similar to those in stroke, can be better when such expert care is provided in a timely manner, and, as is the case with rtPA, care options that are not available via telemedicine may not be an option after a limited period of time for acute illness.

Policy makers and hospital leaders must investigate opportunities to collaborate to provide coordinated high quality care. Telemedicine is a tool that will allow them to do so. South Carolina has demonstrated the possibilities of increased access to care through telemedicine in the area of stroke, and continued growth with this promising new delivery mechanism should be explored. In 2013 and 2014, the South Carolina Legislature invested over $30 million to advance telehealth initiatives and create a coordinated, open-access telehealth network for the state. The South Carolina Telehealth Alliance was formed as an unprecedented collaboration of academic medical centers, community hospitals and providers, government leaders and other entities that believe that all South Carolina residents should and can have access to quality health care, while effectively managing the cost of providing care. Through productive collaboration, the Alliance seeks to transform and maximize the efficiency of the South Carolina health care delivery system. With a mission to improve the health of all South Carolinians through telehealth, investing in expanding needed specialty and subspecialty capabilities, such as maximizing statewide telestroke coverage, is a key driving strategy to accomplishing that goal.
SCIENTIFIC MANUSCRIPT

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References
8. Bart M. Demaerschalk, MD, MSc; Jeffrey A. Switzer, DO; Jipan Xie, MD, PhD; Liangyi Fan, BA; Kathleen F. Villa, MS; and Eric Q. Wu, PhD. Cost Utility of Hub-and-Spoke Telestroke Networks From Societal Perspective. American Journal of Managed Care, December 2013.

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A 66-year-old, Caucasian male with past medical history significant for atrial fibrillation presented to our hospital with odynophagia and dysphagia for several days. His anticoagulation regimen had been changed two weeks prior from warfarin to dabigatran due to a planned prolonged vacation and desire to reduce the burden of laboratory monitoring. Other comorbidities included hypertension, type 2 diabetes mellitus, hypogonadism, prior venous thromboembolism, diffuse large B-cell lymphoma in remission, and vertebral osteomyelitis requiring long-term suppressive antibiotics. Active medications included dabigatran 150 mg twice daily, loratadine, tamoxifen, pravastatin, cephalexin, diltiazem, glyburide, and testosterone gel daily. Patient denied alcohol, illicit drug and tobacco use. On admission, patient was febrile with a temperature of 100.5°F. Serum creatinine was stable at 1.2 mg/dL with an estimated creatinine clearance of 77 mL/min.

Dabigatran was held for 24 hours prior to undergoing an esophagogastroduodenoscopy (EGD) which revealed several large, superficial ulcers extending from the proximal third of the esophagus to the lower esophageal sphincter (Figure 1). There were no significant findings in the stomach or duodenum. Sucralfate was initiated and dabigatran was discontinued. Fever, dysphagia, and odynophagia improved dramatically and had completely resolved four days after admission. The patient was informed of suspected dabigatran-induced esophageal injury; however, he continued dabigatran at discharge against medical advice. The patient was seen by his primary care provider 18 days after discharge with complaints of vomiting and throat irritation. Dabigatran was discontinued and warfarin was resumed without further complaints.

Discussion

Oral medications are usually administered as tablets or capsules; however, the high concentration of active medication within can often result in injury to esophageal tissue. Odynophagia with or without dysphagia is considered the hallmark symptom of medication-induced esophageal injury, also commonly referred to as “pill esophagitis.” An estimated 10,000 cases of pill esophagitis occur annually in the US affecting patients of all ages. A female predominance exists (2:1), and this is thought to be due to increased usage of medications by women which are associated with pill esophagitis (e.g. alendronate, NSAIDs, iron sulfate, and antibiotics).1-2 Evidence-based guidance for prevention or clinical management of upper GI symptoms including pill esophagitis related to dabigatran is unavailable. General recommendations for prevention include taking dabigatran with a large glass of water or with food and remaining upright for at least 30 minutes following administration.1-2 Persistent or severe upper GI symptoms may represent mucosal ulceration; therefore, endoscopic investigation may be considered. Treatment of established pill esophagitis is directed at withdrawal of the offending agent. Adjunctive medications including acid suppression, sucralfate, and topical anesthetics are often used for symptom relief, although none have been proven to speed relief of pain or healing of injured esophageal mucosa in pill esophagitis.1-2

Non-bleeding upper gastrointestinal adverse events (NB-UGI AEs) have been
previously reported with dabigatran, but few reports are available describing pill esophagitis.3-5 Table 1 summarizes the available patient, drug dosing, symptoms, and management of reported cases of dabigatran-associated esophagitis. All patients were elderly males and were taking dabigatran 220 mg per day dosed either once or twice daily. Symptom onset occurred within 2 weeks of initiation.3-5 Symptom resolution occurred within one week in all but one patient. In this patient, symptom resolution was not assessed or reported possibly due to prolonged intensive care unit stay.5

In our patient, symptom onset began within two weeks from initiation of dabigatran and was consistent with the classic presentation of pill esophagitis. Dabigatran treatment interruption for endoscopy resulted in rapid resolution of symptoms in our patient, and his symptoms recurred upon restarting dabigatran. Results of the causality analysis, using the probability scale established by Naranjo, describe the relationship between dabigatran and esophagitis as definite in our patient.

Most patients with pill esophagitis have normal premorbid esophageal anatomy and function. The pathophysiology of NB-UGI AEs related to dabigatran is not known; however, several theories are suggested. The contents of many pills are sufficiently caustic to cause esophageal injury if retained and released prematurely. Both acid and alkaline burns have been demonstrated in animal models or by placing the medication directly on human buccal mucosa.1,2 Dabigatran capsules contain tartaric acid to help maintain a low gastric pH and promote absorption.7 Even medications which produce neutral pH solutions when dissolved may injure esophageal mucosa via induction of gastroesophageal reflux (e.g. anticholinergics), creation of local hyperosmolar states (e.g. potassium chloride), and intracellular toxicity following mucosal uptake (e.g. doxycycline).1 Although the precise mechanism is unknown at present, it is likely that dabigatran esophageal and upper-GI toxicity is mediated through one or more of these mechanisms.

Dabigatran-associated NB-UGI AEs including pill esophagitis are significantly more common relative to warfarin. For most NB-UGI AEs drug discontinuation is not typically required. However, dabigatran-associated esophagitis requires permanent treatment interruption and should be considered in patients presenting with acute odynophagia with or without dysphagia, particularly when these symptoms present within two weeks following dabigatran initiation.

Table 1. Summary of reported cases of dabigatran-associated esophagitis comparing clinical characteristics and management.

<table>
<thead>
<tr>
<th>Reference</th>
<th>Patient Description</th>
<th>Dabigatran dose</th>
<th>Symptom onset</th>
<th>Management</th>
<th>Symptom resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ootani et al(3)</td>
<td>70-yo Japanese male</td>
<td>110 mg twice daily</td>
<td>14 days</td>
<td>Dabigatran discontinuation, rabeprazole</td>
<td>“within days”</td>
</tr>
<tr>
<td></td>
<td>73-yo Japanese male</td>
<td>110 mg twice daily</td>
<td>4 days</td>
<td>Dabigatran discontinuation, rabeprazole</td>
<td>“within 1 week”</td>
</tr>
<tr>
<td>Okada et al(4)</td>
<td>79-yo Japanese male</td>
<td>110 mg twice daily</td>
<td>3 days</td>
<td>Dabigatran discontinuation, rabeprazole</td>
<td>1 week</td>
</tr>
<tr>
<td>Singh et al(5)</td>
<td>69-yo Caucasian male</td>
<td>220 mg once daily</td>
<td>1 day</td>
<td>Dabigatran discontinuation, ICU admission,</td>
<td>Not reported</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>omeprazole infusion, nasogastric tube, cardiorespiratory support</td>
<td></td>
</tr>
</tbody>
</table>
Frequency and Costs of Hospital Transfers for Ambulatory Care Sensitive Conditions among Medicaid Nursing Home Patients

By: R. Neal Axon, MD, MSCR; Kelly Hunt, PhD; Charles J. Everett, PhD; Mulugeta Gebregziabher, PhD

In the U.S., approximately 1.8 million people reside in nursing homes (NH) or other skilled nursing facilities, a number expected to double within 40 years. Medicaid provides healthcare insurance for 4.6 million low income senior citizens and is the nation’s largest payor for NH services. In 2012, Medicaid spent $140 billion on long-term care, approximately half of which was for institutional care. That year, South Carolina Medicaid spent $553 million on nursing home services. In addition, Medicaid is the primary payor for approximately 21% of all acute hospitalizations in U.S. Nursing home patients are at high risk for hospitalization, and they are frequently transferred to acute hospital emergency departments (EDs) with associated risk for complications and declining health trajectories among frail elders.

The Agency for Healthcare Research and Quality (AHRQ) and other organizations track hospitalization for Ambulatory Care Sensitive Conditions (ACSC) as a measure of access to appropriate primary health care. Several reports indicate that avoidable hospitalizations for ACSCs are common and costly. Carter and colleagues examined an elderly Massachusetts cohort and found that 20.3% of ED visits among NH residents were for ACSCs, and NH residents had a relative risk ratio for hospital admission of 2.23 (95% CI 1.744, 2.855) compared to community dwelling patients. In addition, acute care costs for ACSCs in NH patients are quite high, estimated at 23% of the $971 million spent on NH residents in New York state. While not all admissions for these conditions are avoidable, it is assumed that timely, high-quality primary care can mitigate need for acute treatment of these conditions.

Most of what is known about nursing home transfers is derived from studies of Medicare, so relatively less is known about the Medicaid population. Few studies have analyzed both ED visits and hospitalizations, and fewer still have analyzed costs of hospital care paid by Medicaid. Understanding rates and associated costs of NH transfers for ACSC is important in light of the large-scale Medicaid expansion dictated by the Affordable Care Act. Twenty-eight states have substantially expanded Medicaid to date, and several others are likely to follow suit. In addition, state Medicaid agencies may follow the lead of Medicare by penalizing hospitals for higher than expected hospital admission/readmission rates. The purpose of this project was to determine the frequency of ED visits and hospitalizations for ACSC among NH patients and to determine Medicaid expenditures for these patients.

Methods

Study Population: We constructed a statewide cohort of Medicaid patients receiving care in South Carolina nursing homes during calendar years 2007–2009. Data were obtained from the South Carolina Office of Revenue and Fiscal Affairs. Selection criteria included: 1) Age ≥ 18 years, 2) Enrolled in Medicaid, 3) Billed for a long-term nursing home stay, or inpatient rehabilitation in a SC NH. Subjects were included in the present cohort if they had a visit to an acute care facility during a NH stay. We categorized subjects as having had acute ED visits or hospitalization if they had such encounters that fell during the period of a NH stay. Episodes of acute care were further categorized as ED only visits, ED-hospitalization visits, or hospitalization only visits. This study was reviewed and approved by our local institutional review board as exempt research. All Analyses were conducted using SAS version 9.3 (SAS Institute, Carey, NC).

Ambulatory care sensitive conditions: For this study, we used a modification of the coding scheme for ACSC recommended by AHRQ. Subjects were categorized as having been treated for ACSC diagnoses or not. ACSCs and relevant ICD-9 codes are shown in Table 2. Given the age range of our
population, we excluded congenital syphilis (ICD-9 090), Hemophilus meningitis age 1-5 only (ICD-9 320.2), convulsions age < 5 years (ICD-9 780.3), and failure to thrive age < 1 year (ICD-9 783.4). We further categorized ACSCs as ‘acute and/or preventable’ versus ‘chronic.’ Finally, given the nature of our research question, and in order to better characterize total hospital costs attributable to ACSC we examined subjects with ACSCs as either a primary or secondary diagnosis.

**Outcome measures:** The primary outcome measures for this study were measures of acute healthcare utilization and associated hospital costs by ACSC treatment status. We determined the number of subjects treated and the number of episodes of care per year for each ACSC. We further determined the mean number of ED visits and hospitalizations per subject and the total number of visits overall. The primary cost outcome for adjusted analysis was mean Medicaid expenditures for ED visits and/or hospitalization based on paid claim amounts. Subjects with Medicare A or B were excluded from cost analysis because Medicare was more likely to be listed as the primary payer for such hospital stays.

**Covariates:** In addition to treatment for ACSC, we also examined several other covariates. Age and length of NH stay were analyzed as continuous variables. Gender (male/female), race (white, black, other/unknown) and marital status (married, divorced, widowed, single, unknown) were analyzed as categorical variables. Comorbidities included cancer, cardiovascular disease, cerebrovascular disease, chronic pulmonary disease, congestive heart failure, depression, diabetes, fluid electrolyte disorder, hypertension, hypothyroidism, lung conditions, obesity, peripheral vascular disease, psychoses, renal failure, weight loss and other comorbidity grouped together defined based on ICD-9 codes listed during the cohort time period during an ED or hospital visit based on previously validated algorithms.

**Statistical Analysis:** Descriptive statistics (medians and proportions) of demographic variables, length of hospital stay and baseline comorbidities were calculated by ACSC status. We also calculated the mean frequency of episodes of care per year stratified by chronic and acute preventable conditions. In order to determine costs attributable to the care of ACSC adjusted for relevant covariates described above, we fitted a generalized linear model with a gamma distribution and a log link via generalized estimating equations. This approach enabled us to estimate costs with robust standard error estimates for making inference regarding expenditures accounting for correlation of

### Table 1. Subject Characteristics (N=11,107 subjects).

<table>
<thead>
<tr>
<th></th>
<th>ACSC Diagnoses</th>
<th>No ACSC Diagnoses</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>N Subjects</td>
<td>9,556 (86.0%)</td>
<td>1,551 (14.0%)</td>
<td></td>
</tr>
<tr>
<td>Age (Median Years)</td>
<td>78</td>
<td>68</td>
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</tr>
<tr>
<td>Marital Status (%)</td>
<td></td>
<td></td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Married</td>
<td>10.0</td>
<td>8.1</td>
<td></td>
</tr>
<tr>
<td>Divorced</td>
<td>7.1</td>
<td>5.0</td>
<td></td>
</tr>
<tr>
<td>Widowed</td>
<td>31.4</td>
<td>22.7</td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>48.9</td>
<td>61.2</td>
<td></td>
</tr>
<tr>
<td>Unknown</td>
<td>2.7</td>
<td>3.0</td>
<td></td>
</tr>
<tr>
<td>Race (%)</td>
<td></td>
<td></td>
<td>0.2391</td>
</tr>
<tr>
<td>White</td>
<td>52.4</td>
<td>50.8</td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>41.9</td>
<td>42.5</td>
<td></td>
</tr>
<tr>
<td>Other or Unknown</td>
<td>5.7</td>
<td>6.7</td>
<td></td>
</tr>
<tr>
<td>Female (%)</td>
<td></td>
<td></td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Any Medicare Part A Eligibility</td>
<td>1.2</td>
<td>1.2</td>
<td>0.9143</td>
</tr>
<tr>
<td>Any Medicare Part B Eligibility</td>
<td>87.8</td>
<td>79.2</td>
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</tr>
<tr>
<td>NH Length of Stay (Median Days)</td>
<td>182</td>
<td>350</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>NH Stays of 1,000-1,096 Days (%)</td>
<td>8.4</td>
<td>22.5</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Comorbidities (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cancer</td>
<td>4.2</td>
<td>2.3</td>
<td>0.0002</td>
</tr>
<tr>
<td>Cardiovascular Disease</td>
<td>22.2</td>
<td>7.4</td>
<td>&lt;.0001</td>
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<tr>
<td>Cerebrovascular Disease</td>
<td>15.8</td>
<td>5.4</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Chronic Pulmonary Disease</td>
<td>25.0</td>
<td>1.1</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Congestive Heart Failure</td>
<td>26.0</td>
<td>1.0</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Depression</td>
<td>11.9</td>
<td>4.6</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Diabetes</td>
<td>34.4</td>
<td>2.3</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Fluid Electrolyte Disorder</td>
<td>42.6</td>
<td>11.7</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Hypertension</td>
<td>61.9</td>
<td>10.6</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Hypothyroidism</td>
<td>10.7</td>
<td>4.6</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Lung Conditions</td>
<td>3.4</td>
<td>0.7</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Obesity</td>
<td>3.4</td>
<td>1.2</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Peripheral Vascular Disease</td>
<td>7.0</td>
<td>3.8</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Psychoses</td>
<td>10.9</td>
<td>10.4</td>
<td>0.5302</td>
</tr>
<tr>
<td>Renal Failure</td>
<td>16.8</td>
<td>12.1</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Weight Loss</td>
<td>11.9</td>
<td>5.2</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Other Comorbidities**</td>
<td>15.0</td>
<td>7.0</td>
<td>&lt;.0001</td>
</tr>
</tbody>
</table>

**NH = Nursing Home**

*One or more ambulatory care sensitive conditions (ACSC) listed among discharge diagnoses for an index episode of care. Not all episodes of care for each patient included ACSC diagnoses.

**AIDS/HIV, Blood Loss Anemia, Coagulopathy, Deficiency Anemia, Liver Disease, Peptic Ulcer Disease Excluding Bleeding, Rheumatoid Arthritis/Collagen Vascular Diseases, and Substance Abuse.
outcomes due to clustering. Adjusted mean costs are reported in U.S. dollars calculated from the model predicted costs with all dollar values adjusted using the consumer price index to 2009 dollars.

**Results**

**Subject Characteristics:** This cohort represents all Medicaid recipients \( n = 11,107 \) treated in South Carolina nursing homes during calendar years 2007-2009. Table 1 describes characteristics of NH patients treated in ED or hospitalized for ACSC diagnoses versus non-ACSC diagnoses with the majority of patients receiving care for ACSC diagnoses (i.e., 86.0% versus 14.0%). Patients receiving care for ACSC were 10 years older, more likely to be female, more likely to be widowed and of similar race as patients receiving care for non-ACSC diagnoses. Patients receiving care for ACSC diagnoses were more likely to have Medicare Part B eligibility, and their mean NH length of stay was considerably shorter. Focusing on differences in comorbidity burden between the two groups, patients with an ACSC diagnosis had higher rates of all comorbidities examined with the exception of psychoses when compared to patients with a non-ACSC diagnosis.

**Ambulatory Care Sensitive Conditions:** Table 2 describes the types of treated ACSC grouped according to acute and preventable conditions or chronic conditions. The most frequent acute preventable condition was kidney/urinary infection followed by bacterial pneumonia and dehydration/volume depletion. These three conditions accounted for 79.7% of all acute and preventable ACSC episodes of care. The most frequent chronic conditions were hypertension, diabetes, congestive heart failure and chronic obstructive pulmonary disease. These four chronic conditions accounted for 88.9% of all chronic condition ACSC episodes of care. Acute preventable conditions accounted for 37.3% of all episodes per year while chronic conditions accounted for 62.7% of all episodes per year.

**Healthcare Utilization:** Table 3 displays several domains of acute ED and hospital utilization in ACSC patients compared to non-ACSC patients transferred from nursing homes. There are many more transfers from nursing homes which involve ACSC diagnoses than transfers with only non-ACSC diagnoses (i.e., 14,757 versus 3,225 transfers). Transfers from nursing homes that involve ACSC diagnoses were more likely to have Medicare Part B eligibility, and their mean NH length of stay was considerably shorter. Focusing on differences in comorbidity burden between the two groups, patients with an ACSC diagnosis had higher rates of all comorbidities examined with the exception of psychoses when compared to patients with a non-ACSC diagnosis.
homes which involve an ACSC diagnoses, result in an ED visit only, an ED visit and admission, and an admission 22.6%, 37.0% and 40.4% of the time, respectively. In contrast, transfers from nursing homes which involve only non-ACSC diagnoses, result in an ED visit only, an ED visit and admission and an admission only 62.5%, 14.4% and 23.1% of the time, respectively. The hospital readmission rate is lower among those with only ACSC diagnoses; however, they have a slightly higher mean number of ED visits per subject, but similar mean number of hospitalizations per subject when compared to those with only non-ACSC diagnoses.

Attributable Costs: Table 4 highlights estimated costs for ED care and hospitalization among NH patients transferred to ED care and hospitalization for ACSC compared to non-ACSC after adjustment for demographic factors and comorbid conditions. Excluding patients with Medicare A or B coverage, ED costs per episode ($252 versus $193, p=0.0001) as well as total ED costs per year ($61,779 versus $35,748) were higher for ACSC diagnoses than non-ACSC diagnoses. For all episodes involving an ED and admission, the cost per episode was lower although not statistically significantly lower ($2424 versus $3720, p=0.1403), while the total cost per year was higher for ACSC diagnoses than non-ACSC diagnoses ($4,722,770 versus $525,386). Similarly, for all episodes involving an admission only, the cost per episode was lower although not statistically significantly lower ($4839 versus $7767, p=0.2130), while the total cost per year was higher for ACSC diagnoses than non-ACSC diagnoses ($9,582,618 versus $1,719,715). Model coefficients are displayed in Table 5. Of note, we analyzed ED costs per episode of care separately for subjects dually eligible for Medicare. These were $58 for ACSC subjects and $52 for non-ACSC subjects.

Discussion

This report is one of the first to analyze both ED and acute hospital utilization in a Medicaid nursing home cohort using robust methods for estimating attributable health-care costs. We observed that a majority of Medicaid NH patients treated acutely had at least one ACSC as a primary or secondary diagnosis. ACSC patients were more likely to be admitted to the hospital from the ED, and mean ED costs per episode of care were higher for among ACSC patients. Finally, total Medicaid expenditures for acute care were substantially higher in ACSC patients compared to non-ACSC patients, though per-episode costs were lower for ACSC patients. While the majority of acute care transfers are likely appropriate, our results suggest that additional measures to improve on-site management of ACSC in NHs might prevent avoidable acute care transfers among stable patients and/or decrease the severity of illness among patients destined to require acute care transfers.

Table 3. Acute Care Utilization among Transfers from Nursing Homes (N=17,982).

<table>
<thead>
<tr>
<th>Type of Transfer (n)</th>
<th>ACSC Diagnoses</th>
<th>No ACSC Diagnoses</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>ED only (%) 14757</td>
<td>3225</td>
<td></td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>ED and admission (%)</td>
<td>3332 (22.6%)</td>
<td>2017 (62.5%)</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Admission only (%)</td>
<td>5462 (37.0%)</td>
<td>464 (14.4%)</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Mean number of ED visits/subject</td>
<td>1.44</td>
<td>1.37</td>
<td>0.0151</td>
</tr>
<tr>
<td>Mean number of hospitalizations/subject</td>
<td>1.46</td>
<td>1.52</td>
<td>0.1669</td>
</tr>
<tr>
<td>Total ED visits/year</td>
<td>2931</td>
<td>827</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Total Hospital Admissions/year</td>
<td>3808</td>
<td>403</td>
<td>&lt;.0001</td>
</tr>
</tbody>
</table>

*Index hospital admission occurred within 30 days of a previous acute care hospital discharge.

Table 4. Estimated Acute Care Costs Attributable to Ambulatory Care Sensitive Conditions.*

<table>
<thead>
<tr>
<th></th>
<th>ACSC Diagnoses</th>
<th>No ACSC Diagnoses</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>ED costs/episode ($)</td>
<td>252</td>
<td>193</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Total ED costs/year ($)</td>
<td>61,779</td>
<td>35,748</td>
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<tr>
<td>ED and admission costs/episode ($)</td>
<td>2,424</td>
<td>3,720</td>
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<tr>
<td>Total ED and admission costs/year ($)</td>
<td>4,722,770</td>
<td>525,386</td>
<td></td>
</tr>
<tr>
<td>Admission costs/episode ($)</td>
<td>4,839</td>
<td>7,767</td>
<td>0.2130</td>
</tr>
<tr>
<td>Total admission costs/year ($)</td>
<td>9,582,618</td>
<td>1,719,715</td>
<td></td>
</tr>
</tbody>
</table>

*Cost estimates adjusted for patient age, gender, race, chronic comorbid conditions not including those that are themselves ACSC diagnoses (as described in Table 5), and whether or not ACSC is a primary or secondary diagnosis. Model coefficients used to calculate costs are displayed in Table 5.

**Excluding patients with Medicare A or B coverage.
Our observations are similar to those of Carter and colleagues who observed that 20.3% of ED visits among NH residents were for primary diagnosis of ACSC. We observed that 24.9% of ED visits in our cohort were for primary diagnosis of ACSC. We chose a more inclusive inclusion criterion for our cohort given our interest in overall acute care costs. Our results are also similar to those in a separate cohort of South Carolina Medicare NH transfer patients. Among 20,867 Medicare NH subjects, 85.3% transferred for acute care had at least one ACSC diagnosis. In that cohort, more ACSC patients transferred to EDs were subsequently admitted to the hospital (50.4% vs. 25%, p<0.0001), and mean ED costs/episode of care were also higher ($401 vs. $294, p<0.0001).

A variety of factors have been associated with NH to ED transfers and hospitalizations. Socio-demographic factors include male gender and increasing age, and medical conditions. Provider-specific factors include the availability of nurses, physicians, and nurse practitioners. Some have cited regulatory factors such as reimbursement rates and bed-hold policies. When surveyed, NH providers have described patient and family preferences, limited knowledge regarding hospice care, lack of familiarity with patients by covering providers, and lack of timely (<4 hours) access to physician or NP evaluation as associated factors.

Prior efforts to reduce NH to ED transfers and hospitalizations have focused on improving access to care, improving care quality, and increasing hospice referrals. More recently, Ouslander and colleagues developed and implemented the Interventions to Reduce Acute Care Transfers (INTERACT2) program to address this issue. Initially implemented in 25 NHs in three states, participating NHs reported a 17% reduction in hospital admissions compared to historic admission rates, with larger reductions in admissions compared concurrent non-participating facilities. Jackson and colleagues described a statewide initiative to prevent recurrent hospitalizations among high-risk Medicaid enrollees. They found that patients discharged from an acute hospitalization who received transitional care coordination were 20% less likely to experience a readmission. While this model was not specifically focused on NH patients,

Table 5. Regression Model Estimating Adjusted Mean Costs Attributable to Ambulatory Care Sensitive Conditions.

<table>
<thead>
<tr>
<th></th>
<th>Estimate</th>
<th>95% Confidence Intervals</th>
<th>P Value</th>
</tr>
</thead>
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<tr>
<td>Intercept</td>
<td>10.4214</td>
<td>10.1026</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Age (year)</td>
<td>-0.0340</td>
<td>-0.0368</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Female (male as referent)</td>
<td>0.0918</td>
<td>0.0099</td>
<td>0.0523</td>
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<tr>
<td>Race</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White (referent)</td>
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<td></td>
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</tr>
<tr>
<td>Black</td>
<td>0.3236</td>
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<td>Other Race or Unknown</td>
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<td>0.3005</td>
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<td>Comorbidities</td>
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<td>Depression (no as referent)</td>
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<td>Lung Conditions (no as referent)</td>
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<td>Obesity (no as referent)</td>
<td>-0.0486</td>
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<td>0.5637</td>
</tr>
<tr>
<td>Peripheral Vascular Disease (no as referent)</td>
<td>-0.0630</td>
<td>-0.1877</td>
<td>0.3214</td>
</tr>
<tr>
<td>Psychoses (no as referent)</td>
<td>0.2689</td>
<td>0.1743</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Renal Failure (no as referent)</td>
<td>0.0051</td>
<td>-0.0970</td>
<td>0.9223</td>
</tr>
<tr>
<td>Weight Loss (no as referent)</td>
<td>0.4410</td>
<td>0.2898</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Other Comorbidities** (no as referent)</td>
<td>0.1217</td>
<td>0.0268</td>
<td>0.0120</td>
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<tr>
<td>ACSC (non-ACSC as referent)</td>
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<td>-0.4129</td>
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</tr>
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<td>Transfer Type</td>
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<tr>
<td>Admission (referent)</td>
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<td></td>
<td></td>
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<td>ED</td>
<td>-4.0472</td>
<td>-4.3206</td>
<td>&lt;.0001</td>
</tr>
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<td>ED and Admission</td>
<td>-0.5181</td>
<td>-0.8058</td>
<td>0.0004</td>
</tr>
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<td>Interaction between ACSC and Transfer Type</td>
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<tr>
<td>ACSC and ED</td>
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<td>0.3051</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>ACSC and ED and Admission</td>
<td>0.0984</td>
<td>-0.1962</td>
<td>0.5127</td>
</tr>
</tbody>
</table>

*Excluding Cancer of the Cervix.

**Including AIDS/HIV, Blood Loss Anemia, Coagulopathy, Liver Disease, Peptic Ulcer Disease Excluding Bleeding, Rheumatoid Arthritis/Collagen Vascular Diseases, and Substance Abuse.
similar programs might be adapted for this setting. Given our findings, such successful models of care should be adopted and expanded broadly.

In addition, several current programs carry the potential to improve rates of acute care transfer for ACSC. For example, the Centers for Medicare and Medicaid Services (CMS) Bundled Payments for Care Improvement (BPCI) Initiative began demonstration projects linking reimbursement for acute hospital and post-acute hospital care in 2013, and over 100 of these projects are now underway. These are intended to foster increased collaboration between hospitals and nursing facilities in ways that can decrease hospital readmissions with likely effects on overall hospital admissions.

This report should be evaluated in light of certain limitations. First, because our analysis involves a single state, South Carolina, our results may not be generalizable nationally. Second, our dataset did not include information on costs related to ambulance transportation. Grunier and colleagues estimated that over 90% of patients transferred to the ED required ambulance transport, so our results may underestimate total costs associated with ED and hospital transfers. Our cost analysis was also limited to patients without Medicare part A, because this portion of Medicare pays for hospital and ED care. Though including such patients may have led to underestimation of mean costs, to the extent that Medicaid may have paid copayments or other associated costs for dual eligible patients, exclusion of these subjects may also have affected estimates of total expenditures. We analyzed costs in aggregate without breaking them down into relevant cost centers such as laboratory, pharmacy, or radiology, so we are unable to provide insight into more granular cost outlays. These could be of interest for future study. Finally, there were baseline differences in the prevalence of several chronic conditions between patients in the ACSC condition group and the non-ACSC condition group. Though we adjusted for comorbid illness in our models estimating mean costs, it is possible that differences in severity of illness may have been the source of residual confounding.

In conclusion, our analysis of a statewide cohort of Medicaid NH patients outlined frequency and attributable costs for the acute care of ACSCs. We expect that our results should be of interest to healthcare providers in NH, ED, and hospital settings as well as for healthcare policymakers. Our cost estimates include both emergency department and inpatient costs and represent actual payments by Medicaid adjusted for socio-demographic and medical need characteristics compared to non-ACSC patients. Given the high frequency of NH transfers to acute care for ACSC, programs improving quality of NH care transitions and those focused on improving case management for high-risk Medicaid patients should be implemented broadly. Further, program evaluation of ongoing bundled payment initiatives may benefit from analysis of ACSC and their costs.

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References
One of this year’s goals for the SCMA Alliance is to help members become aware of and be able to easily access important information on a wide variety of topics on aging. Whether families are beginning to deal with their own aging issues or are providing care for elderly family members, many are wisely seeking to become informed before actually needing to know the facts and resources. As the Alliance focuses on “Issues of Aging,” the topics emphasized will be those that may not be generally addressed by physicians.

Alliance members at the April 2016 Annual Conference in Myrtle Beach received a copy of the All About Seniors magazine. Publisher Bill Sweezy describes it as “the most comprehensive resource information for Seniors, Caregivers and Industry Professionals.” Complimentary copies may be found in the offices of doctors, elder care attorneys, legislators, and others who champion causes for senior citizens.

The print version can be viewed online and is a great resource for families who may be “caring from a distance.” To locate a copy of All About Seniors, please contact the editor Gail Stokes at gstokes@stripedrock.org or (864) 350-7160 or view online at www.allaboutseniors.org.

On October 18 Carol Page, PHD of the SC Assistive Technology Program at USC School of Medicine and Ms. Elizabeth Ford from the Lt. Governor’s Office on Aging will address the SCMA Alliance in Columbia on topics dealing with aging and how to best serve our aging population.

Since the convenience and speed of the internet brings information so quickly and efficiently, it’s helpful to have access to a list of pertinent websites. (Of course this is only a partial list with attention to the caregiver as well as the “care receiver.”) Remember it’s always good to “Know it before you need it!”

### Aging (General Information)
- Office on Aging in SC — www.aging.sc.gov
- Aging Resource Center — www.scupstateadrc.org
- Senior Living — www.seniorliving.about.com

### Alzheimer’s
- Alzheimer’s Association in SC — www.alz.org/sc
- Alzheimer’s Association (Federal) — www.alzheimers.gov

### Caregivers
- Adult Care — www.adultcare.org
- Adult Children of Aging Parents — www.acapcommunity.com
- ARCH Respite Network — www.archrespite.org
- Caregiver Action Network — www.caregiveraction.org
- Elder Care Guide — www.101elderCare.org
- Family Caregiver Alliance — www.caregiver.org
- Full Circle of Care — www.fullcirclecare.org
- Medicare Caregiver Information — www.medicare.gov/caregivers
- Well Spouse Foundation — www.wellspouse.org

### Elder Abuse
- Elder Abuse Helpline (federal) — www.ncea.aoa.gov
- Center on Elder Abuse — www.centeronelderabuse.org
- Warning Signs of Elder Abuse — www.helpguide.org/articles/abuse/elderabuse

### End of Life Planning
- Funeral Planner — www.funeralplan.com
- Body Donation Program — www.medcure.org

### Geriatric Care Management
- Geriatric Care Management (National Assn.) — www.caremanager.org
- SC Caring — www.caring.com
- Senior Action — www.senioraction.org
Hospice
• End of Life Care–SC — www.cchospice.org
• Hospice SC — www.hospicecare.net

Health and Healthcare information
• Health Finder — www.healthfinder.gov
• Healthy Aging — www.mayoseniorhealth.org
• Mayo Clinic On-Line — www.mayoclinic.org
• Medicare — www.medicare.gov
• Web MD — www.webmd.com

Long Term Care—Housing and Insurance
• Eldercare Locator — www.eldercare.gov
• National Clearinghouse for LTC — www.longtermcare.gov
• Nursing home comparisons — www.medicare.gov/nhcompare/home.asp
• Senior Living Guide — www.seniorliving.com

Medicare
• Medicare — www.medicare.gov
• Medicare Fraud — www.stopMedicarefraud.gov
• SHIP (Senior Health Information Program: click on “Find Counselor” for specific state and county) — www.shiptalk.org

Reverse Mortgages
• Hidden Truths about Reverse Mortgages — www.forbes.com

Social Security
• Social Security Administration — www.ssa.gov

(Website list is from information provided by Sally Lowery, SHIP Volunteer, Greenville County, SC. SHIP stands for Senior Health Information Program.)
The 2016 National Resident Matching Program® (NRMP®) announced the largest Main Residency Match® on record with 42,370 registered applicants vying for 30,750 residency positions.1 With a match rate of just over 75% for first year positions, applicants are faced with the very real possibility of unemployment and an average medical school debt of $180,723.20 Nationally, this has become a trend with the number of medical graduates exceeding residency slots – particularly among more desirable subspecialties or geographical regions. Meanwhile, rising student debt pushes students to pursue specialties as opposed to choosing primary care.

States that recognize this growing discrepancy hold a strategic advantage. By recruiting soon-to-be-physicians with a larger number of medical residency positions, states may better meet the growing health care needs of their citizens and boost their economy with an influx of new, young professionals. Although there are many infrastructure obstacles in growing or starting residency positions in regards to quality and satisfaction, the most glaring hurdle is identifying funding.

Utilizing Association of American Medical Colleges workforce data and the South Carolina Office for Healthcare Workforce Analysis and Planning data briefs, current state and national student, physician, and population data were compared. Trends in Graduate Medical Education (GME) funding, training, and retention for South Carolina since 2008 were examined with potential funding opportunities considered to offer suggestions to increase available residency positions in South Carolina. Model initiatives from other states and consumer taxes, focusing on those with dual health benefits were considered.

South Carolina
Because it takes years to train new physicians, this shortage must be addressed now to prevent long-term repercussions. As of 2015, South Carolina falls below the national physician supply average: ranking 37th in the number of active physicians per 100,000 population, 36th in number of active Primary Care Physicians and 31st in number of active General Surgeons.3 Recognizing the disparity between physician supply and a growing aging population, South Carolina has begun to address the growing need for physicians in the state by doubling the number of medical schools. With the opening of Edward Via College of
Osteopathic Medicine in Spartanburg in 2011 and the University of South Carolina Greenville Campus in 2012, South Carolina ranks as the 5th highest increase in UME student enrollment (113%) in the nation from 2004-2014 and 16th highest in concentration of UME students per 100,000 patient population during the 2014-2015 academic year.\(^3\) As of 2014, South Carolina boasted 1,944 enrolled students in Undergraduate Medical Education (UME, encompassing M.D. and D.O. training programs). South Carolina medical schools will graduate over 500 physicians each year once schools are at maximum capacity and provide Graduate Medical Education (GME) to 1,275 residents. GME is commonly referred to as residency.

Across the country, 68% of physicians remain in the state in which they complete their residency. South Carolina has an above average retention rate, ranking 8th in the country with 77% remaining in-state to practice.\(^3\) Retention rates are highest among physicians who complete both their UME and GME in the same state, and South Carolina is no exception with 76.9% remaining in state to practice.\(^3\) In 2014, South Carolina was below the national average in number of residents and fellows in ACGME-accredited training programs per 100,000 (26.4 versus the national average of 36.9 residents and fellows per 100,000) and number of residents and fellows in ACGME accredited Primary Care training programs (10.1 versus the national average of 13.6 residents and fellows per 100,000).\(^3\)

Although South Carolina trained students demonstrate a propensity to remain in-state and the number of UME graduates in the state have doubled, residency-training programs in South Carolina have increased at a much slower pace of only 30% over the same 10-year period (2004-2014), and remains below the national average regarding the number of residents and fellows in accredited training programs.\(^2\) With a GME to UME enrollment ratio of 0.8, South Carolina is poised to loose locally educated physicians and currently lacks the capacity to import the surplus of residents from other states.\(^1\) This imbalance forces new physicians, who may wish to remain and continue practicing in South Carolina, to seek GME training elsewhere.

**GME Funding Opportunities**

**Background**

Although government funding for GME was originally intended to be a temporary source, today it is the single largest supporter of GME funding through Medicare, Medicaid, the Veterans Administration, and the Health Resources and Services Administration.\(^4\) With the Balanced Budget Act (BBA) of 1997, and what was thought to be a physician surplus, Congress capped Medicare funding of GME reimbursements at the 1996 levels, halting the creation of new residency positions.\(^4\) Two federal bills are currently under Congressional consideration, the Creating Access to Residency Education (CARE) Act to improve access to care in geographically underserved areas, and the Resident Physician Shortage Reduction Act to increase the number of residency spots by 15,000 over 5 years in an attempt to address predicted specialty shortages.\(^3\)

During 2012, South Carolina received $110.7 million in Medicaid GME funding, one of three states in which Medicaid GME funding exceeded Medicare GME funding.\(^5\) It is worth noting that although South Carolina was one of eight states in the country receiving Medicaid funds in excess of $100 million, during this same time period first year residents in the Southern region of the United States (including South Carolina) received the lowest mean stipends in the country (at $47,989 vs national average of $50,274).\(^5\)

Traditional federal funding, although a crucial component of the current GME

<table>
<thead>
<tr>
<th>Table 1.</th>
<th>Projected Enrollment</th>
<th>Matched Students</th>
<th>Matched Students Remaining in SC for GME</th>
<th>% Matched Students Remaining in SC for GME</th>
</tr>
</thead>
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<tr>
<td></td>
<td>Class of 2019</td>
<td>Class of 2015</td>
<td>Class of 2016</td>
<td>Class of 2015</td>
</tr>
<tr>
<td>Medical University of South Carolina (MUSC, est. 1824)</td>
<td>164</td>
<td>156</td>
<td>162</td>
<td>49</td>
</tr>
<tr>
<td>University of South Carolina School of Medicine, Columbia (USC-Columbia, est. 1977)</td>
<td>90</td>
<td>85</td>
<td>83</td>
<td>32</td>
</tr>
<tr>
<td>Edward Via College of Osteopathic Medicine, Carolinas (VCOM Carolinas, est. 2011)</td>
<td>150</td>
<td>153</td>
<td>150</td>
<td>25</td>
</tr>
<tr>
<td>University of South Carolina School of Medicine, Greenville (USC-Greenville, est. 2012)</td>
<td>100</td>
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<td>49</td>
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</tr>
<tr>
<td>Total</td>
<td>504</td>
<td>394</td>
<td>444</td>
<td>106</td>
</tr>
</tbody>
</table>
training model, is not the sole source. Private funds support various current GME programs and stem from academic institutions, medical centers, physician organizations, and even private insurers who pay an increased rate for care at teaching hospitals versus their non-teaching hospital counterparts. Even with the federal caps from the Balanced Budget Act, with a bit of creativity, states have continued to increase available GME residency positions to ensure health care needs are met.

**Initiatives around the United States**

Recently, the state of Texas quadrupled the financial allotment for GME expansion through grants for planning, partnership development, residency program expansion and growth, and giving sites more flexibility to develop innovative methods of improving access to care. Texas offered planning and implementation grants for new residency programs ($150,000 and $250,000, respectively) as well as expansion grants for current GME training programs ($65,000). Now with a budget of $53 million, Texas is not only addressing the state’s UME vs GME bottleneck, but they are also importing additional trained physicians into the state and have raised resident salaries.

A gasoline tax has been implemented in countless states across the United States in order to provide a funding source for public work projects. Because of the multitude of tourists flocking to the South Carolina beaches and coastal towns in the spring and summer, a gasoline tax would not only accrue funding from locals, but also capitalize on the influx of all motor vehicles passing through. In Orange County, FL, a half-penny sales tax on gasoline to benefit school construction ensured that tourists paid 55% of the tax while their students benefited 100%. Over 480 million dollars, collected over 15 years, is expected to fund school facilities in Volusia County, FL from a half-cent gasoline tax. Similarly, Brevard County, FL approved a half-cent sales tax increase to help improve roads and schools. A relatively insignificant increase of a half-cent, or even a quarter of a cent, is appealing to many conservative voters who are opposed to markedly increasing taxes, yet cumulatively this tax can amount to a significant sum. As of January 2016, South Carolina gas taxes remained below the national average ($0.17 compared to $0.30). In 2014, voters in Charleston County, SC passed a half-cent sales tax on all goods purchased in the county for 25 years or a total investment of $1.3 billion. The sales tax was allocated for green space acquisition and mass transit projects.

Using reported gasoline sales from 2016 of 3.38 billion gallons, a half-penny sales tax per gallon would yield approximately $16.9 million in new funding. In light of damage from the historic flooding in South Carolina during late 2015, a gasoline tax that addresses repairing infrastructure combined with improving access to health care throughout the state is particularly timely and necessary for long-term outcomes.
Dual-Benefit Models

Consumer taxes at the state and county level have been leveraged to provide funds to target issue areas, and in many cases provide a dual benefit of deterring participation in public health concern. With the creation of Medical Education and Research Costs (MERC) through Health Care Access and Medicaid funds and a one-time tobacco settlement in 1999, Minnesota enacted a cigarette tax of 2.5 cents per pack. The cigarette tax provides a dual-benefit with decreased risk of cancer, coronary artery disease, COPD and an increase in the number of healthcare providers (increasing ability to care for tobacco users who take a large toll on the healthcare system). South Carolina’s current cigarette tax of ($0.57 per pack) falls well below the national average ($1.61) and is a reasonable source for GME funding.

West Virginia enacted a one cent excise tax per 16.9 fluid ounces of sugar sweetened beverages that provided $16.2 million dollars in 2011 alone for the West Virginia University schools of medicine, dentistry, and nursing.

South Carolina has recognized that there is a shortage of healthcare providers and has begun to take the initiative to correct the disparity by means of the South Carolina Education Lottery. Over twenty million dollars have been awarded to the “Allied Healthcare Initiative” in order to address the state’s skilled healthcare workforce shortage since 2006.

Regarding other “sin” excise taxes, another proposition with similar dual-benefits on public health and revenue generation, particularly in South Carolina, is alcohol. In 2013, the Centers for Disease Control and Prevention recommended an increase in alcohol excise taxes for prevention purposes in South Carolina. For wine and beer, a 10% increase in price would be anticipated to reduce consumption by 5% and 6%, respectively. Again, South Carolina’s tax on beer ($0.77) and wine ($1.08) fall below the national average of $0.35 and $1.03, respectively (7th and 17th highest, excluding local excise taxes).

From a public health standpoint, it is crucial to decrease excessive alcohol consumption and from an economic standpoint, those dollars could be used to fund additional GME residencies in South Carolina.

International Medical Graduates

Further complicating the issue of retaining locally trained physicians is the growing number of International Medical Graduate (IMG) applicants to U.S. residencies. These graduates, a mix of U.S. citizens and foreign nationals, from medical institutions outside the United States, Puerto Rico, or Canada, have increased in number of applications for ACGME residencies and fellowships by 70% from 2002-2012, growing the total pool by one-third. There are concerns that IMG applicants may displace in-state educated physicians. In the 2016 National Resident Matching Program (NRMP) match, 54% of U.S. citizen IMGs matched to PGY-1 positions, the highest match rate since 2005 and 51% of non-U.S. citizen IMGs matched, also the highest since 2005.

South Carolina ranks 44th in the country for taking IMG’s; training only 10% of IMG’s in South Carolina while the national average is 22%. It is important to note that IMG physicians have been crucial at meeting healthcare disparities in the United States, with a higher propensity and willingness to practice in primary care and underserved areas. In 2016, IMG’s most commonly matched into Neurology, Family Medicine, Internal Medicine, Pathology, and Pediatrics preliminary year. In South Carolina, 9% of 2016 residency positions were filled by IMGS. South Carolina offered 375 positions, 12 of which were filled with US citizens from non-US medical schools and 23 were non-U.S. citizens from non-U.S. medical schools.

Conclusions

Because a growing number of UME graduates do not match into a residency position, Missouri, Kansas, and Arkansas have passed laws to allow these new physicians to work in medically underserved areas as an “assistant physician” without completing a residency as long as they collaborate with licensed physician. In order to ensure the highest quality of medical
treatment, the AMA has encouraged securing funding to create more residency spots rather than endorse the idea of allowing these unmatched “graduate registered physicians” to provide patient care.

It is critical to address the GME bottleneck by adding new training opportunities to meet the pressing health care needs of an aging population and retain in-state physicians. Further analysis is required regarding the number of training positions needed as newer schools (USC-Greenville and VCOM Carolinas) match data become more established and trends emerge. Consumer taxes provide a unique, untapped source of revenue to fund additional South Carolina GME training positions in order to address growing healthcare needs.

References
**Medical Humanities**

**Just Passing Through**

**By: Joseph Zealberg, MD**

*Ordinary, one’s death, yet different from anything you’ve ever lived through.*

— Costika Melchiu

There’s a breach in the works.
The pendulum stopped, congealed.

I remove its arms, strip numbers away.
Single digits: placed on a silver table.
Double digits: dumped in a plastic can.

I weigh the empty face,
clean its expression with a vinegar sponge
stolen from a Rilke poem.

Tyler, my grandson,
asks if I believe in reincarnation.
I’ll return as an osprey, he says.

And I’ll be a porpoise in the ocean, I decide,
chasing fish to the surface for your mid-day meal.

Time to discuss sunset dreams, Cabernet sky.
Never drink and fly, I warn
and always protect your necessary beak.

Smiling, he goes to the yard, climbs an oak.
I remove number twelve from the plastic can.
The clock unwinds itself.

* Dr. Zealberg is a practicing psychiatrist in Charleston and also practices at the Ralph H. Johnson VA Medical Center.

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**CME Calendar**

**Fourth Quarter 2016 Calendar**

**Jennifer Root, MD**

Chairperson, Continuing Medical Education

**October 2016**

**Friday-Saturday, October 21-22, 2016**

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**CONTACT:** Nancy Robinson, 828-277-9706; sha@shallc.net

Other Registration Information:
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Website: www.cceinc.org

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Mirroring

By: John Brewer Eberly, Jr., Duke Divinity School, USC School of Medicine, Columbia, South Carolina

Dante’s *Divine Comedy* is an allegorical epic which rises among the peaks of Western poetic achievement. As C. S. Lewis wrote to a close friend, “[Dante] reaches heights of poetry which you get nowhere else: an ether almost too fine to breathe.”¹ In the three-part Comedy, the poet Dante descends into Hell in the *Inferno* to climb Mount Purgatory in *Purgatorio* and finally ascend into Heaven in *Paradiso*. Darkness and stagnation give way to warmth and movement which flower into light and eternal motion. The themes of desire, love, justice, and mercy pulsate throughout the poem.

In *Inferno*, Canto XXXII, Dante is speaking with one of the damned souls or “shades” trapped in the lowest level of Hell, a frozen lake as Dante imagines it, representing the cold, motionless, enslaving prison which pride, betrayal, and self-sovereignty create. At this point Dante’s relentless curiosity and questioning begin to frustrate the ice-bound shades. A sad and irritated soul looks up, and delivers this penetrating line to Dante, and to us:

*Perché cotanto in noi ti specchi?*

“Why are you mirroring yourself in us?”²

A couple of thoughts first: One, I don’t just sit around reading Dante. I’m a medical student, not a classicist. Most nights my wife and I watch Netflix or simply hang out with friends. Nevertheless, these ancient texts have a wisdom and a movement that I think we lack in our medical lives. As C. S. Lewis said, we need the weather of the ancient books, the “clean sea breezes of the centuries,”³ to gust through the dusty furnishing of our minds. Or as aphorist Gómez-Dávila has written, “Books are not tools for perfection, but barricades against tedium.”⁴ Literature is meant to enrich and clarify, not perfect.

Philosophers and those of erudition can write (or not write) in a way that makes me feel as though I just haven’t quite read enough or thought hard enough. For example, I’m reading a book right now which is excellent, but blasts me with words like “perfidy,” “ennui,” “sybaritic,” “treacly,” and “jejune.”⁵ In this case the discomfort is most likely due to my insecurity, but then there are times when I think the writer could truly do a better job of inviting the reader into the learning and into the knowledge, rather than distancing with his or her intellectual acumen. Often, this cerebral alienation can rear its proud head in the shrewd landscape of medical science and education. One of my greatest fears as a young and restless medical student is the prospect of creating art that is kitsch or proud, or teaching with words and rhetoric that are as plastic as they are condescending.

Dante stands in sharp contrast to these attitudes. He’s writing at the highest level of poetic and artistic excellence, referencing and building a world that echoes knowledge of Florentine politics, theology, numerology, mythology, history, and the like. And yet, Dante writes as everyman. And he constantly addresses us as, “you, reader.” Dante writes his poem not in the contemporary high Latin one would expect, but in the everyday Italian his people are used to, the vernacular – the everyday common speech of everyday common man. Dante, like the best of leaders, descends from his high station to become common man, inviting us to walk with him in the
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darkness, the self-reflection, and the light. We get to be fellow sojourners with Il Sommo Poeta, “The Supreme Poet.” We get to ask questions with the inquisitor.

Which brings us back to the shade’s great question, “Why are you mirroring yourself in us?” Stephen W. Smith, Professor of English at Hillsdale College, states that Dante encounters mirror after mirror in the souls of the Inferno, mirrors that do not flatter, but reflect the state of brokenness and bent desire in Dante himself, and in all of us as readers. The souls are mirrors to Dante as his great poem is a mirror to us.

It seems to me that we could learn something of this in how we mirror ourselves in our patients. How are our patients mirrors? What do we see when we look at the reflections? Do we mirror ourselves in them at all? Are we like the proud religious elite at the wall in that famous parable by the Christ in Luke 18? “…thank you that I am not like other men, extortioners, unjust, adulterers, or even like this tax collector. I fast twice a week…” It is so easy for me to mirror myself against my patients in this way. We can imagine my thoughts rendered, “…thank you that I am not like other patients, lazy, manipulative, ungrateful, or even like this tax collector. I run twice a week…” Perhaps we could get even more penetrating, “…thank you that I am not like other physicians, insurance agents, politicians, administrators, or even like this pharmaceutical rep.” I mirror myself against much more than I mirror myself in.

This sort of response comes from what Allan Bloom calls a “psychology of separateness,”6 quoting Jean-Jacques Rousseau’s Emile, “Each sets up his own little separate system.”6 In our modern American individualistic culture, we each set up our own little system, built on a foundation of being separate from patients and from others. At best, we create a sense of obligatory, professional distance. At worst, we maintain a quiet position of superiority or protection. And this is precisely why the question “Why are you mirroring yourself in us?” is so powerful, because it rips us back into the reality of messy and beautiful community in which all of us cry out in humble self-reflection, as the tax collector next to the Pharisee, “…be merciful to me.”10

How much can we learn from looking into the eyes of our patients and seeing a reflection of our own humanity, our own potential for laziness or non-compliance or corruption or injustice? This dimension is where true empathy is born, rather than the pale, emaciated, buzzword empathy we hear about all the time. Authentic empathy is closer to Dante’s concept of intentional, self-reflective mirroring, which reaches beyond merely ‘being nice’ to our patients. Genuine mirroring can be the physician’s barrier against zero-calorie empathy, the decaying effects of cynicism, and the blunting defense mechanisms of blasé humor at the patient’s expense. Mirroring allows true compassion.

I doubt that our patients are looking up at us, perhaps frozen or cold in their own hospital inferno, and asking, “Why are you mirroring yourself in us?” (If they are doing that, please let me know, because that sounds epic.) I understand most patients, let alone most people, are not going to speak that way. However, all the more, I think the question is worth asking of ourselves, “Am I mirroring myself in my patients?”

No doubt, as healers, our relentless curiosity and questioning frustrate those patients we are trying to heal. We can imagine a sad and irritated patient looking up, and delivering the penetrating line: “Why aren’t you mirroring yourself in us?”

References


3 Alternatively, there is also Longfellow’s classic translation, “Why dost thou so mirror thyself in us?” See Dante Alighieri, Dante’s Divine Comedy, Henry W. Longfellow, trans., Anna Amari-Parker, ed. (London: Chartwell Books, Inc., 2008), 147. Finally, Princeton’s impressive Dante Project is worth consulting at http://etcweb.princeton.edu/dante/pdp/ (Search for Canto XXXII, line 54).


6 Smith, “Great Books.”


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WE ARE GROWING IN SOUTH CAROLINA

McLeod Regional Medical Center, our flagship hospital, is a stable 565 bed, tertiary care facility, located in Florence, SC, 1 hour from the Coast. We have 2 growing facilities located at N. Myrtle Beach, SC and 5 rural locations. We have more than 90 practices located throughout the region. McLeod offers a full spectrum of ancillary services to the physician and offers a full spectrum of services and sub-specialties to our patients. With a service area of 1.5 million people, the incoming physician will gain an established patient base in no time!

All McLeod locations are located near the beach and major cities such as Charlotte, NC, and Charleston, SC. With our warm weather, we offer outdoor recreation, such as golf, tennis, and water activities year round. If you are interested in practicing medicine with a nationally recognized, state of the art healthcare system in an economically robust area in the southeast, please contact Angela Stukes at astukes@mcleodhealth.org or 843-777-7046.