



The El Paso Physician

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EDITORIAL AND BUSINESS OFFICE

Patsy Slaughter, Executive Director

1301 Montana, El Paso, Texas 79902

Phone: 915-533-0940

Fax: 915-533-1188

email: epmedsoc@aol.com

www.epcms.com

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EPCMS Mission:

“to advance the art and science of medicine,
protect the physician and serve the patient”



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President's Comment

Roxanne Tyroch, MD, FACP

President, El Paso County Medical Society



The practice of medicine is a labor of love. I was reminded of this at a recent membership meeting of the El Paso County Medical Society and heard the report of Dr. Carlos Gutierrez and other El Paso physicians who have been involved in the migrant children from Central America.

All members are encouraged to get the most out of their dues—please join us at our monthly meetings at 5:30 pm second Tuesdays of every month at 1301 Montana and get to know current board members and involved membership.

In November I served on the reference committee on medical education at the AMA meeting in Washington DC. A forum was held by the Pennsylvania Medical Association on the issues surrounding the American Board of Internal Medicine Maintenance of Certification program. A certifying organization, the National Board of Physicians and Surgeons presented their organization, history and future objectives. The AMA Council on Medical Education recommended against adoption of a resolution supporting the AMA developing model legislation encouraging competition among qualified certifying bodies thus modification of board certification requirements, including maintenance of certification. I will continue to report on this topic. The reference committee heard testimony on resolutions relating to rural education, a proposal to operate a physician suicide hotline through the AMA staffed by physicians and measuring physician competency as we age.

The Texas Medical Association Winter Conference was held in January in Austin. The Council on Legislation reviewed bills being filed. Your TMA staff is superb at developing strategies and activities that prevent bills adverse to the practice of medicine from gaining ground. Think of them as your guardian angels, I do! As always, scope of practice was a large part of our discussions, as well as the rainy day fund as it relates to other deficits. The Lone Star Caucus met and discussed endorsement of candidates at Texmed in May. We also discussed potential resolutions for endorsement. The current AMA president, Barbara McAneny, addressed the AMA delegation. She practices in Albuquerque, NM. I am thrilled to announce that Sue Bailey, a Texas allergist, will be running for AMA president in June, 2019 in Chicago.

I truly believe that if you can familiarize yourself with the resources available to you through your El Paso County Medical Society, American Medical Association and Texas Medical Association, you will become much more resilient to the forces that overwhelm the practicing physician. We look forward to your participation.

Roxanne Tyroch, MD, FACP,
President, El Paso County Medical Society

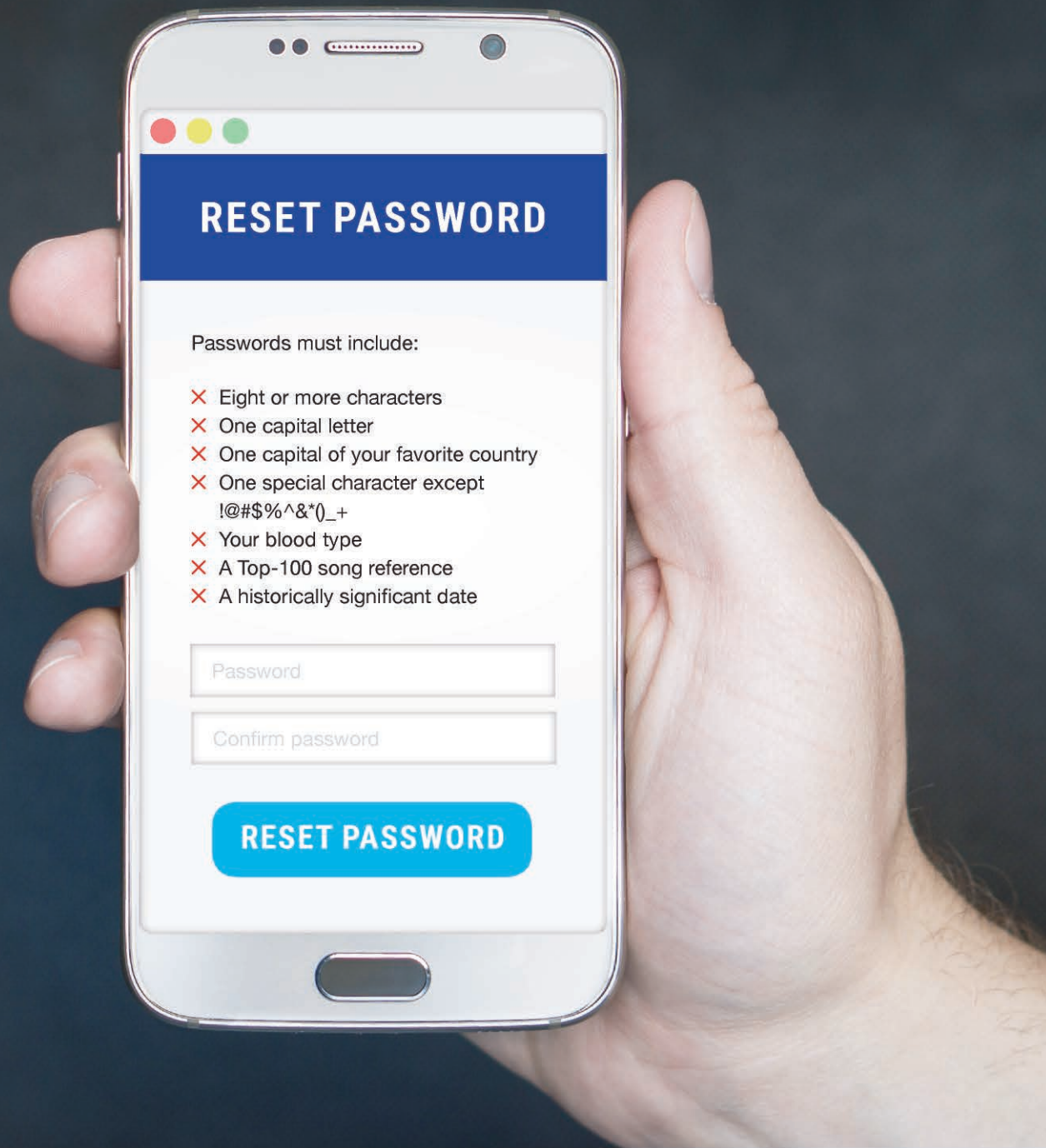


**“What does the medical society do?”
a colleague asked.**

The answer is....

So, to answer the earlier question about what does DMCS do, I would say it works to bring physicians together to help preserve the physician-patient relationship. This intimate bond based on the promise to do our best to preserve and enhance health, and to relieve suffering of the individual, makes us unique. And, together, we are stronger and better able to manage the outside influences that inevitably get between the physician and patient.

Kevin W. Klein, MD
President - Dallas County Medical Society



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Editorial Comment

Alison L. Days, MD
Editor
El Paso Physician, EPCMS



“Teamwork is the ability to work together toward a common vision. The ability to direct individual accomplishments toward organizational objectives. It is the fuel that allows common people to attain uncommon results.”

– **Andrew Carnegie**

“None of us, including me, ever do great things. But we can all do small things, with great love, and together we can do something wonderful.”

– **Mother Teresa**

Dr. Klein of Dallas Medical Society was asked what a medical society does and his answer is included after Dr. Tyroch’s presidential comment in which she also answers what our medical society does. I wanted to echo those comments by, once again, talking about the need for membership to the El Paso County Medical Society (EPCMS) and the Texas Medical Society (TMA).

When you become a member of one of the above organizations, you become a member of both. You then can reap the benefits of both. The TMA helps by giving free or reduced CME activities online or by supporting local CME presentations in El Paso. Additionally, the TMA can give you updates about current bills being reviewed or voted on in the Texas Legislature that might affected the practice or scope of medicine. Online you can find free templates for employee handouts or other office forms and they can give advice about setting up or closing down a medical practice. Lastly, membership in the TMA gives you access to TMLT—one of the best medical malpractice insurances.

The EPCMS can help locally by getting referrals for you, helping with patient complaints, and helping you to publicize new research, case reports, or announcements for upcoming events in the El Paso Physician Magazine (4 times a year) or on the El Paso Physician TV Show (1-2 times a month) and is available to find the resources for your practice. You can contact the EPCMS @ epmedsoc@aol.com, 915-533-0940 or website EPCMS.com In this month’s edition, you can find articles and information about e-cigarettes, Hookahs, med students and their pets, diabetes academic abstracts and a case report about stroke from a fungal infection.

As the TMA website states:” The TMA/EPCMS is relentlessly working for you and your patients. Whether it’s representing medicine in Austin and Washington, D.C., meeting with third-party payers to get you paid, developing practice management tools and seminars for you and your office staff, or creating programs to improve public health, TMA has long been a physicians’ best advocate.” The same can be said of EPCMS. We are your society. Help us make it great.

If you have contributed or are reading this magazine, likely you are already a member. However, many of your friends or colleagues may not be members. With this in mind, read Dr. Tyroch’s description of local events and then go convince someone you know to join our team!

Alison L. Days, MD, Editor, El Paso Physician Magazine



If you would like to see past episodes of the El Paso Physician TV show, go to the following link

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CASE REPORT

E. P. C. M. S.

“Vertebral artery stroke secondary to rhinoorbital mucormycosis: A case report and pathologic review.”

Jacob Winters, MS3
Calvin McNelly, MS3
Lloyd Christensen, MS3
Osvaldo Padilla, MD
Kishan V. Patel, MD

ABSTRACT

Mucormycosis is a potentially devastating infection that classically infects those with diabetic ketoacidosis^{1,2}. It can cause stroke secondary to vascular compromise^{3,4}. A patient with diabetic ketoacidosis presented with left vertebral artery stroke as a consequence of invasive rhinoorbital mucormycosis. The pathological findings and methods used to investigate this infection are reviewed. While such cases are uncommon, a high index of suspicion should be maintained for mucormycosis in patients with stroke symptoms in the context of diabetic ketoacidosis, especially in those with ocular symptoms.

BACKGROUND INFORMATION

Mucormycosis is a potentially devastating angioinvasive infection that classically infects diabetic patients, particularly those with immunocompromise⁵ and diabetic ketoacidosis². On rare occasion, mucormycosis causes stroke symptoms secondary to parenchymal invasion and vascular compromise, as seen by Stretz et al. in their patient with Gerstmann syndrome⁶ and by Fu et al. in their patient with basilar artery involvement³. Due to its angioinvasive nature and ability to invade functional tissue, the presenting symptoms of cerebrovascular accident secondary to *Mucor* vary greatly.

CASE PRESENTATION

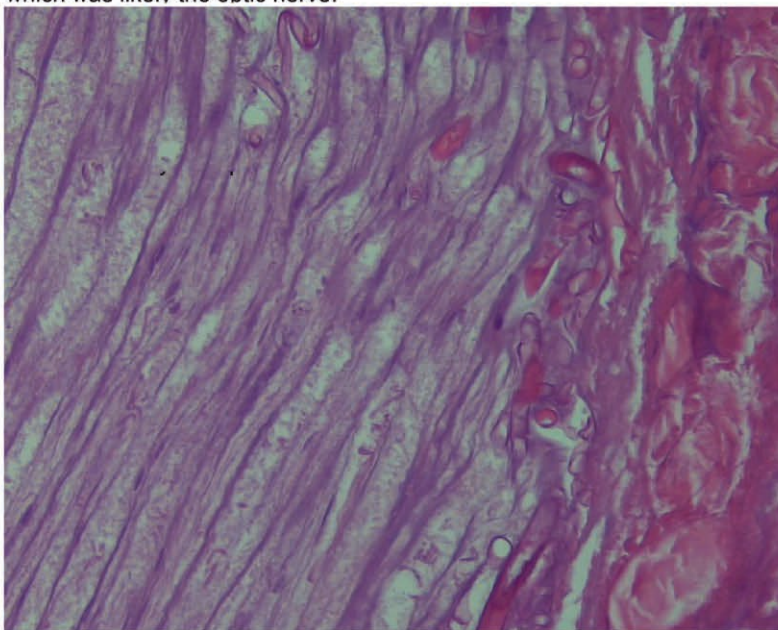
A 57-year-old male with no reported past medical history was transferred from Odessa, Texas to University Medical Center, El Paso, Texas for diagnosis of cerebrovascular accident, having presented with diabetic ketoacidosis, hemiparesis, aphasia, and left lateral ophthalmoplegia with periorbital swelling. Computed tomography scan of the head indicated vertebral artery occlusion and orbital lesion consistent with mucormycosis. The patient was subsequently transferred to University Medical Center El Paso with intent for thrombectomy. Following arrival, further history revealed a recent dental procedure in Mexico. Further work-up included fungal cultures and pathologic examination.

Microscopic examination of frozen section biopsy of the left maxillary and left frontal sinuses was undertaken. An intraorbital mass with optic neural tissue was also evaluated (Figure 1). GMS and PAS stains were performed. Sections from the maxillary sinus and intraorbital mass featured necrosis and osteomyelitis.

Tissue displayed fungal invasion by organisms demonstrating 90-degree branching and lack of hyphae septations consistent with Phycomycosis (Figure 2), which includes the families of *Mucor*, *Absidia*, *Rhizopus*, and *Cunninghamella*. Fungal culture yielded *Rhizopus* species. Although other fungal species were not entirely excluded, the clinical picture of diabetic ketoacidosis and angioinvasive symptoms was most consistent with *Mucor*. As a result, the patient was diagnosed with rhino-cerebral-orbital mucormycosis with involvement of the left maxilla and occipital region.

The patient was treated surgically with maxillectomy along with IV amphotericin B and daily irrigation with amphotericin B. Blood glucose and acidemia were also controlled.

Figure 1. Hematoxylin and Eosin staining at 20X power. Image demonstrates invasion of organism (center-right) in nervous tissue (left), which was likely the optic nerve.

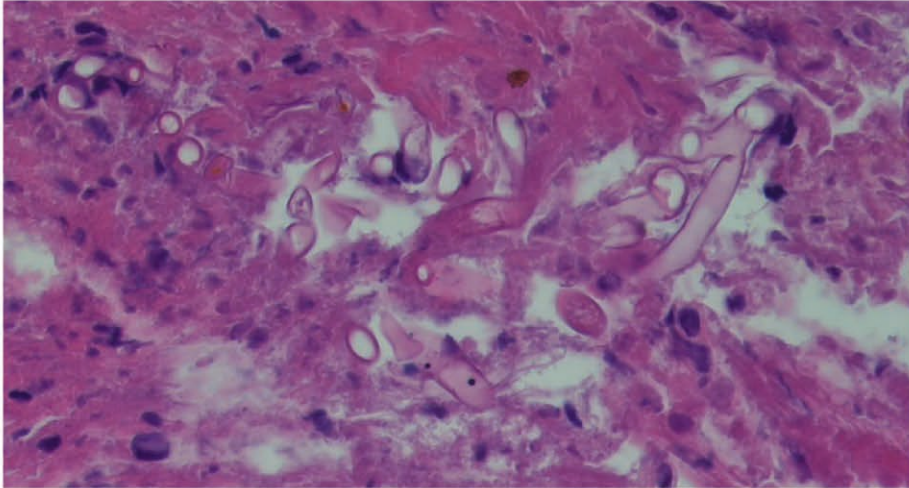


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**“Vertebral artery stroke secondary to rhinoorbital mucormycosis:
A case report and pathologic review.”**

(Continued)

Figure 2. Hematoxylin and Eosin staining at 20X power. Aseptate organism seen at right of image.



Despite aggressive treatment, the infection progressed. As a result of the inpatient course and resultant poor prognosis, our patient was placed on comfort measures only and was ultimately discharged to hospice.

DISCUSSION

Mucormycosis is commonly associated with craniofacial infection in diabetic patients, especially those with diabetic ketoacidosis². It can also occur in patients with neutropenia, hematologic malignancy, chronic steroid or immunosuppressive drug use, and history of transfusions^{6,7}. While craniofacial involvement can resemble sinusitis, presentation can also mimic preseptal or even orbital cellulitis, with symptoms such as proptosis, extraocular motility defects, and cranial neuropathy⁷. Despite the rare correlation with mucormycosis, it is important to note that this angioinvasive pathogen can cause cerebrovascular occlusion and ischemia resulting in an initial presentation of stroke symptoms, as seen in this case^{3,4,5,6}.

Definitive diagnosis can be made by biopsy and histologic examination with periodic-acid Schiff (PAS) or methenamine silver staining and light microscopy, which will demonstrate broad, non-septate hyphae with 90-degree branching. Correlation with confirmatory microbiological cultures is necessary. CT and MRI can be helpful in confirming diagnosis and to ascertain depth of invasion for treatment considerations^{2,7,8}.

Therapy includes both surgical debridement and IV lipid formulation amphotericin B. Posaconazole and isavuconazole are suggested salvage treatment options, especially in patients at high risk of amphotericin-induced nephrotoxicity. It is important to correct underlying predisposing derangements such as hyperglycemia, acidosis, and to discontinue or taper immunosuppressive agents^{8,9}. Mucormycosis mortality is high, with some studies reporting rates ranging from 24% to 49%⁴. Early diagnosis may be important to reduce mortality, though morbidity is common in resolved cases, with sequelae such as blindness, ophthalmoplegia, and cosmetic defects^{4,9}.

While not the typical etiology of cerebrovascular accident, mucormycosis should be considered in patients with stroke symptoms in the context of diabetic ketoacidosis, especially those with ocular symptoms.

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Jacob Winters, MS3, TTUHSC El Paso Paul L. Foster School of Medicine,

Calvin McNelly, MS3, TTUHSC El Paso Paul L. Foster School of Medicine

Loyd Christensen, MS3, TTUHSC El Paso Paul L. Foster School of Medicine

Oswaldo Padilla, MD, TTUHSC El Paso Paul L. Foster School of Medicine Department of Pathology

Kishan V. Patel, MD, TTUHSC El Paso Paul L. Foster School of Medicine Department of Internal Medicine



Necrotizing Soft Tissue Infection

Ginger Coleman, MD
Ellen Wicker, MD
Caesar Ricci, MD
Alejandro Rios Tovar, MD
Susan McLean, MD
Alan H. Tyroch, MD

Necrotizing soft tissue infection (NSTI) is of particular importance due to the high morbidity and mortality of this surgical condition. NSTI is a bacterial infection characterized by necrosis of the skin, subcutaneous tissues and the fascia.¹ NSTI can occur on any part of the body and frequently cannot be distinguished from simple cellulitis upon initial presentation.² Due to the speed at which NSTI progresses, it is important for this serious infection to be recognized quickly and treatment to occur expeditiously to reduce complication and death. Texas Tech acute care surgeons (trauma surgeons) at University Medical Center of El Paso have developed evidenced-based guidelines to recognize and expeditiously treat NSTI.

NSTI is a severe and aggressive skin and soft tissue infection that causes rapidly progressive and extensive soft tissue destruction with associated systemic toxicity, multi-organ failure and death. Mortality rates have ranged from 23% to 76% with recent studies demonstrating mortality rates around 25% with standard management.^{1,2,3,4} The cornerstone of treatment of NSTI is early diagnosis, prompt administration of empiric broad-spectrum antibiotics and **emergent surgical exploration** with aggressive debridement of necrotic and infected tissue.⁴ Emergent and adequate surgical debridement is the most important intervention.

NSTI includes the following type of infections and variations: necrotizing cellulitis, necrotizing adipositis, necrotizing fasciitis, necrotizing myositis, clostridial myonecrosis (gas gangrene), Fournier's gangrene (perineal fasciitis) and Ludwig's angina (cervical necrotizing fasciitis). These infections may involve all layers of the soft tissue from epidermis down to the level of deep muscle. Infections can be classified as type I (polymicrobial), type II (monomicrobial), type III (marine organisms such as *Vibrio vulnificus*) and the rare but highly lethal type IV (fungal such as mucormycosis).^{2,3,4,5} Type I is the most frequent NSTI encountered. The most common bacterial organisms causing NSTI are group A streptococcus (GAS or *Streptococcus pyogenes*), clostridia species, methicillin-resistant *Staphylococcus aureus*, methicillin-sensitive *Staphylococcus aureus* and Gram negative bacteria.^{5,6,7} Initial empiric antibiotics should cover all of these organisms.

NSTI can occur spontaneously with no clear portal of entry or it can be associated with trauma or surgery. Infection can affect

healthy individuals and any age group. Risk factors for development of an NSTI include:

- major or minor penetrating trauma including,
 - minor lacerations
 - crush injury
- blunt trauma as mild as a muscle contusion, sprain, or strain
- skin disruption from vesicles, insect bites and injection drug use
- recent surgery
- childbirth or obstetrical procedures
- immunosuppression from diabetes, cirrhosis, neutropenia or HIV infection
- malignancy (hematogenous seeding from *Clostridium septicum*)
- freshwater wounds (*Aeromonas hydrophilia*)
- warm coastal seawater wounds
- ingestion of raw shellfish especially in cirrhotic patients (*Vibrio vulnificus*)
- burn wound infections

A thorough history and physical exam is essential in the evaluation of suspected NSTI. The most common findings in order of frequency are: edema that extends beyond visible erythema (75%), severe pain out of proportion to physical exam (72%), erythema without sharp margins (72%), fever (60%), crepitus (50%), and skin changes including bullae, necrosis, or ecchymosis (38%).⁸ The infection can spread as quickly as 2.5 cm per hour with or without obvious skin changes.^{7,9} Any of these physical findings associated with nausea, vomiting, and diarrhea may herald impending toxic shock syndrome (TSS); a rare but highly lethal complication of NSTI caused by group A streptococcus or staphylococcal infection.⁴ Clostridial myonecrosis can also produce a variety of toxins leading to a fulminant toxic shock-like syndrome. Patients will frequently have systemic signs of toxicity such as fever, tachycardia, and hypotension.^{2,10} Physical findings may be absent in the early stages of disease or in immunosuppressed patients or patients taking NSAIDs.

Surgical exploration is the mainstay for diagnosis and treatment of a NSTI. Laboratory studies are only supportive and imaging

Continued on page 11

(Continued)

Table 1: Laboratory Risk Indicator for Necrotizing Fasciitis (LRINEC).

CRP (mg/dl)	< 15	0
	≥ 15	4
WBC (per mm ³)	<15	0
	15-25	1
	>25	2
Hemoglobin (g/dl)	>13.5	0
	11-13.5	1
	<11	2
Sodium (mEq/L)	≥135	0
	<135	2
Creatinine (mg/dl)	≤1.6	0
	>1.6	2
Glucose (mg/dl)	≤180	0
	>180	1
Composite Score	Score < 6	Low Risk
	Score 6-7	Intermediate Risk
	Score ≥ 8	High Risk

is rarely required and should be minimized to decrease delay to debridement. Should imaging be necessary, a computerized tomography (CT) scan with intravenous (IV) contrast is the study of choice as an MRI would cause a delay to surgery. Although the finding of soft tissue gas on CT scan is highly specific for necrotizing infection, the absence of gas does not rule out NSTI. Failure of fascia to enhance on CT with IV contrast is concerning for NSTI.⁴ Laboratory studies only help support the diagnosis, but initial labs showing a leukocytosis > 15.4 x 10⁹/L, sodium < 135 mEq/L and CRP > 15mg/dL (150 mg/L) may help differentiate NSTI from cellulitis. A marked leukemoid reaction (> 50 x 10⁹/L) and hemoconcentration are concerning for TSS or severe clostridial infection. Elevated creatinine kinase levels may indicate deep muscle infection.⁸

The Laboratory Risk Indicator for Necrotizing Fasciitis (LRINEC) score is a tool used to determine risk of NSTI (**Table 1**). It is comprised of six components: CRP, WBC, hemoglobin, sodium, glucose and creatinine. A score > 6 indicates intermediate probability (50–75%) for NSTI and thus merits careful evaluation. A score > 8 suggests a high probability (>75%) of a NSTI.^{4,6,8,11} Subsequent studies have shown a lower sensitivity of LRINEC and have even called into question its usefulness in diagnosing NSTI. The test should be used with caution and only as an adjunct to the other diagnostic modalities. An elevated C-reactive protein (CRP) is strongly associated with NSTI, and typically levels five times the normal value are seen. CRP levels tend to be only slightly elevated in cellulitis. For cases with an unclear diagnosis and especially for unstable patients, surgical exploration should be the default. Findings on surgical exploration of NSTI include necrotic subcutaneous tissue and fat, dish-water-gray exudate, absence of pus, friable superficial fascia or non-contractile ischemic-appearing muscle.⁴

NSTI guidelines have been established at UMC of El Paso to facilitate the care of these critically ill patients. A pre-set PowerPlan within Cerner’s electronic medical record is initiated at

the instruction of the acute care surgeon, who is to be called immediately upon suspicion of a NSTI. The surgeon evaluates the patient, marks the area of concern and mobilizes the surgical team for operative debridement. These patients are treated with the same urgency as our Level 1 trauma patients. Three antibiotics are administered in the following order:

- Clindamycin
- Piperacillin/Tazobactam or a Carbapenem
- Vancomycin

Clindamycin is included with all initial antibiotic regimens as it suppresses toxin production and helps prevent TSS.¹⁰ Meropenem, Imipenem/Cilastatin or Ceftriaxone with Metronidazole are optional substitutes for Piperacillin/Tazobactam depending on a patient’s prior history of allergy or adverse drug reactions. Linezolid is an acceptable alternative to Vancomycin (**Table 2**). Specialty surgical services such as Urology, Gynecology or Orthopedics are contacted if their expertise is needed, however, the acute care surgical service oversees the resuscitation of the patient prior to surgery and following debridement in the critical care unit. A second look operation is then scheduled within the following twenty-four hours. Antibiotics are promptly de-escalated based on Gram stain, tissue culture and sensitivities (**Table 3**).

The mortality of NSTI has historically been extremely high, but has decreased in recent years due to prompt recognition and aggressive treatment by a multidisciplinary team throughout a patient’s hospital course.⁴ Our intent is to reduce morbidity and decrease mortality for NSTI patients in the El Paso region. In addition to the guidelines, we established a NSTI registry for quality improvement and research purposes. For a copy of our NSTI guidelines, please send a request to alan.tyroch@ttuhsc.edu.

Continued on page 12

Table 2: UMC Initial broad-spectrum empiric antibiotic regimen for suspected NSTI:

Clindamycin 900mg IV q 8h	<u>Plus:</u> Piperacillin/Tazobactam 4.5g IV q 6 h Or Meropenem 1g IV q 8 h Or Imipenem/Cilastatin 1g IV q 6 h Or Ceftriaxone 2g IV q 24 h + Metronidazole 500mg IV q 8 h	<u>Plus:</u> Vancomycin (power plan) Or Linezolid 600 mg IV q 12 h
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Table 3: Antibiotic therapy based on microbiology for specific organisms causing NSTI.

Group A streptococcus (GAS)	PCN G 4 million units IV q4 h + clindamycin 900mg IV q8 h
Clostridia	PCN G 4 million units IV q 4 hrs + clindamycin 900mg IV q8 h
MRSA	Vancomycin or linezolid or daptomycin
Vibrio vulnificus	Doxycycline 100mg IV q 12 h + ceftriaxone 2g q 24 h
Aeromonas hydrophilia	Doxycycline 100mg IV q 12 h + ceftriaxone 2g q 24 h
Polymicrobial infection	Piperacillin/tazobactam or meropenem or imipenem or ceftriaxone/metronidazole
Mucormycosis	Liposomal amphotericin B

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Bridging technological innovations to medical education with a portable sequencing device

Miki Wang, MSI
Cynthia Perry, Ph.D
Jorge Cervantes, MD, Ph.D

Introduction

Historically, advanced diagnostic tools have been accessible only through clinical diagnostic testing labs. Physicians, medical students, and resident trainees had little access or understanding of their use. Affordable new diagnostic technologies are becoming more common, but there is insufficient training for new physicians on how to apply them.¹ Medical educators can seize the initiative to prepare medical students to identify and instruct in the use these tools. With this goal in mind, we conducted our first next generation sequencing (NGS) hands-on practical module at the Laboratory for Education in Molecular Medicine (LEMM), a dual function teaching and research lab at Texas Tech Health Sciences Center El Paso Paul L. Foster School of Medicine, in order to expose an interested group of medical students to a new portable sequencer device.

The MinION

NGS has become an important tool for a range of clinical applications, including bacterial and viral identification, strain-specific detection of antimicrobial drug resistance, non-invasive prenatal testing, tumor profiling, and genetic screening.²⁻⁹ The Oxford Nanopore Technologies MinION is one of the affordable new portable sequencing devices. [Figure 1] It is capable of sequencing tens of kilobases (kb) lengths of DNA molecules in real-time.^{10,11}

Our Next Generation Sequencing Workshop for Students

Genetics is affecting medical knowledge and health care. We have utilized a novel sequencing technology in an innovative educational opportunity to introduce medical students and residents to state of the art next-generation sequencing technologies in order to reduce perceived and actual barriers to applying these tools in clinical practice. [Figure 2]

The MinION™ portable DNA sequencer has been successfully incorporated into middle school, collegiate and graduate level classrooms.^{5,11,12} Utilization of those devices in the classroom provides students with first-hand experience with DNA sequencing technology, while learning about the principles of DNA extraction and sequencing.^{6,13-15}

Hands-on experience helped student participants become more comfortable with NGS, and stimulated interest to learn more about the science and application of this technology in medicine beyond what is typically covered in the undergraduate medical education curriculum.

Continued on page 14

Figure 1: Portable sequencing device (MinION, Nanopore Technologies).



Future Directions

We will be conducting additional modules for residents, graduate students, and plan to offer middle school and high school workshops in El Paso. This initiative will lead to scholarship in evaluating the value of these activities for medical students and residents.

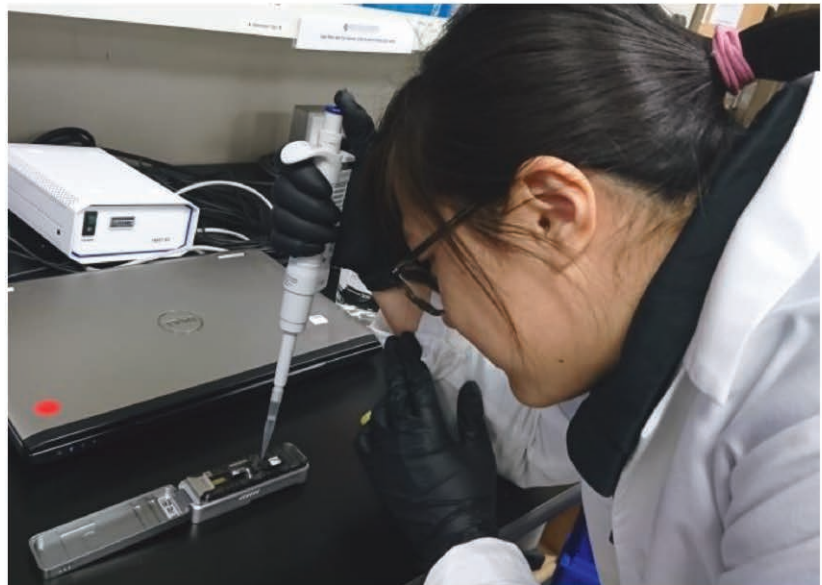
Acknowledgement

We gratefully acknowledge appreciation of Oxford Nanopore’s loaning of MinION sequencers and reagents in support of this educational workshop.

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Figure 2: During the workshop students sequenced genomic DNA from different strains of *Mycobacterium tuberculosis*. MS1 Miki Wang demonstrating flowcell loading of DNA to be sequenced.



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The Most Common El Paso-Juárez Parasitic Infections

Frank H. Wians, Jr., PhD, DABCC, FACB
Professor and Vice-Chair, Clinical Pathology
Department of Pathology
Texas Tech University Health Sciences
Center, El Paso, TX

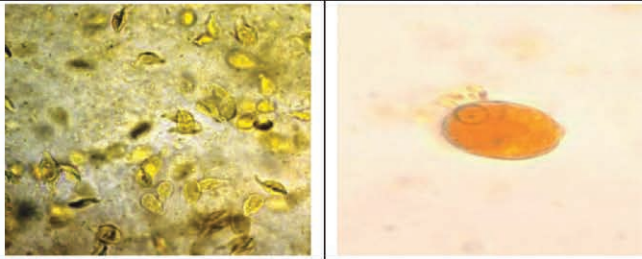


Fig. 1 **A)** *Giardia intestinalis* trophozoites in stool sample from a patient with diarrhea; **B)** *Entamoeba histolytica* cyst.

Despite the prevalence (~15,000 cases in 2012) of giardiasis in the U.S. (Fig. 3), **giardiasis is not a reportable disease in Texas**. However, 95 cases (or 4.6 cases/100,000 population) were reported in New Mexico; in 3 of 5 El Paso Independent School District schools, a total of 16 cases of giardiasis were reported; and, in 2004, the most prevalent pathogens found in stool samples from individuals (288 to 388) with gastrointestinal (G.I.) infections in Juárez (the largest urban metropolitan area of the U.S.-Mexico border), were (Table 1)¹²:

Pathogen	Prevalence, %
<i>Helicobacter pylori</i>	38.2
<i>Taenia spp.</i>	3.3
<i>Giardia spp.</i>	2.7
<i>Cryptosporidium spp.</i>	1.9
<i>Entamoeba dispar</i>	1.3
<i>Ascaris lumbricoides</i>	0.3
<i>Necator americanus</i>	0.3

More recently, a 5-year (2013-2018) retrospective review of all O&Ps performed in the University Medical Center, El Paso Microbiology Lab indicated:

Less than 1% of all O&Ps (n = 5,912) performed during this time period yielded positive results (n = 54; <1% of total).

Among the 54 positive O&P results, the distribution of organisms observed is shown in **Table 2**:

Table 2 Frequency and Distribution of Organisms Found in ~6,000 O&P Stool Specimens From UMC El Paso Patients Over a 5-Year Period (1 May 2013-31 May 2018)

Organism ID for Positive O&Ps	No.	% of 5-year Total O&Ps
<i>Blastocystis hominis</i>	31	0.524
<i>Endolimax nana</i>	8	0.135
<i>Giardia lamblia</i>	7	0.118
<i>Cryptosporidium species</i>	4	0.068
<i>Entamoeba histolytica/dispar group</i>	1	0.017
<i>Taenia species</i>	1	0.017
<i>Entamoeba coli</i>	1	0.017
<i>Dientamoeba fragilis</i>	1	0.017
No. of Positive O&Ps	54	0.930
No. of Negative O&Ps	5,858	99.070
Total no. of O&Ps Performed	5,912	100.000

Except for *Blastocystis hominis* and *Endolimax nana*, *Giardia lamblia*, and *Cryptosporidium species* were the next most prevalent organisms, albeit at low frequency (<0.12%), while *Entamoeba histolytica dispar* group was observed with very low (<0.02%) frequency (only 1 positive stool specimen out of the nearly 6,000 specimens tested).

In 2007, 411 cases of amebiasis were reported in California alone³; over 40% of fatal amebiasis cases occurred in residents of California and Texas; the overall prevalence of *E. histolytica* infection in the United States is ~4%; amebiasis causes ~100,000 deaths globally each year, especially in tropical areas with poor sanitary conditions that many individuals in the U.S., and neighboring countries, travel to and from. Therefore, it seems prudent to include testing for *E. histolytica* in patients from El Paso and the border regions of the U.S.

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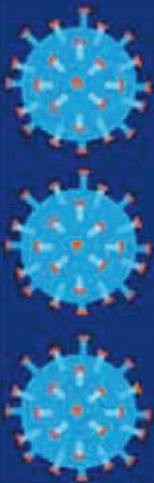




Photo's courtesy of Moriah Tyroch

MEASLES IS SERIOUS — AND HIGHLY CONTAGIOUS

Vaccination is the only defense against this disease.



What is measles?

- ✓ Measles is a virus that travels by direct contact or through the air.
- ✓ You can catch measles by walking into a room where someone with the virus has been (even after they've left).

Unvaccinated children are most at risk

Before 1963
(when the vaccine became available) measles killed **2.6 million** people worldwide each year.

2016 Vaccination programs cut that to **89,000**.



Measles remains a leading cause of death among children worldwide. Most U.S. cases are imported from other countries.

Treatment

Bed rest and plenty of fluids. Doctors can treat only the symptoms, not the illness, with:

- ✓ Medicines to bring down fever and boost vitamin A levels, and
- ✓ Antibiotics if you get an infection.



Be Wise — Immunize

- ▶ 2 shots (at 12-15 months and at 4-6 years) give almost full protection against measles.
- ▶ The shot for measles also protects children against mumps and rubella. It's commonly called the MMR vaccine.
- ▶ Getting the vaccine is much safer than getting sick.

Talk to your doctor if you have questions about measles.



Symptoms and complications

Symptoms can last up to 10 days

- ▶ High fever, cough, runny nose
- ▶ Red, watery eyes
- ▶ Small white spots in the mouth
- ▶ Tell-tale rash 3-5 days after symptoms begin

Complications can send 1 in 4 to the hospital

- ▶ Diarrhea, vomiting, eye infections, and bronchitis
- ▶ Pneumonia, swelling of the brain, blindness, even death

Sources: Centers for Disease Control and Prevention, World Health Organization



Be Wise — Immunize™

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Hookah: Popularity, Use, and Risks

Stephen Nuñez, UTEP Student
Dessaray Gorbett, B.S.
Giovanna Perez MSI

Hookah popularity has grown among younger people in the Paso del Norte region. Hookah is less regulated than cigarettes and appealing to adolescents because of its flavors.^{1,2}

Although cigarette use among adolescents is declining, the use of alternative tobacco and other nicotine products is increasing.^{3,4} Specifically, 9.4% of high school students and 4% of middle schoolers in the U.S. reported using hookah.^{3,5} College students report hookah use being more socially acceptable than cigarette smoking.^{6,7} Among college students in an urban Midwestern university, researchers found that 50% of participants had tried hookah, 22% had used hookah in the past 30 days, and 13% had future intentions to try hookah.⁶ A study by Allem & Unger assessed emerging adulthood themes and its relationship to hookah use among a sample of college students, and found that those who believed emerging adulthood (18-25 years old) was a time for experimentation were more likely.⁸ Hispanics have reported higher rates of hookah use when compared to other ethnicities.^{4,9}

Hookah smoke has detrimental effects on health.¹⁰ Despite popular misconceptions, reviews on hookah's health effects and the addictiveness of nicotine have found that hookah is neither less addictive, nor less harmful than cigarettes.¹¹⁻¹⁷ Kassem et al. examined the effects of hookah use in homes with children found that children living in those homes had elevated levels of nicotine and other carcinogens.¹⁸

Whereas efforts have focused primarily on youth prevention and cessation of traditional cigarette smoking, broader campaigns that address hookah use in both adolescents and young adults are warranted.^{19,20} It is important that healthcare professionals include hookah in their assessment of patients' tobacco use, and promote cessation resources available such as 915-534-QUIT or www.smokefreepdn.org.

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Hookah: Popularity, Use, and Risks (Continued)

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Hookah: Popularity, Use, and Risks (Continued)

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Stephen Nuñez, The University of Texas at El Paso School of Pharmacy

Dessaray Gorbett B.S., The University of Texas at El Paso School of Pharmacy

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OPINION

E.P.C.M.S.

E cigarettes: flavorful gateway to other addictions

Gilbert Handal, MD

Battery powered cigarette- and pipe- like devices and the flavored nicotine vapor-generating products they deliver entered the US market from China in 2008.¹ More than 3.6 million youth in middle school and high school are since consuming these products, and use has continued to escalate between 2017 and 2018.² [Figure 1]

Combustible tobacco smoke contains more noxious substances than the vapors delivered by the electronic devices. Electronic vapor devices confer less second hand health risks than exposure to tobacco smoke. Although they pose less risk for cancer than combustible tobacco products, each puff of vapor contains along with nicotine, propylene glycol, glycerol, a substantial portion or samples contained tobacco-specific nitrosamines which are carcinogenic, and organic acids such as anabasine, myosmine and beta-nicotyrine for which risks have not been adequately assessed.³⁻⁵

Initially promoted as a safer alternative to combustible tobacco products with potential for helping smokers quit combustible tobacco, experience has shown that only nine per cent of people motivated to use e-cigarettes in attempts to quit using combustible tobacco had succeeded during a one-year follow-up.⁶⁻⁸ Nicotine is a highly addictive substance. The devices deliver nicotine in relatively high concentration, thus nicotine addiction is not only perpetuated by e-cigarettes, it follows that trying e-cigarettes can conversely become the gateway to a combustible tobacco habit.^{9,10} In 2015, Leventhal and colleagues predicted that the products would lead to higher consumption of tobacco products, and that is since being confirmed here and in Europe.^{7,11} Many add e-cigarettes to their existing tobacco consumption.^{6,7} [Figure 2]

An additional safety issue is highlighted in reports of children ingesting toxic and lethal concentrations of nicotine, because children are attracted to vape products by flavors such as chocolate, candy or bubble gum.¹²⁻¹⁵

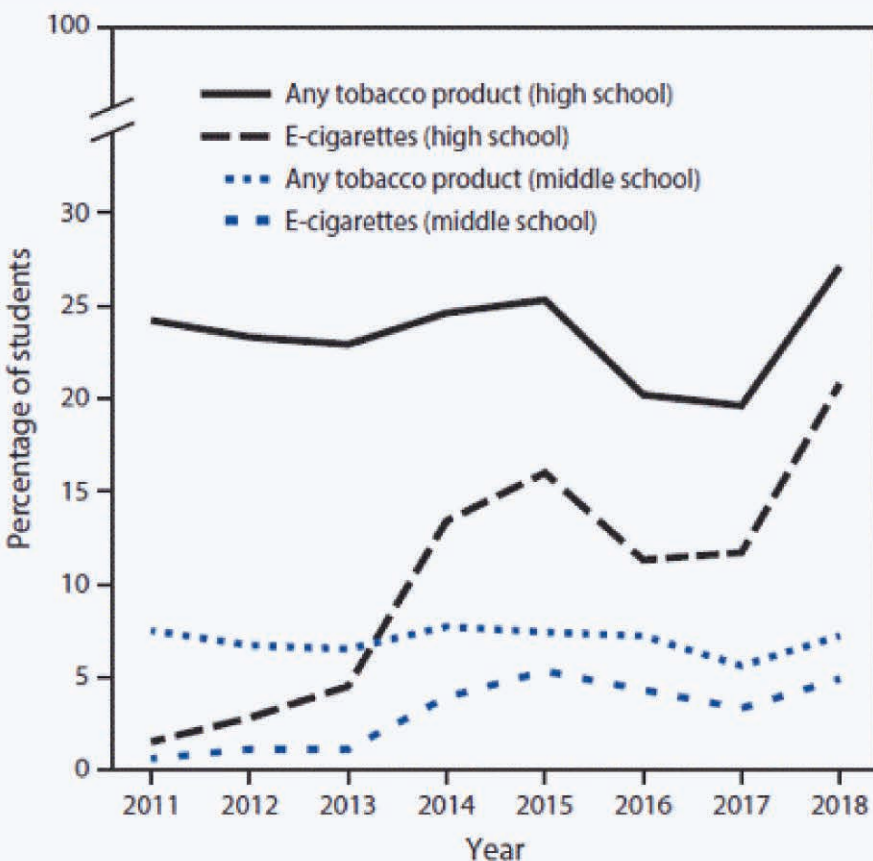
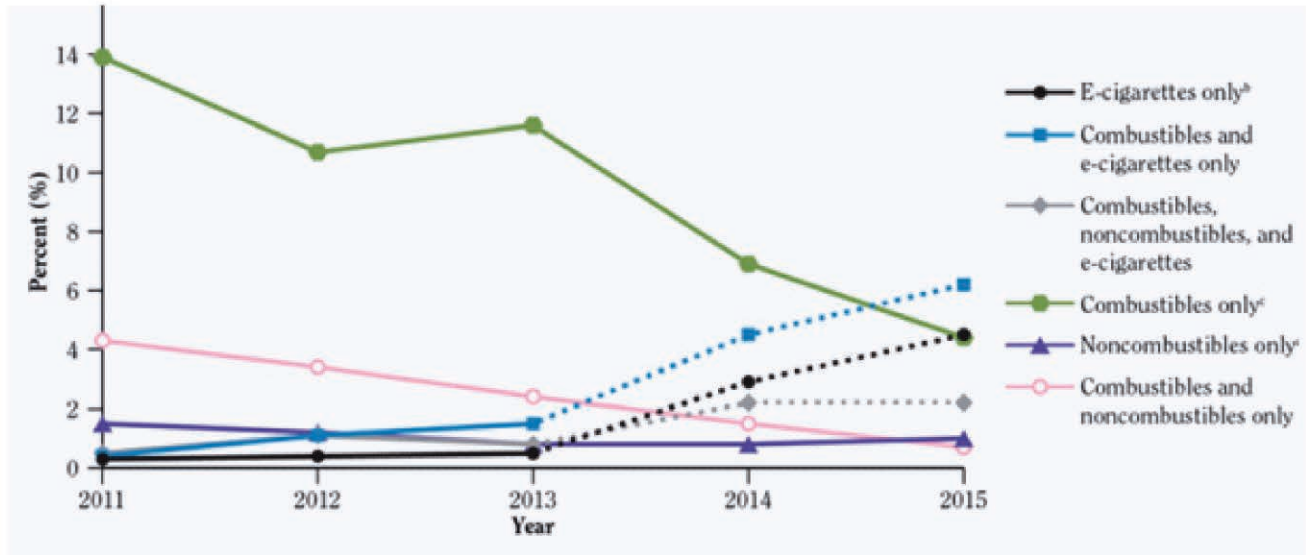


Figure 1: Percentage of middle and high school students who currently use e-cigarettes and any tobacco product – National Youth Tobacco Survey, United States. 2011-2018.

The FDA has embarked on a comprehensive plan for tobacco and nicotine regulation that includes eliminating youth electronic cigarette use. The overall plan places nicotine, and the issue of addiction, at the center of the agency’s tobacco regulation efforts as a multi-year roadmap to better protect youth and help addicted adult smokers quit, significantly reducing tobacco-related disease and death in the U.S.^{16,17}

Continued on page 23

FIGURE 2:



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PLFSOM Pets!

Pets at PLFSOM help their human companions through exam weeks and more! Students love to come home to their beloved furry best friends after a long day of school, or spend the entire day with them studying. Pets are not only a loyal companion but also an emotional support. Most students move to a different city for medical school and the only family they can bring with them are their pets.



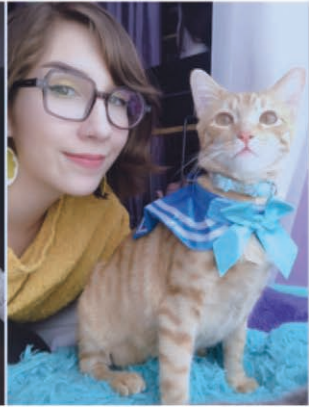
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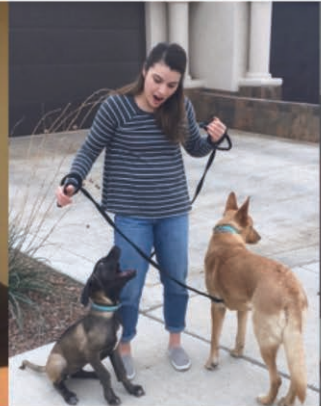
Christina Shreeve & Cheeto



Katherine Farris & Athena, Holly



Jourdan Harper & Goose



Christina Alvara & Stella, Willow



Mauricio Ollervides & Mack

An interesting story about Christina Shreeve and Cheeto (top right corner) is that she actually found him on campus at PLFSOM and rescued him. He was trapped in a sewage hole and she took him out of there and gave him a new home where he is loved and taken care of. Having a support system during medical school is essential in order to be successful. However, not every student is fortunate enough to have family or a significant other close by. Our furry best friends are part of our family and thus part of our support system. There is nothing like having a loyal best friend that loves you unconditionally and will always be there when you come home from a difficult day at school or perhaps a long day of studying.

Continued on page 25



Tina Flores & Loki

Tayana Rodriguez & Lola

Joshua Smith & Denver

Alyssa Salcido's: Coockey



Mariella Webber's: Remy

Hannah Gomez's: Chai

John Corbette's: Duke

Eric Tran's: Buttercup



Erick Rodriguez's: Thomas

Sam Lujan's Bunny

Scarlet Reed's Kittens

Tayana Rodriguez's: Leah

Leiah (bottom right corner) likes to sit right next to me as I study, its almost as if she's making sure I go through all of my lectures and work efficiently. The best way to get through all the studying we have to do is to have a companion, and boy are these fur babies the best company anyone could ask for!

N

NEWS

E. P. C. M. S.

NEWS

The following is a list of new/re-instated members of the El Paso County Medical Society. congratulations to all new members!!!

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154 N. Festival Dr., Ste A
El Paso, TX 79912
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Casillas, Adrian, MD
AI IM
Univ. of California School of Medicine, 1987
11163 La Quinta, Ste A200
El Paso, TX 79936
(915) 320-3854

Di Pascuale, Mario A., MD
OPH
Escuela de Medicina Universidad, 1997
2900 Pershing, Ste A 2nd Floor
El Paso, TX 79903
(915) 261-7011

Flo, Frederick J., MD
EM
University of Rochester School of Medicine, 2014
400 Enterprise Blvd
Rockport, TX 78382
(361) 529-9400

Ingram, James Ray, DO
ORS
Midwestern Univ. Chicago College of Osteopathic Medicine,
1989
1720 Murchison
El Paso, TX 79902
(915) 534-1288

Ogden, Paul Edward, MD
IM
TX A&M University Medical School 1981
301 Tarrow
College Station, TX 77840
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Okada, Ken, MD
AN
Uniformed Services Univ. of Health Science, 1991
10301 Gateway Blvd West
El Paso, TX 79925
(915) 595-9603

Reyna, Edgar David, MD
FM
Univ. Autonoma de Guadalajara Jalisco, 2002
2270 Joe Blvd., Ste M
El Paso, TX 79938

Salloum, Hassan Nasim, MD
PD
Faculty of Medicine Damascus University, 1982
7102 Westwind
El Paso, TX 79912
(915) 581-5100

Semeiks, Jeremy, MD
EM
UT Southwestern Medical School, 2015

Uga, Aghaegbulam Harachi, MD
MP IM/Psychiatry
University of Calabar, 1998

Wawer-Chubb, Allison Kristen, DO
PD
Philadelphia Col of Osteopathic Med, 2005
650 Belvidere St
El Paso, TX 79912
(915) 533-1441

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Nearly a decade into a scope-of-practice battle, the Texas Medical Association has proven that when it comes to keeping other professions out of the practice of medicine, TMA is in it for the long haul.

In a split victory, TMA once again prevailed in November 2018 when the Third Court of Appeals upheld a trial court’s decision that chiropractors don’t have the authority to perform vestibular-ocular-nystagmus testing (VONT). However, a recent change to state law caused the appeals court to find in the Texas Board of Chiropractic Examiners’ (TBCE’s) favor on the use of the word “diagnosis” in the board’s administrative rules — meaning chiropractors can diagnose, but only within their scope of practice.

The appeals court’s decision on VONT came as welcome news to Austin otolaryngologist James Kemper, MD, who testified as part of TMA’s lawsuit against the TBCE — a case that began back in 2011.

VONT collectively refers to electronystagmography (ENG) or videonystagmography (VNG) tests, which evaluate a patient’s eye movements. Physicians use the tests to diagnose abnormalities of the vestibular system. An ENG test involves electrodes placed around the eyes, while a VNG test uses video goggles.

Audiologists or trained subspecialists perform the tests in a physician’s office, but doctors are the ones who evaluate the results. They also must be around during the test in case VONT makes a patient extremely ill — which Dr. Kemper says is not uncommon.

“I’ll put it this way: Every time vestibular testing is done, there is a barf bag nearby ... because it can happen to anybody,” he said. “What I was most impressed with during the court process was, it was a great presentation of physiology and science versus a lot of definitions that were written on whiteboards that basically were created within the school of [chiropractic]. To me, it was a triumph of the practice of medicine, the science of medicine, the protection of patients through known objective science.”

TMA’s concern with the use of the word “diagnosis” in a non-medical context “really depends on the chiropractic board and how vigorously they want to work to make sure that their licensees stay within their legitimate scope of practice,” said David Bragg, an attorney representing TMA in the case. “We’ve had difficulty with the board attempting to authorize various things that go beyond [that scope] — needle electromyography, among others. As long as the board insists that their licensees stay within their legislatively authorized scope of practice, there’s not a problem.”

Diagnosis: Chiro’s have limited ability

TBCE Executive Director Patrick Fortner wouldn’t comment to *Texas Medicine* on why chiropractors are so determined to obtain authority to perform VONT. But in court documents, TMA has

noted the testing involves the “fertile area of dizziness, imbalance, and vertigo,” collectively one of the most common health care complaints primary care physicians see.

TBCE originally adopted a rule authorizing chiropractors to perform VONT in October 2010. TMA filed suit in early 2011, alleging the rules exceeded chiropractors’ lawful scope of practice. TMA also later argued TBCE unlawfully authorized chiropractors to diagnose diseases; improperly defined the musculoskeletal

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system to include “nerves”; and defined “subluxation complex” as a “neuromusculoskeletal condition,” which would have illegally authorized chiropractors to diagnose and treat neurological conditions.

TBCE argued in court filings that chiropractors couldn’t function without diagnosis, and that they needed to diagnose outside the chiropractic realm, for example to determine if a chiropractic exam revealed something requiring medical attention. The chiropractic board argued VONT did not constitute treatment and could be used to differentiate conditions. For example, cervical vertigo, a musculoskeletal condition within chiropractors’ treatment realm, can cause dizziness, TBCE argued.

In 2016, a district court invalidated TBCE’s rule on VONT and sided with TMA on the other rule provisions. (See “Standing Up For Scope,” January 2017 *Texas Medicine*, pages 33-39, www.texmed.org/standingscope.)

The appeals court, in its November decision, wrote that although vestibular diseases could impact the musculoskeletal system, disorders in the scope of chiropractic don’t cause vestibular conditions. Judges said the “scope of chiropractic practice is limited under Texas law,” and agreed with TMA and the trial court on the “nerves” issue.

Since TMA originally filed suit, however, something important changed that shaped the appeals court’s decision on the word “diagnosis.” In 2017, an amendment to state law added the word “diagnose” to the list of actions a chiropractor can lawfully perform. So, the appeals court decided in November, the TBCE rules’ use of the word “diagnosis” didn’t exceed chiropractors’ authority.

“We have always looked at ‘diagnosis’ as the diagnosis of diseases, rather than diagnosing what’s wrong with your car,” Mr. Bragg said. “The courts, including the (Texas) Supreme Court, have taken the position that the word diagnosis can have many meanings. In this particular case, the Court of Appeals held that [as chiropractors], ‘yes, you can diagnose. But it can only be a diagnosis of the musculoskeletal system and the spine. You can’t venture beyond that.’”

Eight years — and counting?

The decision on VONT came as welcome news to the Texas Association of Otolaryngology (TAO), including its immediate past president, Waco otolaryngologist Bradford Holland, MD.

“This is a battle that’s gone back to 2011 ... and one which we think is completely out of [chiropractors’] wheelhouse,” Dr. Holland said.

He added that vestibular-ocular reflex disorders “are some of the most complex nervous-system disorders known to medicine. And frankly, even most MDs, most otolaryngologists, leave the diagnosis and management to subspecialists. So there’s little

hope that the average chiropractic practitioner can properly evaluate and treat these conditions, which are certainly outside the realm of their musculoskeletal field.”

At press time, TBCE and the Texas Chiropractic Association (TCA) had asked the appeals court to reconsider the case. TCA, which joined the lawsuit after it began, seems determined to keep the case alive, according to a statement on its website. TCA referred *Texas Medicine* to the statement, which says:

“If necessary, TCA will appeal this ruling to the Texas Supreme Court. We will do whatever is required to prevent this decision from taking effect before the Texas Supreme Court has a chance to consider our appeal.” In a separate message posted to the website, TCA President Devin Pettiet called the decision “a setback that TCA simply won’t accept.”

After the court’s decision, Mr. Fortner, TCBE executive director, told *Texas Medicine* the chiropractic board was “reviewing our options with the attorney general, and it’d be inappropriate to say anything beyond that.”



Just four states generally don’t allow medication dispensing out of a physician’s office. Texas is one of them.

But Austin family physician Chris Larson, DO, who provides direct primary care, gets a taste of what he and his patients are missing out on.

Dr. Larson communicates with other direct primary care physicians across the nation in a private Facebook group. As the odds would suggest, many of them hail from the 46 other states that allow doctors to dispense out of their offices.

For many of his interstate colleagues’ patients, the membership cost typically associated with a direct primary care practice pays for itself — because patients can get their medications straight from their doctor, instead of incurring extra costs when a pharmacy or a pharmacy benefit manager (PBM) takes its cut.

“When you mete it out, how much [patients] save versus how much they spend on the membership, many of them will get their direct primary care for free because they save so much on the medications,” Dr. Larson said.

The Texas Medical Association supports allowing physicians to dispense out of their offices, and TMA and the Texas Academy of Family Physicians (TAFP) are supporting business groups and other leaders as they mount a legislative effort to bring the practice to Texas. Proponents are wielding data that illustrates potential benefits like reduced medication costs and increased patient adherence to their drug regimens.

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Texas' ban is "a barrier to care that really doesn't need to be there," Dr. Larson said.

Support from medicine and business

Only Texas, Montana, New York, and Utah ban physicians from dispensing medications, according to TAFP. Texas law includes a few exceptions, including the "immediate need" exception, which allows a physician to dispense up to a 72-hour supply for proper treatment until a patient can access a pharmacy; an exception for dispensing in certain small-population rural areas; and an exemption allowing pharmaceutical manufacturers to distribute samples.

A 2014 survey published in the *Annals of Internal Medicine* examined more than 37,000 prescriptions for nearly 16,000 patients in a primary care network, and found 31 percent of those prescriptions weren't filled. Other data show that physician dispensing may improve patient adherence significantly. (See "Prescriptions and Physician Dispensing: By the Numbers," right.)

The ability to dispense would be a major step forward for the Houston-area onsite workplace clinics Next Level Urgent Care runs, says its CEO, family physician Juliet Breeze, MD. Next Level operates 12 urgent care facilities, with two more under construction. It also operates three free onsite workplace clinics for Houston-area county employees, including one that was scheduled to open Feb. 1.

"When you can't give medicines out, then you take away some of the effectiveness of that," Dr. Breeze said. "Because if a patient comes to us at an onsite clinic and they're getting checked for diabetes, or if they're getting their routine care, and we could simply provide the medications at the time of service that they were needing, there would be no extra stops."

Also, she noted, Next Level facilities often get calls from patients who encounter problems filling their prescriptions, such as price or pharmacy hours.

"I would say about 65 percent of the calls that we receive all day long at my ... urgent cares are regarding pharmacy issues or medication issues. And all that would go away if we were actually dispensing onsite, because those conversations would be able to be had right there and then. ... This is just another step toward getting patients a better health care experience for less money," she said

Tom Banning, TAFP's executive director, says dispensing medications from a clinic or physician's office ensures the patient is getting the right prescription at the right time.

"When you put in a middle man like a PBM that's going to take a cut out of whatever that prescription drug cost is, it just adds cost to medications. By streamlining the supply chain where physicians can buy directly from wholesalers and dispense from

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their office with no markup on the cost of the pharmaceuticals, it can dramatically decrease patient cost on many medications, certainly for generics and commonly prescribed [medications for] chronic diseases,” Mr. Banning said.

Although bringing down pharmaceutical costs eventually could result in physicians earning back-end shared savings, Mr. Banning says, doctors aren’t looking to make money off physician dispensing; he doesn’t envision allowing for physicians to charge an upfront dispensing fee.

He says the drivers of the discussion around physician dispensing aren’t the doctors who would dispense as a result; instead, patients and employers are speaking up the loudest.

“More and more employers are moving to onsite/near-site clinics. And certainly for the self-insured employers that are either buying an insurance product and paying for prescription drug benefits that way, or [giving] pharmaceuticals directly to their employees and patients either for at-cost or free, there’s efficiency in that, and there’s cost savings for that.”

WeCare tlc, which develops and operates onsite and near-site health centers for employers, is one business that supports physician dispensing in Texas.

“For employers who invest in a worksite health solution for their employees and families, integrating [dispensing] into the health center is a huge opportunity to improve health outcomes and make access to medications more affordable for their members,” said Kevin Cooksey, managing director of sales for WeCare. “And it goes to support the entire medical home concept.” He says patients in states with more permissive physician dispensing laws than Texas are more likely to use an employer-sponsored health center.

Pharmacist objections

This isn’t the first time medicine has lobbied for physician dispensing in Texas. A previous TMA-supported push to allow physicians to dispense, Senate Bill 546 in 2011, met with opposition from pharmacists. That measure, authored by then-Sen. Bob Deuell, MD (R-Greenville), got through the Senate but died in the House.

In a 2015 article in the journal *Pharmacy and Therapeutics*, registered pharmacist Matthew Grissinger of the Institute for Safe Medication Practices, examined some of the pharmacist community’s misgivings about physician dispensing. His article, “Good Intentions, Uncertain Outcomes: Physician Dispensing in Offices and Clinics,” notes opponents of physician dispensing cite “serious medication safety concerns, particularly the loss of a crucial second check by a pharmacist and use of software to detect prescribing errors, and lack of regulatory oversight, which may lead to lax procedures for medication labeling, record-keeping, storage, and supervision of the dispenser.”

Those safety concerns “cannot be dismissed easily, and the proper regulatory oversight of this practice needs to be well thought out and funded if physician dispensing trends continue,” he wrote. “Otherwise, the potential harm from physician dispensing is too great, and the medication dispensing process should continue to be managed by a licensed pharmacist and state regulatory agencies that aggressively enforce standards of care in dispensing pharmacies.”

Fredericksburg family physician Jason Peet, MD, says he supports physician office dispensing and, if he had the option, would probably dispense such drugs as antibiotics, anti-inflammatories, and blood pressure medication. But he acknowledges doctors would have to take care to do it right.

“Physicians would have to be very diligent about doing it well and trying to have safeguards in place for dispensing errors and so forth. That would be the downside I would see,” he said. “A pharmacy, in theory, should do a better job, because that’s all they do. I think a physician’s office would have to work pretty hard to keep a similar rate of dispensing errors and so forth down. That’d be my concern implementing it in my office, just because physician staff have so many different things they have to learn and be competent in, that every time you add something like that, you really have to have a different staff that can own that and do it well.”

Mr. Banning, the TAFP executive director, says TAFP has met with pharmacists and heard their concerns regarding storage, labeling, and physicians needing to follow the same requirements pharmacies do. He says for TAFP, the focus is about patient empowerment.

“If we’re moving into a consumer-directed model and trying to empower patients and provide transparency to patients in terms of what they’re buying — I don’t want to say it’s common sense, but it is a conversation that needs to occur,” he said. “Whether we’re able to address all the pharmacy concerns or issues, we’ll try. But we’re more concerned about giving patients a choice and access to lower-cost pharmaceuticals.”

An innovative workaround

In the absence of a physician dispensing option, Dr. Larson is trying something else to keep costs down on the medications he prescribes most often.

When he spoke to *Texas Medicine*, Dr. Larson was preparing to launch a prescription plan he worked out with the pharmacy benefit manager Southern Scripts. For \$8 per month and no copay, his patients will have access to up to 12 prescriptions for medications on the Southern Scripts formulary list, with up to a 90-day supply for each.

The prescriptions will be dispensed at CVS pharmacies.

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“In order to make the price free to the patient, there’s a cost to meet,” he said. “And in a different scenario, where I could buy the medication wholesale, just pass the cost on through to the patient — I mean, some of these medications that I’m selling for \$0 I could probably sell for \$4, and the cost wouldn’t rest with me. Even the ones that I could sell for \$4, the PBM is charging me more than that. But this is a benefit that I feel like our patients deserve.”

Most of the medications on the formulary are “going to be for those diseases that are in my wheelhouse as a primary care physician,” Dr. Larson said. That generally means drugs for chronic diseases such as hypertension, diabetes, and high cholesterol.

“None of us is interested in dispensing controlled medications from our office. None of us is interested in dispensing medications that are not in our wheelhouse. I’m not interested in dispensing chemotherapeutics,” Dr. Larson said. “It’s just the basic stuff that your normal family doctor would normally prescribe.”

Rather than seeing the drug membership plan as a true solution, though, Dr. Larson calls it a “workaround” for the inability to dispense out of his office. But in the attempt to persuade lawmakers to finally allow it, Mr. Banning says TAFP is pushing for a “competitive marketplace” just as pharmacy groups attempt to move more into clinical care delivery. That is, “if they want to do certain tests and provide medical advice, then certainly from an efficiency standpoint and access standpoint, the doctors ought to be able to compete in that space.”

Prescriptions and Physician Dispensing: By the Numbers
31.3%

Share of primary care prescriptions that aren’t filled
(Source: *Annals of Internal Medicine study, April 2014*)

67%

Percentage of people who didn’t fill their prescription who said cost was the reason

(Source: *Truven Health Analytics/NPR health poll, June 2017*)

29%

Increase in adherence to cholesterol medications for Medicare Advantage patients with physician-led point-of-care medication delivery

(Source: *American Journal of Managed Care study, July 2016*)

76%

Percentage of Medicare Advantage patients surveyed who found the point-of-care dispensing system more convenient than filling at a retail pharmacy; 87 percent said it improved their ability to take the medications

(Source: *American Journal of Managed Care study, July 2016*)

\$337 billion

Avoidable medical and pharmacy expenses in U.S. as a result of medication nonadherence

(Source: *Express Scripts Drug Trend Report, 2013*)

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