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Osteopathy in a Combined Didactics Setting

Standardized Patient Modules in Medical
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Transgender Patient in Mind

REVIEW ARTICLE

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Management Options for Chronic
Pain Management

CLINICAL IMAGES

Painful Bubbles

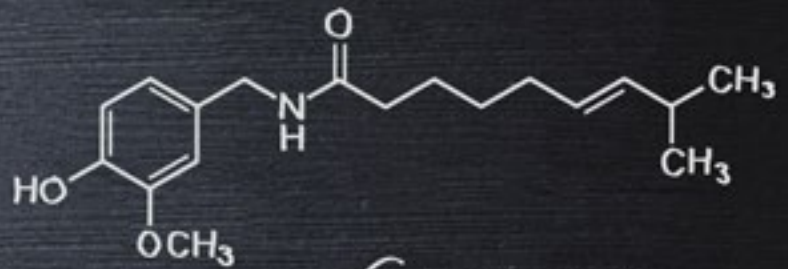
Two Cases of Progressive Erythematous
Lesions of the Upper Extremity

PATIENT EDUCATION

Eczema

Pain Management

Spider Bites



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Family Medicine / OMT Certification / OCC Cognitive Exam	Electronic Testing Regional Sites September 22, 2018	May 1, 2018 <i>Late fee through June 1</i>
Family Medicine / OMT Certification / OCC Performance Evaluation Only	AOA OMED Conference San Diego, CA October 6 - 10, 2018 October 5 - 7, 2018	May 1, 2018 <i>Late fee through June 1</i>
Family Medicine / OMT Certification / OCC Performance Evaluation Only	ACOFP Annual Convention Las Vegas, NV March 21 - 24, 2019 exam dates TBD	October 1, 2018 <i>Late fee through December 1</i>
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2019 - 2020 BOARD OF GOVERNORS

ACOFP SEEKS NOMINEES FOR 2019 - 2020 BOARD OF GOVERNORS

In accordance with the Nominating Committee process, the ACOFP is now accepting nominations for the positions of Governor, Resident Governor, and Student Governor for the 2019-2020 ACOFP Board of Governors. These positions will be elected by the ACOFP Congress of Delegates in March, 2019.

Please visit acofp.org Board of Governors page under the "About Us" tab to submit your nominations by **August 15, 2018**.

Please send cover letters to:

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1. American Cancer Society. Cancer Facts & Figures 2017. Atlanta, GA: American Cancer Society; 2017.

EDITOR'S MESSAGE

The Power of Touch

Ronald Januchowski, DO, FACOFP, Editor, *Osteopathic Family Physician*

Welcome, or welcome back to the *Osteopathic Family Physician*! As the new Editor-in-Chief, it is my pleasure to introduce the May/June issue for 2018.

As an osteopathic physician, I am always interested in discovering new things and connecting to issues and items related to, but perhaps not directly involved with the practice of medicine. While our journal does not have specific themes applied to each issue, there tends to be underlying subtleties that connect the articles contained within.

The painting seen below is *The Five Senses, Touch*, painted by a Baroque artist in 17th century Antwerp. I cannot claim to be an expert on Baroque art, but I can feel the pain present in the subject's eyes and wonder what caused the wound on this subject's hand. By observing this painting, a connection is formed with someone and feelings are produced.

What does this have to do with this issue of the *OFP*? The power of touch is pervasive in the practice and the teaching of osteopathic medicine. We have a couple of research articles on academic teaching including one on instructing both DO's and MD's in a combined setting. This is a timely and relevant subject given the upcoming ACGME residency program merger.

Another teaching article relates possible methods to help medical students remain compassionate in the care of all patients. Our clinical images are closely related to the painting, as they both deal with wounds and skin lesions. Finally, the review article adds to the literature on pain management for the *Osteopathic Family Physician* by presenting complementary treatment options that might be used in clinical practice.

Even without a stated theme for this issue, I hope you can find your own way to connect to others with your five senses, especially the power of touch. Thanks for reading this issue of *OFP*!



< **The Five Senses, Touch**
(Gonzales Coques, ca. 1650)

FROM THE PRESIDENT'S DESK



What Members Want from ACOFP

Duane G. Koehler, DO, FACOFP *dist.*
2018 - 2019 ACOFP President

I pledge to you, as your new President, and along with the other Board members, to keep "ACOFPP weird," – a reference to our recent Convention host city's slogan, "Keep Austin Weird." That is to say, keep ACOFP diverse – in practice type, ethnicity, geography, and gender. It is in the coming together of our diversity that we are able to learn from each other's differences and create the best ideas, the best solutions to the challenges our osteopathic family face today.

As a result of a recent member survey, you have told us what direction you want ACOFP to take. Know that this is taken seriously by your Board, and that change has already started in these top areas:

- Osteopathic Distinctiveness
- Increased focus on Resident and Student Engagement
- Being a stronger osteopathic voice for the specialty, creating greater awareness of ACOFP's impact for members...and their patients

OSTEOPATHIC DISTINCTIVENESS

At a time when it appears that the osteopathic focus of our profession is being diluted by post-doctoral training standards, in CME content, and in certification requirements, the ACOFP Board is determined to double-down on the distinctiveness of osteopathic family medicine.

- Articles in this Journal – *Osteopathic Family Physician* – will emphasize OPP and OMM in the scientific content, as well as in our CME lectures.
- The annual Intensive Update & Board Review will feature every-day application of OMT.
- We will be updating the series of 150 videos in the ACOFP's Education and Video Resources for Teaching OMT series, which includes the textbook, "Somatic Dysfunction in Osteopathic Family Medicine.
- We are pilot-testing a new formative exam for residents in a program with ACGME Osteopathic Recognition status. This is in addition to continuing the In-service Exam used by more than 2,000 family medicine residents each year.

For the first time in ACOFP's 65-year history, the Delegates in the ACOFP Congress, through the approved process, decided to allow MDs as Active Members, with levels of involvement to be written into proposed amendments for final consideration at the 2019 ACOFP Congress.

If your first thought on reading this is, "well this is not very osteopathically distinctive," think about what A.T. Still would have wanted – more access, for more patients to the healing power of osteopathic medicine by physicians who are appropriately trained in the science and art of osteopathic medicine.

The greater the number of osteopathically-trained physicians, the more osteopathic medicine moves from mainstream to the forefront of medicine. What if OMM achieved a status where it was used before NSAIDs or opioids in the treatment of chronic pain? That's the kind of thinking of which A.T. Still would be proud.

RESIDENT & STUDENT ENGAGEMENT

Through financial support of chapters on all osteopathic college campuses, the ACOFP has already made a strong investment in Students. But we begin losing contact with the third - and fourth-year Students when they go on rotation. It will be even more difficult for the ACOFP message to reach residents when they fall under ACGME accreditation, rather than AOA accreditation and ACOFP Basic Standards. We will need to try that much harder to engage them.

The plan includes: increasing social media activity with a new campaign, providing content for students via an ACOFP podcast channel and app. ACOFP has seen success with our Future Leaders Conference and there are three alumni on the ACOFP Board.

Most importantly, the ACOFP will advocate to the AOA and to our certification board for initial and continuous certification that is more cost-effective and time-efficient.

OSTEOPATHIC VOICE

Members want ACOFP to better communicate the benefits and services available to them. Members also want to know about return on investment for national lobbying efforts.

- The Board took a big step by selecting our own lobbying firm of Alston & Bird. ACOFP has already weighed in to national government agencies on a variety of health care topics germane to membership. One of the latest was a letter to the Administrator of CMS, Seema Verma, on the CMS initiative titled, “Patients Over Paperwork.”
- We are introducing the ACOFP/Lightbeam alliance partnership to those who want to improve their patient and population management. Lightbeam uses data from your EMR to help you identify care gaps, improve outcomes, and maximize shared savings. Whether you are in a solo practice, ACO, or Medicare Shared Saving Program, they have a cost-effective solution, with an ACOFP discount.
- We are providing ACOFP members with access to the MIPSPRO Quality Reporting System to better navigate the quality reporting steps associated with MIPS.
- With a large segment of ACOFP members in the small and rural settings, we are providing no cost assistance to practice improvement services through our partnership with the National Rural Accountable Care Consortium.
- Members have an opportunity to join one of many Special Interest Groups (SIGs) for those of you with focused interest in such areas as: direct primary care, diversity and inclusion, men’s health, women in medicine, military health care, public health and wellness, and young physicians.

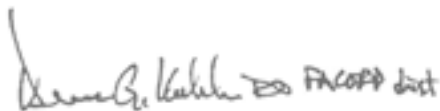
ACOFP AS COMMUNITY

We will continue putting family medicine first through our work with eight other national Family Medicine organizations in supporting the “Health Is Primary” campaign as part of the Family Medicine for America’s Health initiative.

We have renewed our commitment to the “Patient Centered Primary Care Collaborative,” a not-for-profit organization representing a broad group of public and private stakeholders. PCPCC’s mission is to promote policies and share best practices that support the growth of high-performing primary care.

Recently, a select group of members met and came up with a vision statement for the ACOFP. There may be no better way to define ACOFP:

“ ACOFP is a community of current and future family physicians that champions osteopathic principles and supports our members by providing resources such as education, networking, and advocacy while putting patients first.”



Duane G. Koehler, DO, FACOFP dist. | 2018 - 2019 ACOFP President

RESEARCH ARTICLE

Evaluating the Effectiveness of Teaching Osteopathy in a Combined Didactics Setting

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KEYWORDS:

Medical
Education

ACGME

Curriculum

Didactics

Accreditation

Osteopathy

Objectives: To evaluate the effects of teaching Osteopathic Manipulative Treatment (OMT) and Principles and Practice (OPP) at a combined didactic conference having both allopathic (MD) and osteopathic (DO) family medicine residents.

Methods: A self-administered pre/post-conference survey was distributed to 58 family medicine residents. Using a Likert-type scale, constructs measured included: the likelihood of using OMT on patients, the impact of session content, and confidence in medical knowledge of the topics presented. Demographic data was included (ie MD/DO status). The comparison of pre/post survey responses were performed for each question using the chi-square test, except when the sample size was small, where Fisher's exact tests were used. The p-value was set at 0.05.

Results: A total of 33 (66%) residents completed both pre/post-conference surveys. Enthusiasm towards OMT as a mode of treatment was high at baseline among residents. For PGY1s, the injection therapies session was most impactful (52.8%). For PGY2s & 3s, the Short Leg Syndrome lecture was most valuable (65.3%). MD/DO residents showed statistical significance in improving confidence in the Short Leg Syndrome Session ($p = 0.013$) and Shoulder Injection ($p = 0.012$). MDs showed a statistically significant increase in confidence for the treatment of Head and Neck Conditions ($p = 0.0485$).

Conclusion: ACGME unification will challenge programs pursuing osteopathic recognition to achieve a balance between on-boarding MDs and providing content for furthering the training of DOs. This study indicates MDs have moderate interest in learning OMM/OPP in a combined didactics setting and promotes further research in this area.

INTRODUCTION

Since the 1980s there has been a trend in graduate medical education of a significant number of osteopathic physicians (Doctors of Osteopathy, or DOs) (> 50%) receiving post-graduate training in traditional ACGME accredited programs.¹ Despite this, DOs continue to express interest in furthering their training in the philosophy of osteopathic medicine (Osteopathic Principles and Practice, or OPP).² In addition, training with DOs who perform osteopathic manipulative medicine (OMM) has fostered an increased interest for allopathic physicians (Medical Doctors, or MDs) to learn these skills.^{1,3,4} In 2014, the American Osteopathic Association (AOA), the American Association of Colleges of Osteopathic Medicine (AACOM), and the Accreditation Council for Graduate Medical Education (ACGME) reached an agreement to unify all graduate

medical education (GME) within the Single Accreditation System. Moving forward, as traditional osteopathic programs seek ACGME accreditation, the faculty at these programs will be tasked with developing ways to onboard and train MDs in OPP and OMM. Currently the Osteopathic Recognition Residency Committee (OR-RC) allows individual programs to determine the curriculum necessary for on-boarding MD residents.⁵

One of these traditional osteopathic programs is a community based hospital in a large city of the mid-western United States. Its Family Medicine (FM) residency has been a traditional osteopathic program for more than 36 years who received initial ACGME accreditation and Osteopathic Recognition (OR) status in 2016. This osteopathic hospital is one of several teaching hospitals in a large non-profit healthcare organization. Currently there are four Family Medicine residencies within this health care system, two that are osteopathic and two that are allopathic. Since its ACGME accreditation, the faculty of the osteopathic residency program has been working to determine the best method for onboarding MDs.

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At the same time, in effort to promote “systemness” within its training programs, the allopathic and osteopathic family medicine residencies created combined didactics three times a year to share resources in teaching. Each of the programs was assigned a topic upon which to organize a conference. These assigned topics aimed to capitalize on a strength of each program. The osteopathic programs joined forces to host a didactic session surrounding musculoskeletal topics that would benefit both MDs and DOs. The faculty utilized this opportunity to trial the introduction of OPP and basic OMM techniques to MDs, with the goal of creating balance between on-boarding MDs to new osteopathic topics while still teaching skills that would advance the training of DOs. It has been reported that programs achieving this balance are likely to be more productive in their osteopathic teaching.⁶

Because the combined didactic conferences were planned to continue for system’s Family Medicine programs throughout the next academic year, the faculty designed a quality improvement (QI) initiative surrounding their first event. The event was titled “Holistic Approach to Musculoskeletal Care,” and took place on May 10, 2017. Outcome measures for the event included:

AIM #1: Did the event affect attitudes towards future use of OMM as a form of therapy?

AIM #2: What were the most and least impactful topics to MDs and DOs collectively at the conference?

AIM #3: Did residents feel more confident in the use of learned techniques?

AIM #4: Was there a difference between MDs and DOs in the reported comfort level with the various topics and exams covered in the lectures?

Success of this pilot was determined by responses to surveys given to residents in attendance before and after the conference, measures of satisfaction with the event, and readiness to use learned techniques in the future. Reporting the outcomes from this study may provide information on how to improve the conference; as well as information on how to implement or improve MD on-boarding to traditional osteopathic programs.

The hypothesis for this project is that a combined didactics forum will be successful at improving the following:

Improving survey scores in residents’ attitudes towards the use of OMM technique on patients

Improving the resident confidence scores in topics discussed at the conference

Demonstrating a measurable difference between DO and MD residents in their comfort level on musculoskeletal topics.

METHODS

This was a retrospective study evaluating pre- and post- conference surveys from the family medicine residents in attendance. This study was approved as a quality improvement (QI) project by System’s Research Institute and thereby exempt of Institutional Review Board (IRB) review. The residents were asked their Healthcare System Identification Number on their surveys so the pre- and post-conference surveys could be linked. Completion of

both the pre and post surveys were required in order to be included in statistical analysis. The event began with a brief introductory lecture outlining the history of osteopathy and basic terminology that would be referenced at the conference. The curriculum was divided into three introductory musculoskeletal topics for PGY1 residents and three advanced topics for PGY2 and 3 residents. Conference topics and a summary of lectures/their objectives are listed in Table 1 (page 12). The specific topics chosen for the combined didactics were selected by a committee composed of program faculty and educators from the hospital simulation center. It was thought that the selected topics fostered a mix of both traditional musculoskeletal and osteopathic concepts. Both groups of learners received pre-conference survey questions identifying MD/DO status, the likelihood of using OMT on patients, and confidence in medical knowledge of the topics presented. Post-conference surveys repeated these questions with additional inquiry regarding the efficacy of the introductory lecture, the facility in which it was held, the format used for presentations, as well as the selection of the most/least helpful topics. Questions were formatted using the Likert-type scale (1= strongly disagree/not confident to 5 = strongly agree/extremely confident). By design, this project did not increase participant risk, with the exception of possible privacy/confidentiality concerns. To diminish this risk, only the principle investigator and research aides had access to the resident surveys, and all data was de-identified upon computer entry. All paper forms are stored in a locked facility with limited access (the office of the Principal Investigator).

Survey responses from the participants were reported using frequencies and percentages for categorical variables and means and standard deviations and/or medians and ranges for continuous variables. For the reporting purpose, we calculated the combined number (percent) of positive responses (agree + strongly agree or confident + extremely confident). The comparison of pre-post survey responses were performed for each question using the chi-square test. When the sample size was very small, Fisher’s exact tests were used to detect statistical significance. The p-value for the significance for these was set at 0.05 for all tests.

RESULTS:

The resident population included in this study was from the four Family Medicine programs at the healthcare system. Combined, these programs currently train seventy-eight family medicine residents, post-graduate years one through three. There were a total of fifty-eight residents in attendance and 33 that had both pre and post surveys completed with a response rate of 66%. Response rate was 70.6% for PGY-1 residents (12/17) and 63.6% for PGY2&3 residents (21/33).

AIM #1: Did the event affect attitudes towards future use of OMM as a form of therapy?

After analysis of the data, it was discovered that the enthusiasm for OMT at baseline was high among both MDs and DOs at the conference (Table #2, page 12). A large number of MDs (near 50%) and nearly all DOs in attendance (near 100%) would consider using OMT as a mode of treatment in their patients. However, the very high baseline support and smaller sample size lead to no statistical significance in improved attitudes as a result of the conference (Table #2, page 12).

TABLE 1:

Conference Curriculum

(*Indicates those topics with Osteopathic Theory or Technique)

LECTURE TITLE	GROUP	LECTURE OBJECTIVES
*Lower Back Pain: A Holistic Approach	PGY-1	Report the red flags for low back pain conditions Practice and conduct a thorough lower back pain (LBP) evaluation using both allopathic and osteopathic techniques Practice two osteopathic techniques for treatment of LBP
*Anatomy and Exam of Knee and Shoulder	PGY-1	Identify the major anatomy of the knee and shoulder Perform a complete shoulder exam (allopathic + osteopathic), including provocative tests of the shoulder Perform a complete knee exam, including provocative tests of the knee
Injection of Knee and Shoulder Joints	PGY-1	List indications, risks, benefits, and technique for knee and shoulder joint injection Demonstrate safe and effective knee and shoulder injection therapy methods by means of simulated experience
*Head and Neck Pain	PGY-2 & 3	Discuss how osteopathic considerations are used for common conditions of the head and neck Discuss the pertinent anatomy and pathophysiology and use osteopathic diagnostic process to identify somatic dysfunction of the neck and head Perform three osteopathic techniques that can assist with conditions of the head and neck
*Osteopathic Mimics of Orthopedic Conditions	PGY-2 & 3	List osteopathic dysfunctions that can mimic other orthopedic conditions Practice osteopathic examination techniques to look for these dysfunctions in a hands-on session
*Short Leg Syndrome	PGY-2 & 3	Understand the various etiologies, clinical symptoms and appropriate treatment plan of leg-length discrepancy (LLD) List the difference between an anatomical and functional leg-length discrepancy Determine the amount of leg-length difference present in a patient

TABLE 2:

Attitudes of Residents Towards Osteopathic Manipulative Therapy (OMT) at the Conference, n/total (%):

	DO	p-value	MD	p-value	DO + MD	p-value
PGY1 likelihood of using OMT on patients:						
pre-conference survey	6/6 (100)	---	3/6 (50)	0.99	9/12 (75.0)	0.99
post-conference survey	6/6 (100)		3/6 (50)		9/12 (75.0)	
PGY2&3 likelihood of using OMT on patients:						
pre-conference survey	12/14 (85.7)	0.482	4/9 (44)	0.99	14/21 (66.7)	0.495
post-conference survey	14/4 (100)		4/9 (44)		16/21 (76.2)	
DO = Doctor of Osteopathy; MD = Medical Doctor; PGY1 = Post-graduate Level year 1; PGY2&3 = Post-graduate Level year 2&3 collectively; --- = sample size too small to calculate chi-square, p = 0.05						

TABLE 3:

Post-Conference Survey Results on the Impact of Sessions (MD + DO collectively), n (%)

	NAME OF SESSION:					
	ANATOMY & EXAM	INJECTION TECHNIQUE	LOW BACK PAIN	OSTEOPATHIC MIMICS	SHORT LEG SYNDROME	HEAD & NECK PAIN
PGY2&3 Attitude towards Topics presented:						
MOST impactful session	4/13 (30.8)	7/13 (53.8)	2/13 (15.4)	XXX	XXX	XXX
LEAST impactful session	2/10 (20.0)	3/10 (30.0)	5/10 (50.0)	XXX	XXX	XXX
PGY2&3 Attitude towards Topics presented:						
MOST impactful session	XXX	XXX	XXX	7/23 (30.4)	15/23 (65.3)	1/23 (4.3)
LEAST impactful session	XXX	XXX	XXX	6/20 (30.0)	4/20 (20.0)	10/20 (50.0)
DO = Doctor of Osteopathy; MD = Medical Doctor; PGY1 = Post-graduate Level year 1; PGY2&3 = Post-graduate Level year 2&3 collectively; XXX = Not applicable						

AIM #2: What were the most and least impactful topics to MDs and DOs collectively at the conference?

When analyzing those lectures most and least impactful (MDs and DOs collectively) – the results of were mixed (Table #3). For PGY1 level residents, the injection therapies session was most helpful (53.8%). Interestingly, this session did not introduce osteopathic theory or technique. For upper level residents, the Short Leg Syndrome lecture was felt most valuable (65.3%). This topic, on the other hand, was heavily based on OPP theory. The least valued sessions were Low Back Pain: Holistic Approach (PGY1, 50%), and Head and Neck Pain (PGY2/3, 50%) (Table #3).

AIM #3: Did residents feel more confident in the use of learned techniques?

For collective MD and DO residents, there was a statistically significant improvement in confidence in the Short Leg Syndrome Session ($p = 0.013$) and Shoulder Injection ($p = 0.012$) (Table #4 and #5, page 14). Other sessions did not reach statistical significance for improved confidence.

AIM #4: Was there a difference between MDs and DOs in the reported comfort level with the various topics and exams covered in the lectures?

When comparing MD and DO results – allopathic physicians had shown a statistically significant increase in confidence for the treatment of Head and Neck Conditions after the course ($p = 0.0485$) (Table #4 and #5, page 14). For all other sessions, there was no statistically significant difference in the confidence level before or after the conference in musculoskeletal topics between MD and DO residents.

DISCUSSION:

Graduate Medical Education is at a transformational place in history. Traditional osteopathic programs are tasked with creating methods to train learners that have not been exposed to OPP or OMM. Educators may look to large osteopathic teaching institutions like ours to create an on-boarding process to train these

“new” learners. Achieving the balance between teaching MDs basic osteopathic skills while still teaching topics that are useful to DOs at the combined didactics setting created challenges for the conference faculty. Graduates of osteopathic medical schools have received an average of 200-300 hours of training in osteopathic principals in practice (OPP) and Osteopathic Manipulative Medicine (OMM) technique even before the first day of training in a residency.⁷ Nonetheless, a review of the literature reveals that balance is possible, as allopathic programs have implemented the teaching of OPP/OMM to a limited number of residents (MDs and/or DOs) with some success.^{1,4,6,8} Being the only Osteopathic Recognized Family Medicine program in region at the time of the study, our program was assigned to teach musculoskeletal medicine for the combined didactics.

Many programs look at Osteopathic Recognition as a method to recruit highly-skilled learners. With the advent of Single Accreditation some traditional ACGME accredited programs have sought osteopathic recognition. There is high enthusiasm for alternative medicine among younger learners which may be one of the reasons for the programs seeking recognition.^{1,2} This eagerness was seen at the baseline of combined didactics where learners were enthusiastic regarding the use of OMT on patients. Though the enthusiasm among MDs did not increase by virtue of the conference, survey comments suggested additional hands on sessions could potentially increase their likelihood of future use. This may give osteopathic programs reassurance to become Osteopathically Recognized in the Single Accreditation System and to continue to work towards an onboarding process for MD medical students to learn osteopathic techniques. The authors believe that the founder of osteopathy, Andrew Taylor Still, MD, DO, would have applauded this inclusiveness.

The combined didactic setting produced the following results. Injection techniques, found to be the most beneficial session by PGY1 residents, was not focused on OPP/OMM. Notably, the session was taught in a state of the art simulation center using cadaveric shoulder and knee specimens. This session provided a real hands-on approach to skills that beginning learners seem to praise regardless of MD or DO status.⁹ On the other hand, higher

TABLE 4:

Confidence among Post graduate level-1 (PGY1) level residents according to session, n/total (%):

SESSION ASSESSED:	DO	p-value	MD	p-value	DO + MD	p-value
Performance of shoulder exam:						
Pre-Conference Survey	4/6 (66.7)	---	1/6 (16.7)	0.545	5/12 (41.7)	0.214
Post-Conference Survey	6/6 (100)		3/6 (50.0)		9/12 (75.0)	
Performance of knee exam:						
Pre-Conference Survey	5/6 (83.3)	---	2/6 (33.3)	0.242	7/12 (58.3)	0.155
Post-Conference Survey	6/6 (100)		5/6 (83.3)		11/12 (91.7)	
Performance of shoulder injection:						
Pre-Conference Survey	3/6 (50)	0.182	0/6 (0.0)	0.061	3/12 (25.0)	0.012
Post-Conference Survey	6/6 (100)		4/6 (66.7)		10/12 (83.3)	
Performance of knee injection:						
Pre-Conference Survey	5/6 (83.3)	---	1/6 (16.7)	0.242	6/12 (50.0)	0.193
Post-Conference Survey	6/6 (100)		4/6 (66.7)		10/12 (83.3)	
Examining patient with Low Back Pain:						
Pre-Conference Survey	6/6 (100)	---	1/6 (16.7)	---	7/12 (58.3)	0.99
Post-Conference Survey	0/0		2/6 (33.3)		8/12 (66.7)	
Performing Manual Medicine for Low Back Pain:						
Pre-Conference Survey	6/6 (100)	---	0/6 (0.0)	0.454	6/12 (50.0)	0.68
Post-Conference Survey	6/6 (100)		2/6		8/12 (66.7)	
DO = Doctor of Osteopathy; MD = Medical Doctor; --- = sample size too small to calculate chi-square; p = 0.05 Confidence included "extremely confident" and "confident" responses on surveys, remaining responses were included as not confident.						

TABLE 5:

Confidence among PGY2&3 level residents according to session, n/total (%):

SESSION ASSESSED:	DO	p-value	MD	p-value	DO + MD	p-value
Identifying Osteopathic Mimics:						
Pre-Conference Survey	10/12 (83.3)	---	0/9 (0.0)	0.471	10/21 (47.6)	0.757
Post-Conference Survey	9/12 (75.0)		2/9 (22.2)		11/21 (52.4)	
Managing Short Leg Syndrome:						
Pre-Conference Survey	8/12 (66.7)	0.093	0/9 (0.0)	0.0824	8/21 (38.1)	0.013
Post-Conference Survey	12/12 (100)		4/9 (44.4)		16/21 (76.2)	
Managing Head and Neck Pain:						
Pre-Conference Survey	12/12 (100)	---	1/9 (11.1)	0.0485	13/21 (61.9)	0.079
Post-Conference Survey	12/12 (100)		6/9 (66.7)		18/21 (85.7)	
DO = Doctor of Osteopathy; MD = Medical Doctor; --- = sample size too small to calculate chi-square; p = 0.05 Confidence included "extremely confident" and "confident" responses on surveys, remaining responses were included as not confident.						

level residents were most impacted from the Short Leg Syndrome session, a session highly focused on OPP theory. The Short Leg Syndrome session may have generated this response as the OPP theory introduced with this topic was potentially new to MDs and a topic that DOs would have been introduced to in their medical school training. Of all the sessions taught at the combined didactics, in-depth knowledge of OMM technique was not necessary to assess patients for short leg and provide treatment that can have a very impactful return.¹⁰ The least valued sessions (Head and Neck pain for PGY1, and Low Back Pain for PGY2/3) could be due to lecture presenters for these sessions attempting to fit too much information in the allotted time frame. A few post-conference survey comments suggested that allowing more time for hands-on practice could have helped improve the view of these sessions in the future.

When comparing DO and MD physicians, no difference in confidence was observed among topics, with the exception of the Head and Neck pain session. After the course completion, MDs had a statistically significant increase in confidence for the treatment of head and neck conditions – which may be due to the head and neck area being easily treated with indirect OMT technique. For example, these techniques have been shown to be easily taught to beginning learners for headache pain.⁸ Also, this session was taught by a faculty member who had completed an undergraduate medical education (UGME) OMM fellowship. UGME OMM fellows have a background of teaching learners with little OMM experience, and this may help give them the skills to teach MDs in a combined didactics setting.

Strengths of this study include the novelty of this topic, the initial insight it provided in on-boarding processes, and the high completion rates of the surveys by the residents at the conference. Weaknesses include the possibility of bias and the small number of overall residents surveyed. The majority of the DO residents in attendance were from our osteopathic program and could introduce bias into the results. Ongoing studies on the combined didactics format to add to the sample size will be challenging for our program due to a planned change in format of which the authors were unaware of at initiation of this project.

CONCLUSIONS:

As indicated above, this topic is rather timely. This study produced mixed results that highlight the need for future research. To date, only 95 programs across the country have applied for OR status and there is a call for more to do the same.¹¹ This study indicates that MD residents are certainly open to learning OMM and OPP, but a formal process for on-boarding these residents into an OR program is still in its infancy as mentioned in ACOFP meeting minutes.¹² The authors advocate the OR-RC create standards that each program can follow to foster the enthusiasm that MD residents possess, and yet not undermine the many hours of OMM/OPP education that DOs have achieved. It is thought that in this process the involvement of a DO faculty member who has had an UGME fellowship in OMM may be advised based on this study. Based on this small study, standards may also consider the order and types of topics introduced to MDs, simplifying teaching points, and making the training interactive. Such changes might also make a combined didactics event successful for osteopathic programs considering MD residents for future matriculation.

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RESEARCH ARTICLE

Standardized Patient Modules in Medical School with the Lesbian, Gay, Bisexual & Transgender Patient in Mind

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KEYWORDS:

Lesbian

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Objective: This study was designed with the intent to serve as an exploratory pilot and first step toward integrating Lesbian, Gay, Bisexual, and Transgender (LGBT) clinical education into the curriculum of Osteopathic and southeastern medical schools.

Methods: Using a quasi-experimental study, second year Osteopathic medical students were studied for their clinical knowledge of LGBT health, attitudes toward LGBT patients, and use of sensitive language while obtaining sexual history from Standardized Patients (SPs) before and after exposure to a didactic module.

Results: We found attitudes of LGBT health to be unaffected by the intervention ($P=0.63$) while clinical knowledge improved ($P=0.11$). Sensitive language used by students during sexual history gathering was similar between groups with no correlation with student LGBT health/knowledge scores. The results support previous literature suggesting a change in medical school curriculum can increase student awareness of LGBT health needs. Attitude scores toward LGBT patients of the studied students were slightly lower than those of six other osteopathic schools, and within the constraints of this study it appears a single didactic module was insufficient in changing attitude scores.

Conclusion: With research being limited on this topic, our study provides guidance and methods for implementing LGBT care training into Osteopathic medical education. We hope our baseline data in conjunction with other studies will provoke further research into the most effective means for implementation. Further research should include multi-modal didactics including small group sessions, lectures, and clinical exposure to LGBT individual(s), as has been suggested and implemented in few other studies.

INTRODUCTION

Disparities in health care needs and access exist between cis-gendered heterosexual populations and the Lesbian, Gay, Bisexual, and Transgender (LGBT) community.¹ As described in Healthy People 2020, "LGBT individuals face health disparities linked to societal stigma, discrimination, and denial of their civil and human rights."² Evidence suggests people who identify as LGBT are more likely to suffer from psychiatric disorders,^{3,4} substance abuse,^{5,6,7,8,9} victimization,¹⁰ homelessness,^{11, 12, 13} sexually transmitted diseases,^{14, 15} obesity,¹⁶ and commit suicide.^{17, 18} Literature also supports the notion that despite heightened needs LGBT patients have for medical care, they are often less likely to utilize health care services to avoid the perceived, and often real, discrimination in the quality of services provided by healthcare providers.^{19, 20, 21, 22}

Initiatives to decrease health disparities of LGBT patient populations in the United States, such as Healthy People 2020 and the 2011 Institute of Medicine (IOM) report, have called for an expansion of applicable research on LGBT populations.^{23, 24} Among the priority research topics suggested by the IOM, intervention research is specifically mentioned.²¹ Intervention of medical education curriculum could be of benefit since Allopathic schools have an average of only 4-6 hours spent on topics concerning LGBT health and many schools lack a multi-cultural approach to case studies with regard to sexual orientation and gender identity.^{1, 25, 26} In 2014, the Association of American Medical Colleges (AAMC) released a 280 page document for medical educators regarding incorporating LGBT sensitivity into medical curriculum. Within the document is an outline of schools who have implemented changes including six Allopathic medical schools that have created LGBT diversity committees, nine Allopathic schools in the United States that currently offer an elective on LGBT Health, and eleven

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Allopathic schools have adapted LGBT health topics into their medical curriculums.¹ None of these schools are in the Southeast United States. Additionally, a 2011 study found that Osteopathic medical schools (N=19) spend zero clinical education hours on LGBT health topics.²⁴ Standardized Patient (SP) encounters within the medical curriculum rarely include LGBT patients. Systematic evaluations of schools with LGBT health studies incorporated into their SP education are limited to a few case studies; though there has been an overall positive feedback from students involved in said studies.^{27, 28, 29}

Since current data suggests that LGBT health and sensitive sexual history training is lacking in southeastern and Osteopathic medical school curriculums, the present study was designed to assess the outcomes of a didactic module. This study sought to determine if second year Osteopathic medical students would change in their clinical knowledge of LGBT health, attitudes toward LGBT patients, and use of sensitive language while obtaining sexual history from SPs after exposure to said module. The investigators hypothesized that the didactic module would increase knowledge, attitudes, and sensitive language of the students based on results from previous studies showing increased knowledge and attitudes following multi-modal didactics or increased exposure to LGBT patients.^{30, 31} This study was designed to serve as a pilot with a quasi-experimental approach in an attempt to guide methods for implementing LGBT care training into Osteopathic medical education. Given the limited research on this topic, this study will provide another contribution to the current literature in determining which methods are effective or ineffective in changing medical student knowledge, attitudes, and sensitivity towards LGBT patient care.



National Association of Community Health Centers and National LGBT Health Education Center Program of the Fenway Institute. Taking routine histories of sexual health: a system-wide approach for health centers.

METHODS

All second year medical students completing the required Reproductive and Endocrine System Curriculum Block in Fall of 2016 at the Edward Via College of Osteopathic Medicine Carolinas (N=160) and Virginia campuses (N=189) (VCOM-CC and VCOM-VA) were invited to participate in the study via an e-mail. No students were excluded from participation in an effort to limit selection bias within the study. The demographics of the second year VCOM students of each campus were not specifically collected, however the general campus populations had similar ages (22-28 years VCOM-CC; 22-39 VCOM-VA), sex (M:F 1:0.8 VCOM-CC; M:F 0.8:1 VCOM-VA), and ethnicity (15-19% Asian, 64-67% Caucasian, 6-9% African American, 4-9% Hispanic, and 3-4% other). Of note, health professional attitudes have not been shown to differ between age, sex, ethnicity, orientation, or socioeconomic status (solely high religiosity and lower self-reported familiarity with religious perspectives on sex).³²

During week one of the block, we assessed baseline medical attitudes towards LGBT patients via a validated survey titled "Attitudes Toward LGBT Patients Scale," which was designed to assess third and fourth year medical students with varying degrees of exposure to LGBT patients.³¹ Baseline clinical knowledge was measured with permission from another validated survey titled "Medical Student Knowledge of LGBT Health Concerns" found in the same study mentioned above.³¹

During the fourth week of the Reproductive block, VCOM-CC students who completed the pretest surveys (N=51) were e-mailed a PowerPoint self-directed module titled, "The Sexual History Examination and the LGBT Patient." The module contains a series of cited educational slides, multiple choice questions, and a video on sensitive sexual history.^{1, 33, 34, 35} The learning objectives of the module were presented as follows:

1. Define the terms sex, gender, gender expression, gender identity, sexual orientation, lesbian, gay, bisexual, and transgender
2. Define the health care barriers specific to LGBT populations
3. Define health concerns that are more prevalent in LGBT populations
4. Address the importance of communication skills in obtaining accurate sexual histories in patients such as non-judgmental neutral language and reminding the patient of confidentiality
5. Address the importance of obtaining accurate sexual history for developing correct diagnosis and screening recommendations.

The PowerPoint module served as the study intervention and was not provided to the students who completed the pretest survey at VCOM-VA (N=18) (the control group) until the conclusion of the study.

The PowerPoint Learning Module for the Sexual History Examination and the LGBT patient can be viewed at <http://bit.ly/SexualHistoryLGBT>.

During the eighth week of the Reproductive block, students participate in SP sessions in which actors and actresses play the roles of patients with medical ailments and evaluate students on their history and physical exam skills. The SP clinical scenarios unfortunately did not involve an LGBT patient due to the curriculum being previously established. However, SP actors from VCOM-CC and VCOM-VA respectively evaluated the VCOM-CC and VCOM-VA students on the sensitivity of their sexual-history gathering. SP actors were provided with the didactic module and given an orientation/training on sensitive sexual history exams with the LGBT patient in mind. SPs were then briefed on the language indicators used for sensitivity before grading students. The SPs evaluated medical students based on meeting 0, 1, 2, or 3 of the following criteria (developed from previous literature):^{33,24}

Was gender-neutral language used throughout the SP encounter?

Did the student allow the patient to self-identify their sexual orientation?

If the SP answers “yes” to being sexually active, did the student ask, “do you have sex with men, women, or both?”

During the tenth week of the Reproductive block, we assessed post-intervention medical knowledge of LGBT populations and students’ attitudes towards treating LGBT patients by issuing post-test survey questions to participating second year students at both VCOM-CC and VCOM-VA. These questions were the same as the pre-test questions sent out at the beginning of the study and distributed in the same manner. Results from the pre- and post-surveys were matched with individual SP performance evaluations and were used to compare the results between campuses as a whole and between individual subjects.

Chi-square analyses were used to evaluate for statistically significant differences in the quantitative attitudes and knowledge surveys (pre and post-) between the exposure group (VCOM-CC) and the control group (VCOM-VA). An alpha error level of significance was set at 5% (0.05). A correlation coefficient was calculated with matched individuals to establish any relationship between post-exposure attitudes score and SP sensitive language measures as well as knowledge score vs. language measures.

RESULTS

Participation

160 VCOM-CC students and 189 VCOM-VA students were invited to participate in an attitudes and knowledge surveys (pre- and post-). Of the VCOM-CC student body, 36 completed the attitudes surveys and 37 completed the knowledge surveys. Of the VCOM-VA student body, 12 completed the attitudes surveys and 8 completed the knowledge surveys. There was a total dropout of 42% between the two campuses. Since the investigators only evaluated SP data on subjects consenting via post-test surveys, there was a total sample size of N=51 for the exposure group and N=18 for the control group.

Attitudes

Overall, baseline LGBT attitudes scores were similar between both the Carolinas and Virginia campuses (Carolinas mean +/- se of 75%

+/- 1%; and Virginia 63% +/- 2%). Attitude scores did not significantly change with the intervention (Carolinas 76% +/- 1%), nor in the control group (Virginia 74% +/- 3%; $\eta^2 = 0.23$, $P = 0.63$, $DF = 1$).

Sensitive Language

Use of the 3 “sensitive language” measures during SP encounters were similar between both the Carolinas and Virginia campuses (Carolinas 2.2 +/- 0.9; and Virginia 2.7 +/- 0.1). Additionally, use of sensitive language was not significantly correlated with a higher attitudes (Carolinas $R = 0.16$, Virginia $R = 0.27$) or knowledge score (Carolinas $R = 0.39$, Virginia $R = -0.31$) on the post-test of individual students on either campus.

Health Knowledge

Carolinas students’ average post-test knowledge scores (74% +/- 3%) exceeded average pretest scores (56% +/- 2%), while the average pre- and post- test scores in Virginia remained at 7.8 +/- 0.4 ($\chi^2 = 2.61$, $P = 0.11$, $DF = 1$). Although it was not of statistical significance, these results show an increase in knowledge scores between the pre- and post- tests in the exposure group, suggesting that the module intervention was successful in increasing knowledge of LGBT health in the short term (Figure 1).

DISCUSSION

In our research, we used a voluntary educational intervention to improve the care of LGBT patients. Our study showed a modest increase in short-term gain of clinical knowledge towards the LGBT patient population, which is consistent with previous studies that have used two hour didactic methodology (although these studies included small group discussions).^{34, 36} Unlike our study, however, one of the studies also demonstrated an increase in comfort with a Lesbian SP encounter.³⁴ Didactic methodology has also been shown to increase comfort and sensitive language in SP encounters with LGBT patients.³⁴ Our particular study failed to show that a single learning module significantly changed the sensitivity and attitudes of student doctors at VCOM towards LGBT populations. We conclude that these results could be due to VCOM-VA students having a higher baseline attitudes scores than reflected in their test results, or perhaps students attained the material in the survey questions from their coursework or other outside sources. However, students exposed to the didactic module did have an apparent increase in short-term LGBT clinical knowledge. Therefore, within the constraints of the study, our results support that a change in medical school curriculum is important in increasing awareness of future doctors to LGBT health needs.

Six other Osteopathic medical schools averaged ~83% on the same survey of attitudes towards treating LGBT patients in a recent assessment.³⁷ The present study results show that the two VCOM campuses have similar, slightly lower, results on this survey (see results), indicating a need for curricular change in Osteopathic schools. However, this conclusion is difficult to make when considering the sample size in mentioned study (N=972)³⁵ versus the sample size in our study (VCOM-CC: N=51; VCOM-VA: N=18).

Despite our results, there were limitations in the present study. Firstly, SP encounter evaluated in the study did not include an LGBT patient case and was only evaluated using sensitive language

indicators. Secondly, self-selection bias could have been present given the high drop-out rate and the possibility that the students who chose to complete both surveys may have had better attitudes towards LGBT patients than their colleagues who opted out of the study. Finally, the low statistical power in our study (from low volunteer and high dropout rates) make the results more difficult to interpret.

We suggest further research should include multi-modal didactics including a combination of small group sessions, lectures, and clinical exposure to LGBT individual(s), which has been suggested and implemented in few other studies.^{30, 34, 35} It would be beneficial for similar future studies to collect subject demographic data concerning religiosity and self-reported familiarity with religious perspectives on sex, as these have been shown to correlate with lower attitudes towards LGBT patients.³² The investigators suspect this religiosity phenomenon may have played a role in the low participation in the present study, a topic which may be worthy of future studies. The lack of student participation in our study, despite a large number of invited participants, stresses a need for future studies to include incentives for subject participation to increase sample size and decreases self-selection bias (e.g., mandatory attendance or school credit). This has shown to be effective in a more recent study.³⁸ Increasing student involvement may also be a factor in participation rates, as two more recent student-designed programs had more participation than our study.^{38, 39} We suggest a next step to include following participants in longitudinal studies to evaluate physicians as they enter residency and practice to examine long-term changes in comfort/knowledge with LGBT patients. Finally, with enough pilot studies, a meta-analysis would be beneficial to determine which educational intervention(s) provide the best long-term results.

CONCLUSIONS

Our study was created with the need and importance of educating future Osteopathic physicians with the LGBT patient in mind. We view our work as a contribution to the ongoing conversation about the need for integrating LGBT health topics into the medical curriculums of Osteopathic medical schools (particularly those in the Southeast United States). We hope our baseline data in conjunction with other studies will provoke further research into the most effective means to train future physicians to provide more knowledgeable and sensitive care to the LGBT population.

AUTHOR DISCLOSURES:

No relevant financial affiliations.

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Assessing Complementary Pain Management Options for Chronic Pain Management

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KEYWORDS:

Natural Pain Relief

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Opioid Alternatives

OTC Pain Therapies

Addiction Medicine

In light of the current opioid epidemic, this article reviews natural chronic pain management agents along with evidence-based documentation of their effectiveness, recommended dosing and administration, mechanism of action and potential side effects.

INTRODUCTION

Approximately 100 million Americans suffer from chronic pain.¹ Chronic pain is defined by the United Surgeon General as:

Chronic pain continues beyond the normal time expected for healing and is associated with the onset of pathophysiologic changes in the central nervous system that may adversely affect an individual's emotional and physical well-being, cognition, level of function and quality of life. Chronic pain serves no apparent useful purpose for the individual and may be diagnostically and therapeutically approached as a chronic disease process. It cuts across the boundaries of mind, brain, and body, resulting in a common symptomatic and functional spectrum of physical, cognitive, psychological and behavioral effects. Chronic pain can be described as ongoing or recurrent pain, lasting beyond the usual course of acute illness or injury or more than 3 to 6 months, and which adversely affects the individual's well-being. A simpler definition of chronic or persistent pain is pain that continues when it should not.²

A large number of chronic pain sufferers create the need for family physician's to provide effective pain management programs.³ Conventional approaches to chronic pain management include prescription medicine or invasive procedures. A 2011 population-based survey documents that as part of their treatment plan over 50% of chronic pain patients take over the counter or prescription medication.⁴

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Complementary integrative medicine (CIM) acknowledges the person as a whole and empowers patients to self-manage, which is a cornerstone philosophy of osteopathic medicine. Current research supports that acceptance is growing for CIM usage in chronic pain management.⁵ Many clinicians incorporate natural chronic pain management agents such as herbal therapies, spices, liniments, topicals, ointments, gels, and rubs into pain treatment plan options.

The following reviews natural chronic pain management agents along with evidence-based documentation of their effectiveness, recommended dosing and administration, mechanism of action and potential side effects.

CAPSAICIN (CHILI PEPPER)

Capsaicin is the active component of Capsicum, a small spreading shrub from the chili plant that the native people of the American tropics used for hundreds of years topically for osteoarthritis, rheumatoid arthritis, post-herpetic neuralgia, HIV-associated neuropathy, fibromyalgia, trigeminal neuralgia, and diabetic neuropathy. It is also used for back pain, myofascial pain, and post-surgical neuralgias. The FDA has approved, the active capsicum constituent capsaicin in topical format to relieve chronic pain.⁶

Capsicum contains capsaicinoids, the most common of which is capsaicin.⁷ It is the capsaicin and other capsaicinoids that makes capsicum taste hot. Naturally-occurring capsaicin exists only in the trans-stereoisomer form. However, the cis-isomer, known as civamide, also has pharmacological activity. Some evidence suggests that civamide is more potent and causes less irritation than naturally occurring capsaicin.⁸

THE CAPSAICIN PAIN TREATMENT NATURAL MEDICINES COMPREHENSIVE DATABASE EFFECTIVENESS RATINGS ARE:⁹

Likely effective in the treatment of diabetic peripheral neuropathy, pain and postherpetic neuralgia.

Possibly effective in the treatment of back pain, cluster headache, postoperative pain.

Insufficient reliable evidence in the treatment of fibromyalgia, HIV-associated peripheral neuropathy, joint pain, migraine headache and myofascial pain.

See Table 1 (page 25) for the parameters of the Natural Medicines Comprehensive Database's Effectiveness Ratings.

THE RECOMMENDED CAPSAICIN DOSING & ADMINISTRATION FOR CHRONIC PAIN CONDITIONS ARE:¹⁰

Back Pain: Topical

Capsicum-containing plasters providing 11 mg of capsaicin per plaster or 22 mcg of capsaicin per square centimeter of plaster applied have been used. The plaster is applied once daily in the morning and left in place for 4-8 hours.¹¹

Cluster Headache: Intranasal

Capsaicin suspension 0.1 mL of a 10 mm, providing 300 mcg/day of capsaicin, applied to the ipsilateral nostril, has been used. Applications of the suspension continued once daily until a burning sensation was no longer experienced.¹² A capsaicin 0.025% cream (Zostrix, Rodlen Laboratories) applied daily for 7 days has been used to treat acute cluster headache attacks.¹³ Due to severe pain associated with intranasal capsaicin administration, pretreatment with intranasal local anesthetic is usually used.

Diabetic Peripheral Neuropathy: Topical

Cream that contains 0.075% capsaicin, the active constituent of capsaicin, has been used topically four times daily for 8 weeks.¹⁴ A single application of a patch containing 8% capsaicin (Qutenza, NeurogesX Inc., San Mateo, CA, USA) has been used for 60-90 minutes.¹⁵

Fibromyalgia: Topical

Cream containing 0.025% to 0.075% capsaicin, the active constituent of capsaicin, has been applied 3-4 times daily for 4-6 weeks.¹⁶

HIV-Associated Peripheral Neuropathy: Topical

A single patch (Qutenza, NeurogesX Inc.) containing 8% capsaicin, the active capsaicin constituent, has been applied for 30-90 minutes.¹⁷

Migraine Headache: Intranasal

Capsaicin 0.075% applied to the nasal mucosa has been used.¹⁸

Pain: Topical

Creams contain the active capsaicin constituent capsaicin and are typically applied 3-4 times daily. It can take up to 14 days for the full analgesic effect. Most creams contain 0.025% to 0.075% capsaicin concentrations.¹⁹

Postoperative Pain: Topical

A capsaicin-containing plaster has been applied to acupoints on the hands or near the knees of adults 30 minutes before anesthesia and left in place for 6-8 hours daily for up to 3 days after surgery.²⁰ The capsaicin-containing plaster used in these studies (Sinsin PAS, Sinsin Pharm Co.) is standardized to contain capsaicin 345.8 mg and capsaicin tincture 34.58 mg per sheet.²¹ Capsaicin 15 mg has been instilled during surgery immediately before wound closure.²²

Postherpetic Neuralgia: Topical

A single patch containing 8% capsaicin (Qutenza, NeurogesX Inc.), the active capsaicin constituent, has been used for 60-90 minutes.²³

Joint Pain: Oral

A specific combination product (Instaflex Joint Support, Direct Digital, Charlotte, NC) containing glucosamine sulfate 1500 mg/day, methylsulfonylmethane 500 mg, white willow bark extract 250 mg, ginger root concentrate 50 mg, Boswellia extract 125 mg, turmeric root extract 50 mg, cayenne 40 m H.U. 50 mg, and hyaluronic acid 4 mg per day in three divided doses has been used daily for 8 weeks.²⁴

CAPSAICIN INTERACTIONS WITH DISEASES TO BE AWARE:

Bleeding Disorders

Theoretically, capsaicin might increase the risk of bleeding.²⁵ However, conflicting results show that capsaicin, a constituent of capsaicin, does not decrease platelet aggregation.²⁶ Until more is known, use cautiously in patients with bleeding disorders.

Damaged Skin

Capsaicin is contraindicated in situations involving the injured skin. Do not apply capsaicin if the skin is open.

Diabetes

Theoretically, capsaicin might affect blood glucose levels in people with diabetes.²⁷ Monitor blood glucose levels closely. Doses of conventional antidiabetes medications may need to be adjusted.

Hypertension

In animals, intravenous administration of a high dose of capsaicin, the active constituent of capsaicin, increases blood pressure.²⁸ Also, cases of an arterial hypertensive crisis have been reported for individuals who consumed an abundant amount of chili peppers.²⁹ Theoretically, ingesting a significant amount of chili peppers might worsen high blood pressure in humans.

Surgery

Capsicum has antiplatelet effects. Capsicum might cause excessive bleeding if used perioperatively. Tell patients to discontinue capsicum at least 2 weeks before elective surgical procedures.³⁰

DEVIL'S CLAW

Devil's Claw is a perennial South African plant found in the Kalahari Desert and Namibian steppes region. Taken orally, devil's claw is purported to ease muscular tension and/or pain in the major joints, i.e., back, shoulders and neck and is a popular treatment for osteoarthritic pain. Devil's claw is prepared from the secondary tuberous roots and the applicable part of devil's claw is a tuber. Devil's claw contains iridoid glycoside constituents primarily harpagoside, but also including harpagide, harpagide derivatives, and procumbide.³¹ It also contains the phenylethanol derivative acteoside (verbascoside) and isoacteoside, and the oligosaccharide stachyose.³² The phenol glycoside constituent 6-acetylacteoside allows distinction between the two species of devil's claw.³³

DEVIL'S CLAW NATURAL MEDICINES COMPREHENSIVE DATABASE EFFECTIVENESS RATINGS³⁴ ARE:

Likely effective for back pain and osteoarthritis.

Insufficient reliable evidence for rheumatoid arthritis.

RECOMMENDED DEVIL'S CLAW DOSING & ADMINISTRATION FOR CHRONIC PAIN CONDITIONS³⁵ ARE:

Back Pain: Oral

A specific devil's claw extract product (Doloteffin, Ardeypharm) 2400 mg taken in three divided doses daily for up to 1 year has been used.³⁶ Another specific devil's claw extract (WS 1531, Dr. Willmar Schwabe GmbH & Co.) 200-400 mg three times daily for 4 weeks has been used.³⁷ An additional devil's claws extract product (LI 174; Rivoltan, Krewel Meuselbach GmbH) 480 mg twice daily for 4-8 weeks has also been used.³⁸

Osteoarthritis: Oral

A specific devil's claw root extract product (Doloteffin, Ardeypharm) 2400 mg taken in three divided doses daily for 8-12 weeks has been used.³⁹ Another specific powdered devil's claw root product (Harpadol, Arkopharma) 2610 mg daily for 4 months has been used.⁴⁰ A specific combination product containing devil's claw 300 mg/capsule, turmeric 200 mg/capsule, and bromelain 150 mg/capsule (AINAT, Laboratoire de Rhumatologie Appliquee) two capsules three times daily for 2 weeks or two capsules twice daily for 2 months has been used.⁴¹

DEVIL'S CLAW INTERACTION WITH DISEASES

Cardiac Disorders, Hypertension, Hypotension

Since devil's claw can affect heart rate, contractility of the heart, and blood pressure,⁴² it might adversely affect people with cardiovascular conditions; use cautiously.

Diabetes

Devil's claw might decrease blood glucose levels⁴³ (and have additive effects with medications used for diabetes. Monitor blood glucose levels closely. Dose adjustments may be necessary.

Gallstones

Devil's claw might increase bile production and adversely affect people with gallstones;⁴³ avoid using.

GAMMA-LINOLENIC ACID

Gamma linolenic acid (GLA) is found in various plant seed oils such as borage oil and evening primrose oil and is an omega-6 fatty acid. The body can convert GLA to substances that reduce inflammation and cell growth. GLA can be converted to compounds that have anti-inflammatory properties.⁴⁴ Some research suggests that dihomogammalinolenic acid, a metabolite of GLA and precursor of prostaglandin E1, might act directly on T-cells to modulate an immune response in diseases such as rheumatoid arthritis (RA).⁴⁵ There is also some evidence that GLA might reduce interleukin-1-beta (IL-1-beta) autoinduction, which is thought to be the cause of synovitis in patients with RA.⁴⁶ People take this orally as a chronic pain treatment option for back pain.

The Gamma-linolenic Acid Natural Medicines Comprehensive Database Effectiveness Rating is insufficient reliable evidence to rate for back pain.⁴⁷

RECOMMENDED GAMMA-LINOLENIC ACID DOSING & ADMINISTRATION FOR CHRONIC PAIN CONDITIONS IS:

Back Pain: Oral

Alpha-lipoic acid 600 mg plus gamma-linolenic acid 360 mg daily for 6 weeks has been used.⁴⁸

GAMMA-LINOLENIC ACID INTERACTIONS WITH DISEASES ARE:

Bleeding Disorders

Gamma-linolenic acid has platelet-inhibiting effects.⁴⁹ There is some concern that gamma linolenic acid might prolong bleeding time and increase the risk of bruising and bleeding.

Surgery

Gamma-linolenic acid has antiplatelet effects.⁵⁰ Gamma linolenic acid might cause excessive bleeding if used perioperatively. Tell patients to discontinue gamma linolenic acid at least 2 weeks before elective surgical procedures.

GLUCOSAMINE SULFATE

Glucosamine is an amino sugar⁵¹ and is required for the synthesis of glycoproteins, glycolipids, and glycosaminoglycans (also known as mucopolysaccharides).⁵² These carbohydrate-containing compounds are found in tendons, ligaments, cartilage, synovial fluid, mucous membranes, structures in the eye, blood vessels, and heart valves. Glucosamine is also a component of biologically active compounds such as heparin, but it does not react with heparin-induced thrombocytopenia (HIT) antibodies.⁵³ It is a substrate used in the biosynthesis of the macromolecules found in articular cartilage. As a dietary supplement, glucosamine is available as glucosamine hydrochloride, glucosamine sulfate, and N-acetyl glucosamine. Some products in the U.S. that are labeled glucosamine sulfate are glucosamine hydrochloride with added sulfate.⁵⁴

In Europe, glucosamine is a registered drug approved for the treatment of osteoarthritis (OA) due to its symptomatic, slow acting effect in promoting cartilage and joint health. In the U.S. it has been designated as an over the counter dietary supplement by the U.S. Food and Drug Administration. People use this in their chronic pain management treatment plan for knee and back pain.

The Glucosamine Sulfate Natural Medicines Comprehensive Database Effectiveness Rating is:

Insufficient reliable evidence to rate for joint pain,⁵⁵ knee pain,⁵⁶ and temporomandibular disorder (TMD).⁵⁷

Recommended Glucosamine Sulfate Dosing & Administration for Chronic Pain Conditions are:

Joint Pain: Oral

A specific combination product (Instaflex Joint Support, Direct Digital, Charlotte, NC) providing glucosamine sulfate 1500 mg/day, methylsulfonylmethane 500 mg/day, white willow bark extract 250 mg/day, ginger root concentrate 50 mg/day, Indian frankincense extract 125 mg/day, turmeric root extract 50 mg/day, cayenne 40 m H.U. 50 mg/day, and hyaluronic acid 4 mg/day, taken in three divided doses daily for 8 weeks, has been used.⁵⁸

Knee Pain: Oral

Glucosamine sulfate 500 mg three times daily for 28 days has been used.⁵⁹ A specific combination product (Instaflex Joint Support, Direct Digital, Charlotte, NC) providing glucosamine sulfate 1500 mg/day, methylsulfonylmethane 500 mg/day, white willow bark extract 250 mg/day, ginger root concentrate 50 mg/day, Indian frankincense extract 125 mg/day, turmeric root extract 50 mg/day, cayenne 40 m H.U. 50 mg/day, and hyaluronic acid 4 mg/day, taken in three divided doses daily for 8 weeks, has been used.⁶⁰

GLUCOSAMINE SULFATE INTERACTIONS WITH DISEASES ARE:

Asthma

Glucosamine might exacerbate asthma by an unidentified allergic mechanism. Use cautiously in patients with asthma.⁶¹

Diabetes

Some preliminary research and case reports have raised concerns that glucosamine sulfate might increase insulin resistance or decrease insulin production, resulting in elevated blood glucose levels.⁶² However, clinical studies show that various forms of glucosamine do not have adverse effects on blood glucose or hemoglobin A1C (HbA1C) in healthy, obese, patients with type 2 diabetes or impaired glucose tolerance.⁶³

Glaucoma

There is some concern that taking glucosamine sulfate might increase intraocular pressure in patients with glaucoma.⁶⁴ Patients with severe glaucoma should avoid glucosamine sulfate. Patients with mild-to-moderate glaucoma should be monitored for changes in intraocular pressure within 3 months of starting glucosamine. If intraocular pressure increases, glucosamine may need to be discontinued.

Hyperlipidemia

There has been concern that glucosamine sulfate might cause metabolic disturbances that could result in increased cholesterol and triglyceride levels. Some preliminary research has suggested that glucosamine might increase insulin levels. Hyperinsulinemia is associated with elevated cholesterol and triglycerides.⁶⁵ Animal model research has also shown that glucosamine might exacerbate hyperlipidemia.⁶⁶ But research in humans has not shown this effect. Glucosamine does not seem to increase lipid levels in people over age 40 who take glucosamine sulfate for up to 3 years.⁶⁷

Hypertension

There has been concern that glucosamine sulfate might cause metabolic disturbances resulting in increased blood pressure.⁶⁸ Some preliminary research has suggested that glucosamine might increase insulin levels. Hyperinsulinemia is associated with elevated blood pressure.⁶⁹ But research in humans has not shown this effect. Glucosamine does not seem to increase blood pressure in people over age 45 who take glucosamine sulfate for up to 3 years.⁷⁰

Shellfish Allergy

For those who are sensitive to shellfish, there is concern that glucosamine products might cause allergic reactions as Glucosamine is derived from the exoskeletons of shrimp, lobster, and crabs. But, allergic reactions in people with shellfish allergy are caused by IgE antibodies to antigens in the meat of shellfish, not to antigens in the shell. Albeit, some evidence suggests that patients with shellfish or shrimp allergy can safely take glucosamine products⁷¹ although a possible allergic reaction was reported in a clinical trial.⁷²

Surgery

Glucosamine sulfate might affect blood glucose levels. Theoretically, glucosamine sulfate might interfere with blood glucose control during and after surgical procedures. Tell patients to discontinue glucosamine sulfate at least 2 weeks before elective surgical procedures.

CONCLUSION

Natural medicine is difficult; however, we see more of our patients wanting to try the natural route first versus prescription drugs. Due to the lack of trials and studies, we, as doctors, have to spend more time educating ourselves on what are the latest evidence-based results for the natural management of chronic pain. With more and more of our patients demanding natural based chronic pain management as their first option to control their pain and the explosion of the opioid epidemic, family physicians are at the forefront of educating patients on their options before turning to prescription pain medicine. As family physicians, we need to constantly educate ourselves on the most recent evidence-based studies and trials as it relates to natural pain management options so we can provide the highest quality and most effective treatment plan for our patients.

TABLE 1:

Definitions of Evidence-based Safety Ratings by the Natural Medicines Comprehensive Database:¹

	TO ACHIEVE THIS EFFECTIVENESS RATING A PRODUCT IS SUPPORTED BY ALL OF THE FOLLOWING:
EFFECTIVE	<ul style="list-style-type: none"> • Evidence consistent with or equivalent to passing a review by the Food and Drug Administration (FDA), Health Canada, or similarly rigorous approval process. • Evidence from multiple (2+) randomized clinical trials or meta-analysis including several hundred to several thousand patients (level of evidence = A). • Studies have a low risk of bias and high level of validity by meeting stringent assessment criteria (quality rating = A). • Evidence consistently shows POSITIVE outcomes for a given indication without valid evidence to the contrary.
LIKELY EFFECTIVE	<ul style="list-style-type: none"> • Evidence from multiple (2+) randomized clinical trials or meta-analysis including several hundred patients (level of evidence = A). • Studies have a low risk of bias and high level of validity by meeting stringent assessment criteria (quality rating = A). • Evidence consistently shows POSITIVE outcomes for a given indication without significant valid evidence to the contrary.
POSSIBLY EFFECTIVE	<ul style="list-style-type: none"> • One or more randomized clinical trials or meta-analysis (level of evidence = A or B) or two or more population based or epidemiological studies (level of evidence = B). • Studies have a low to moderate risk of bias and moderate to high level of validity by meeting or partially meeting assessment criteria (quality rating A or B). • Evidence shows POSITIVE outcomes for a given indication without substantial valid evidence to the contrary. Some contrary evidence may exist; however, valid positive evidence outweighs contrary evidence.
POSSIBLY INEFFECTIVE	<ul style="list-style-type: none"> • One or more randomized clinical trials or meta-analysis (level of evidence = A or B) or two or more population based or epidemiological studies (level of evidence = B). • Studies have a low to moderate risk of bias and moderate to high level of validity by meeting or partially meeting assessment criteria (quality rating A or B). • Evidence shows NEGATIVE outcomes for a given indication without substantial valid evidence to the contrary. Some contrary evidence may exist; however, valid positive evidence outweighs contrary evidence.
LIKELY INEFFECTIVE	<ul style="list-style-type: none"> • Evidence from multiple (2+) randomized clinical trials or meta-analysis including several hundred patients (level of evidence = A). • Studies have a low risk of bias and high level of validity by meeting stringent assessment criteria (quality rating = A). • Evidence consistently shows NEGATIVE outcomes for a given indication without significant valid evidence to the contrary.
INEFFECTIVE	<ul style="list-style-type: none"> • Evidence from multiple (2+) randomized clinical trials or meta-analysis including several hundred to several thousand patients (level of evidence = A). • Studies have a low risk of bias and high level of validity by meeting stringent assessment criteria (quality rating = A). • Evidence consistently shows NEGATIVE outcomes for a given indication without valid evidence to the contrary.
INSUFFICIENT EVIDENCE	There is not enough reliable scientific evidence to provide an Effectiveness Rating.

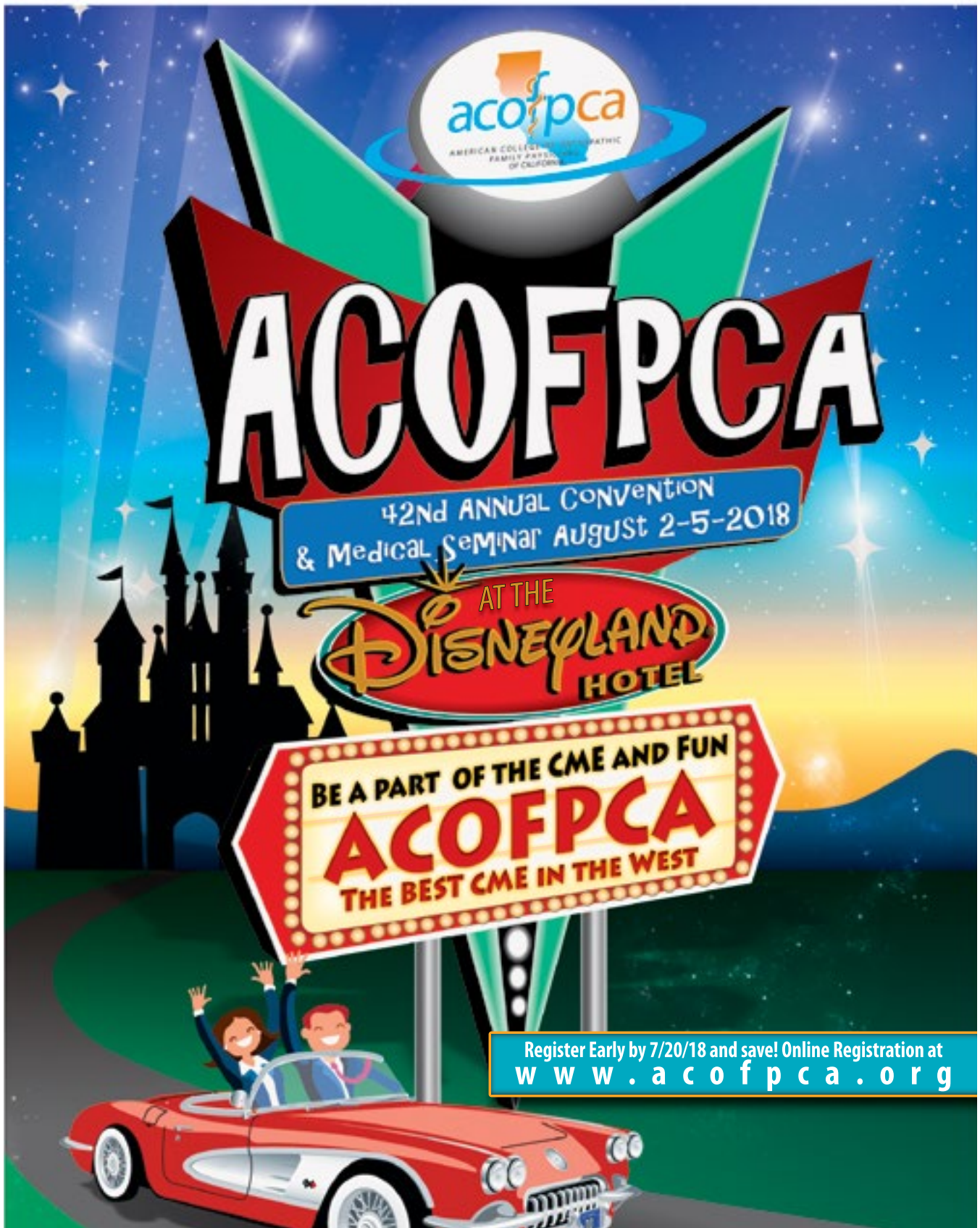
AUTHOR DISCLOSURES:

No relevant financial affiliations

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This program anticipates being approved for 32 hours of AOA Category 1-A CME credits. Application for 32 CME credits has been filed with the American Academy of Family Physicians. Determination of credit is pending.

Painful Bubbles

Craig Bober, DO & Amy Schultz, DO

Lankenau Hospital Family Medicine Residency

A 25 year-old female with a past medical history of well controlled eczema presented to her primary care physician with a one week history of a painful “bubbles” localized to her right antecubital fossa as seen in Figure 1. She noted that the new rash appeared to form overnight, was extremely painful, and would occasionally drain a clear liquid after scratching. It did not respond to her usual over-the-counter regimen of moisturizers prompting her to be evaluated. She had subjective fevers and malaise but denied oral or genital ulcers, vaginal discharge, dysuria, ocular irritation, visual disturbances, and upper respiratory or gastrointestinal symptoms. Review of systems was otherwise unremarkable.

She had no other known medical problems, allergies, and denied drug and alcohol use. She denied any recent travel, sick contacts, pets, or OTC medications/creams. She was sexually active in a monogamous relationship for over a year.

QUESTIONS

1. What is the most likely diagnosis?

- A. Cellulitis
- B. Eczema herpeticum
- C. Impetigo
- D. Primary varicella infection

2. Which test should be performed initially?

- A. Blood culture
- B. Direct fluorescent antibody staining
- C. Tzanck smear
- D. Wound culture

3. What is the best treatment?

- A. Acyclovir
- B. Augmentin
- C. Doxycycline
- D. Varicella Zoster Immune Globulin

FIGURE 1:



CORRESPONDENCE:

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ANSWERS

1. What is the most likely diagnosis?

Correct answer: B) Eczema herpeticum

Eczema herpeticum is characterized by painful symmetric clear to yellow colored vesicles in areas previously affected by atopic dermatitis or eczema with a superimposed infection with HSV1 or HSV2. The rash appears as fluid-filled blisters that are pruritic and painful typically affecting the face or neck. The blisters are usually monomorphic, meaning that they appear similar to one another and are not in various stages of healing which is classically seen with Varicella zoster. Newly formed blisters may exhibit central umbilication, which could be mistaken for molluscum contagiosum. The fluid within the blisters can be thin yellow fluid or thick and purulent which can leak or weep from the site. The blisters can bleed at times as well.¹

The differential diagnosis of eczema herpeticum includes impetigo, bacterial superinfection, and primary varicella infection (chickenpox).² Chickenpox or primary varicella infection is an infection with Varicella zoster virus typically occurring in children. The incidence has been effectively decreased 79% overall with the Varicella zoster vaccination and active surveillance.³ A history of non-adherence to vaccination schedules along with vesicles in various stages of healing would help differentiate chickenpox from eczema herpeticum which is characterized by vesicles all of the same stage.⁴ Impetigo is a bacterial infection of the soft tissue caused by Staphylococcus or Streptococcus species. Impetigo's appearance is classically described as vesicles with honey-colored crusting near the nose, mouth or on the extremities. This is primarily a clinical diagnosis.⁵ Cellulitis is a bacterial infection of the subcutaneous and dermal layers of the skin most commonly caused by Staphylococcus or Streptococcus species. Physical exam will reveal a warm, indurated, homogenous erythematous plaque or patch at the area of infection.⁵

2. What test should be performed initially?

Correct answer: C) Tzanck smear

Confirmation of this diagnosis can be made with one of four ways: viral DNA on PCR, viral culture, presence of HSV-infected cells from blister fluid with immunofluorescence (DFA) or through a Tzanck smear.² Clinically the first test to be performed is a Tzanck smear which can be helpful when combined with history and physical examination. Tzanck smear has a sensitivity greater than 80% and specificity of 90% that is dependent on the experience of the evaluator.⁶ This test is performed by unroofing the vesicular lesions and scraping the base with a scalpel. The skin obtained from the base is then placed onto a slide for evaluation with light microscopy for the presence of multinucleated giant cells which indicates infection with HSV or VZV.² Direct fluorescent antibody (DFA) staining and PCR confirm the diagnosis after initial clinical testing.⁷ DFA staining has a sensitivity as high as 90% for HSV which is primarily dependent upon proper sampling technique and PCR has a sensitivity of 93% with specificity of 100%.^{8,9} DFA staining is resulted within hours while PCR takes at least 48 hours to result lending some benefit to DFA in comparison to PCR if rapid definitive diagnosis is needed.⁷

Blood cultures can be obtained for concern of systemic symptoms with a bacterial soft tissue infection especially in patient that are immunocompromised or of advanced age but would not be helpful in this case.⁴ Wound cultures are also indicated in bacterial soft tissue infections when patients have a history significant for an immunocompromised status, large and recurrent abscesses or bites from humans or animals but would not be helpful in this case unless specific requests for viral culture are made.⁴

3. What is the best treatment?

Correct answer: A) Acyclovir

Treatment of eczema herpeticum is an antiviral agent such as oral acyclovir as the underlying cause is HSV type 1 or type 2. Acyclovir is a guanosine analog and becomes incorporated into the viral DNA and ceases viral replication.¹⁰ In neonates or extensive systemic cases, intravenous acyclovir is required.¹¹ Intramuscular Varicella Immune Globulin is prophylactic against chickenpox, VZV, and is reserved for use in neonates exposed in utero and immunocompromised children according to the CDC.¹² Augmentin is used in treatment of impetigo.⁴ Doxycycline is used in treatment of soft tissue infection concerning for MRSA involvement.⁴

DISCUSSION

Eczema herpeticum (EH), also known as Kaposi's varicelliform, occurs when the compromised dermal barrier from atopic dermatitis becomes infected with a primary or reactivation infection with HSV-1 or HSV-2.² HSV-1 is widely prevalent in the general population with 20% of children and 60% of adults testing seropositive. Despite the ubiquity of HSV-1, only 3% of patients with eczema will develop eczema herpeticum.¹³ The patients will present with widespread monomorphic vesicular lesions typically affecting the head, neck and trunk with systemic symptoms of fever, malaise and lymphadenopathy.² Lesions can be expected to dry and become eroded or "punched out" pits at about two weeks after vesicular eruption. The dried lesions can tense the overlying skin and crack during this time. Healing and full resolution can take up to six weeks.

Eczema, also known as atopic dermatitis, affects 15-20% of the population in developed countries such as the United States.¹⁴ This chronic skin disorder can occur in a triad with two other disorders: asthma and allergic rhinitis which when combined constitutes the "atopic triad."¹¹ Atopic dermatitis (AD) severely affects the epidermal layer and its protective capabilities due to the breakdown of the skin barrier with atopic dermatitis, the skin is more susceptible to infection with bacteria (typically *Staphylococcus aureus*) as well as viruses (Herpes simplex), more rarely.

Diagnosis is typically clinical although can be supported with a Tzanck smear showing multinucleated giant cells from ulcer base sampling in the clinical setting. This test is supportive and not confirmatory in that it is neither sensitive nor specific for HSV. Confirmation can be made with the use of direct immunofluorescent antibody testing, commercial immunofluorescent tests, viral DNA PCR or viral culture.² Blood cultures are useful when concern of bacterial soft tissue infection from skin breakdown is suspected, especially in patient that are immunocompromised.⁵ Wound cultures could be obtained although a specific request for viral culture must be made when sending the sample to the lab.⁵

Treatment is managed with an oral antiviral (acyclovir) to decrease disease severity and reduce the chance for viremia and other systemic complications.² Dosing is 400 milligrams three times a day for 7 to 10 days. In cases indicated by high fevers, inability to maintain adequate nutrition and hydration or superimposed bacterial infection, the patient should be hospitalized and acyclovir administered via intravenous route for 7 days at a dose of 5-10mg/kg per dose at a frequency of three times daily in order to effectively treat these severe systemic cases. For patients less than 12 years old the dose is reduced to 750 mg/m² per dose although the frequency and total treatment days remain the same at three times daily and 7 days, respectively.² Pre-administration baseline creatinine levels should be drawn before the use of oral acyclovir to monitor for nephrotoxic complication. Before the administration of antiviral medication was widely accepted the mortality rate was 75%.² Appropriate measures to moisturize the vesicles should be made to avoid dry skin and subsequent cracking leading to a greater likelihood of bacterial infection.²

Complications include herpetic keratitis, meningitis and encephalitis making the need for ophthalmic evaluation essential, especially patients complaining of visual blurring, pain and discharge.² Careful monitoring of the patient must be performed for symptoms

concerning for central HSV infection such as headache or confusion. If left untreated, infection can become disseminated or develop a secondary bacterial infection which leads to death.¹¹

In this case, confirmation of HSV-1 was made via viral polymerase chain reaction. The patient was treated with a course of acyclovir for seven days and the rash resolved within a week. Upon further questioning her baseline eczema had been worsened by her recent increase in water exposure after joining the local aquatic center, likely predisposing her to infection. The patient now is more vigilant and more consistently uses moisturizer to avoid future eczema exacerbations.

AUTHOR DISCLOSURES:

No relevant financial affiliations.

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CLINICAL IMAGES

Two Cases of Progressive Erythematous Lesions of the Upper Extremity

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CASE #1

A generally healthy 39-year-old male presented to his local emergency department with a progressively enlarging area of erythema on his left upper extremity for three days. The patient worked at a water treatment plant and was reaching to grab something while working in a water tower when he saw a "brown spider with thin legs" bite him on the left arm. He stated he immediately knocked the spider away and was not able to find it for identification. The patient admitted to some chills, but no fevers, nausea, vomiting, or diarrhea. The remainder of the review of systems was negative. The patient had no prior medical history and took no medications.

Physical exam revealed a localized area of erythematous tissue at the site of the bite on the left forearm, with central necrosis and a well-demarcated border. The size of the lesion was approximately 3.5 x 3.5 cm (Figure 1).

He was treated with IV ampicillin/sulbactam and underwent a surgical debridement of the area. He required a skin graft at the site and subsequently did well in follow up.

CASE #2

A 44-year-old male truck driver presented to the emergency department with a skin lesion on his arm for four days. He notes the lesion appeared after waking from sleep. The lesion progressively got larger over the past three days. The patient stated he drives and delivers freight to the entire east coast of the United States and sleeps in his truck frequently. The lesion described in this case is similar to the case above.

The patient denied any fevers, chills, nausea, vomiting. He denied any significant past medical history. He took no chronic medications. The remainder of his review of systems was negative.

On physical exam, the lesion was approximately 1.5 x 1.5 cm (Figures 2 and 3).

He was advised by the emergency department physician that he should have intravenous antibiotic therapy, but due to his employment, he stated could not stay for IV antibiotics or admission. He, therefore, was started on oral doxycycline (>95% bioequivalency to IV formulation of doxycycline) and discharged to have a follow-up in 24 hours. The patient was advised to go to the nearest emergency department on his travels at any time for any worsening, progression, fevers, etc.

QUESTION

1. Given the presentations and physical examinations in Cases 1 & 2, which of the following is the most likely the diagnosis?
 - A. Methicillin-resistant Staphylococcus Aureus (MRSA)
 - B. Brown recluse spider bite
 - C. Cutaneous anthrax
 - D. Black widow spider bite

CORRESPONDENCE:

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FIGURE 1:



FIGURE 2:



FIGURE 3:



ANSWER

Given the presentations and physical examinations above, which of the following is the most likely diagnosis?

Correct answer: B) Brown Recluse Spider Bite.

This diagnosis is based on patient history and careful physical examination. Attention must be paid to rule out lesions that may present similarly. MRSA lesions are more commonly associated with localized abscess formation and possible surrounding cellulitis. Cutaneous anthrax may very easily be confused with brown recluse spider bites, as they may form localized necrotic, ulcerated lesions. However, these are usually not painful. Black widow spider bites usually cause systemic symptoms within 15 minutes, which often will require immediate hospital monitoring and supportive care.

DISCUSSION

While historically known to be in the Southern and Midwestern United States, Brown Recluse spiders (*Loxosceles reclusa*) have relatives in the Americas, Africa, as well as the Middle East. They may commonly be found hiding in dark environments, such as under rocks or in caves. Typically, they prefer these environments and pose little threat to humans unless threatened or found to be within direct contact with human skin. They can also rarely be found in homes especially in dark closets, basements, under furniture, or any hidden area with little light exposure. While human bites are uncommon, they are typically found on the abdomen, arms, and neck regions of the body.¹

The initial cutaneous presentation of the bite typically depicts a painless lesion with a stinging sensation. Within six to eight hours of the bite, vasospasm causes localized ischemia, causing the lesion to become painful and pruritic, often causing the patient to sense a localized hive-like reaction. Also, there is likely to be central induration surrounded by a pale zone of ischemia and an exterior zone of erythema.

In severe cases, the erythematous region may spread with the development of central necrotic tissue. An overlying eschar forms, which eventually sloughs off after several weeks. Scars may follow the more severe lesions. Other systemic symptoms are possible, but not the focus of this discussion.

Most patients do well with recommended conservative intervention. A limited number of patients may experience delayed healing with longstanding lesions taking up to several months to resolve.²

CONCLUSION

In the majority of patients, the Brown Recluse spider bite lesion may clear spontaneously in several days without treatment. Supportive care must be provided, and includes rest, application of ice or cool compresses, compression of the lesion, and elevation of the region of the body affected, if possible. Dapsone (diaminodiphenyl sulfone), an antibiotic and anti-inflammatory agent, may be helpful in preventing severe necrosis. However, the use of dapsone is usually reserved due to the risk of myelosuppression and bone marrow failure.¹ Debridement and local skin grafting may be necessary following cessation of the acute-inflammatory reaction, but if done hastily, may be harmful. Anti-venom is not used in brown recluse bites, as these bites are more often a localized reaction as mentioned in the presentation of the two patients above.¹

Primary care physicians should take a careful history of potential exposure to the Brown Recluse Spider when patients present with isolated cutaneous lesions similar to the ones described above. Prompt recognition and surgical debridement and repair can help prevent morbidity. Primary care physicians can also educate patients that might have exposure to spiders on measures to prevent being bitten such as wearing appropriate clothing to cover skin areas when working or recreating in areas that are common spider habitats.

AUTHOR DISCLOSURES:

No relevant financial affiliations.

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www.mainedo.org

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ECZEMA

Keisha Sullivan, DO, MS, Sana Haq, DO, MS, & Tina Joyce, DO, FACOFP

Ronald Januchowski, DO, FACOFP, Editor



Eczema or atopic dermatitis is a skin condition that causes the skin to become dry, flaky, and itchy. It occurs in individuals of every gender, race, and age. The cause is unknown but it has been found to be more severe in individuals with environmental or food allergies. Symptoms include itchy, red, and dry patches of skin that are usually located in different places in different age groups. Babies usually get eczema on the front of their legs and arms, scalp, or cheeks. Adults tend to get the patches in the creases of their elbows, knees, and necks. It can also be found on the face, forearms, wrists, and hands. If you notice areas on your body as listed above, please follow up with your family physician to be evaluated and treated. Eczema is not a medical emergency but worsening symptoms can cause skin thickening and darkening that could be difficult to treat once advanced.

PREVENTIVE MEASURES TO AVOID FLARES INCLUDE:

- Keep skin soft and moisturized, especially after washing
- Avoid hot showers and baths
- Avoid harsh soaps, scented lotions, and perfumes
- Avoid wearing clothing with wool or synthetic fabrics
- Avoid exposure to dry heat or air, which can dry out the skin
- Avoid places with extreme temperature changes
- Try to avoid scratching affected skin areas because symptoms can worsen

MEDICAL CARE & TREATMENT OPTIONS:

Diagnosis is based on symptoms and physical exam. There is no perfect test that confirms eczema. Eczema has no cure and treatments are used to relieve symptoms. Treatments include creams and ointments that moisturize the skin. Medications such as steroids can reduce redness and inflammation while antihistamines can help to relieve itching. Light therapy can reduce symptoms in severe cases not fully treated with creams. Certain foods can act as triggers in some individuals including milk, soy, eggs, nuts and processed foods. Discuss with your physician whether avoidance of these foods might be beneficial to you.

SOURCE(S): American Academy of Dermatology, American Academy of Allergy, Asthma, and Immunology

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PAIN MANAGEMENT: Ways to Manage Your Pain Without Opioids

Kerry Pearson, DO

Ronald Januchowski, DO, FACOFP, Editor



Pain is one of the leading reasons for primary care visits in the U.S. Opioids are a type of pain medication used for acute and chronic pain; side effects can include nausea, vomiting, constipation, physical dependence, addiction, and respiratory depression. Due to these side effects and recent increases in deaths from opioids, non-opioid medications for pain relief have become an essential part of both acute and chronic pain management. Different types of pain can be successfully treated based on the cause, so check with your doctor to determine the best treatment modality for you.

SOURCE(S): *Centers for Disease Control and Prevention, National Center for Biotechnology Information, Ohio Opioid Prescribing Guidelines*

NON-PHARMACOLOGIC TREATMENT OPTIONS TO HELP TREAT PAIN:

- Rest, ice, heat, compression, bracing, wraps, splints, stretching
- Osteopathic manipulative medicine, physical therapy
- Massage therapy, acupuncture, chiropractic adjustments, regular exercise

PHARMACOLOGIC TREATMENT OPTIONS TO HELP TREAT PAIN:

- Acetaminophen (Tylenol®)
- Non-steroidal anti-inflammatory drugs (NSAIDs; Over-the-counter and prescription)
- Oral corticosteroids
- Topical non-steroidal anti-inflammatory creams and gels
- Low concentration topical capsaicin
- Topical lidocaine
- Muscle relaxants
- Corticosteroid injections
- Antidepressants such as selective serotonin reuptake inhibitors (SSRIs), serotonin and norepinephrine reuptake inhibitors (SNRIs), tricyclic antidepressants (TCAs), and bupropion
- Gabapentin or pregabalin

NEWER TREATMENT OPTIONS THAT MAY NOT BE READILY AVAILABLE:

- Spinal cord stimulation
- Stem cell injections
- Platelet Rich Plasma Injections (PRP)
- Medical marijuana
- Ketamine Infusion Therapy

PREVENTIVE MEASURES:

If you develop side effects from any of the above-mentioned medications, contact your doctor right away, or go to the nearest emergency room. All medications can have side effects and it is important you speak with your doctor and pharmacist to determine the best treatment plan for you.

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SPIDER BITES: SYMPTOMS & TREATMENT OPTIONS

April L. Barnum, DO

Ronald Januchowski, DO, FACOFP, Editor • Paula Gregory, DO, MBA, CHCQM, FAIHQ, Health Literacy Editor



There are around 100,000 species of spiders worldwide. Spiders can be found in garages, basements, attics, cabinets, sheds, gardens, woodpiles, in garbage, under tree bark, and inside of homes. Spiders have four pairs of legs and fangs at the ends of their mouths to bite prey and inject venom. Spider bites are relatively rare. However, spiders may bite when they feel threatened, such as when they are wedged between a part of the human body and an object. Most spider bites are harmless, as spider venom is not thought to be toxic to humans. Generally, a spider will not bite multiple members of the same household. Some spider bites are painful, while other bites are painless. A spider bite will usually resolve on its own within 7-10 days. The skin site should be watched, as spider bites can get infected.

COMMON SYMPTOMS OF A SPIDER BITE:

- Raised, red bump(s)
- Mild, moderate, or severe pain
- Pain a few hours after the bite

RARE SYMPTOMS OF A SPIDER BITE:

- Flu-like symptoms, including fevers, sweating, nausea, and vomiting
- Swelling
- Seizures
- Shock
- Increases in blood pressure
- Muscle aches
- Vision changes
- Chest pain
- Life-threatening allergic reaction
- Excessive saliva
- Kidney failure
- Belly pain
- Abnormal heart rate or rhythm
- Muscle contractions
- Skin tissue death
- Death is possible

HOME TREATMENT OF A SPIDER BITE:

- Wash the skin with soap and water.
- Apply an ice pack to the bite for 15 minutes at a time. Wrap the ice pack in a towel to protect the skin.
- Keep the bitten area raised above the level of the heart, if possible.
- Take over-the-counter anti-inflammatory medication, such as Ibuprofen.
- Collect the spider if possible or try to remember what the spider looked like, so that the type of spider can be determined.

WHEN TO SEE A DOCTOR FOR A SPIDER BITE:

- Tetanus shot, particularly if last tetanus shot was more than 5 years ago
- Antibiotics if there are signs of infection, including but not limited to: fevers, redness, swelling, pain, and pus
- Prescription medications to treat pain, inflammation, nausea, vomiting, muscle spasms, and muscle contractions. In rare cases, epinephrine may be given for a life-threatening allergic reaction.
- Anti-venom to treat severe symptoms (such as muscle pain and spasms). Need for anti-venom is based on symptoms
- Hospitalization for pain control if pain is severe and surgery to remove any dead skin tissue

SOURCE(S): Auerbach, Paul S. *Wilderness Medicine, Sixth Edition. Maryland Heights: Mosby, 2011. Print; Forgey, William W., M.D. Wilderness Medical Society Practice Guidelines for Wilderness Emergency Care, 5th Edition. Guilford: Rowman & Littlefield, 2006. Print; McManners, Hugh. The Complete Wilderness Training Book. New York: DK Publishing, Inc., 1998. Print; and UpToDate.com.*

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