



# the JOURNAL

of the Pennsylvania Osteopathic Medical Association

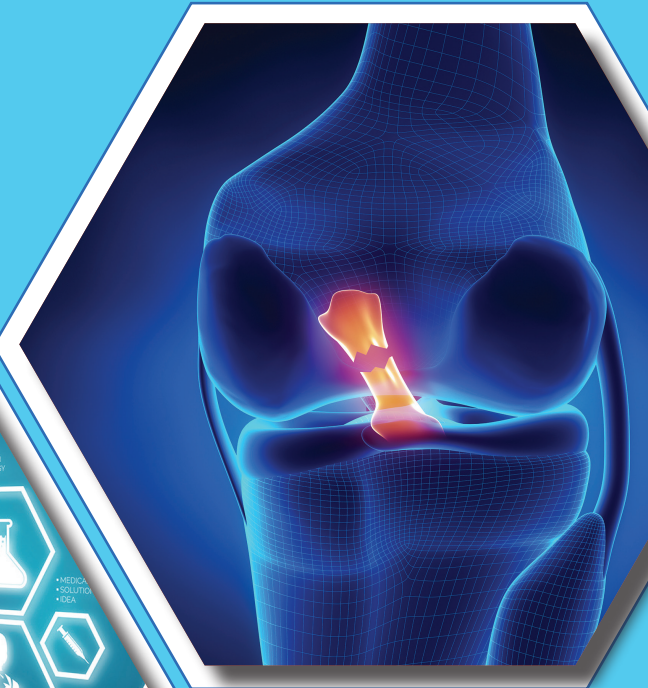
June 2018

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## Summer CME Conference

August 13-16, 2018



### Conference Information

LECOM Summer Primary Care 2018 in Sarasota, Florida offers a unique learning experience for physicians and health care professionals seeking the opportunity to learn the latest information on medical advancements and treatment options.

Topics for this year cover cardiovascular issues, pediatrics, pain management with and without medication, OMM demonstrations, legal matters and so much more!

LECOM clinical faculty will present topics from the perspective of a primary care physician.

### Registration Information

**Standard Registration: \$1,550**

**Adjunct Faculty Registration: \$1,300**

**Commuter Registration: \$450**

Standard and Adjunct Faculty Registration includes CME fee, four (4) nights lodging at the Ritz Carlton, Sarasota, Florida and breakfast Monday through Thursday. Commuter Registration includes CME fee and breakfast. It does not include a hotel stay.

### CME Credits

LECOM anticipates AOA and AAFP approval for 20 Category 1-A Credits. All lectures will be held between 8 a.m. and 1 p.m. allowing time for afternoon activities around Sarasota.

### How To Register

To reserve your spot for the LECOM Summer CME Conference in Sarasota, Florida, go to [lecom.edu/cme](http://lecom.edu/cme) to register. Adjunct faculty can receive a discount by emailing or calling the CME conference office.

### Contact Us

📍 1858 West Grandview Blvd., Erie, PA 16509

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THE

# Journal OF THE PENNSYLVANIA OSTEOPATHIC MEDICAL ASSOCIATION

June 2018 / Vol. 62, No. 2

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# FROM THE EDITOR'S DESK

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*Mark B. Abraham, DO, J.D.*



*Mark B. Abraham, DO, J.D.  
Editor-in-Chief*

I hope everyone has had a nice spring and summer so far. For those who did attend the convention, I am sure you enjoyed yourselves. The opening, keynote address by The Honorable Josh Shapiro, Attorney General of the Commonwealth of Pennsylvania, was not only well attended but clearly elicited many concerns, which we as physicians have as we move forward in an age of narcotic addiction. That theme continued with other lectures throughout the convention. Questions and comments from the audience for Attorney General Shapiro were clearly thought provoking.

I also had the opportunity to present the awards to our First and Second Place Winners of the Golden Quill contest. In this edition of the Journal, which highlights research, you will all have a chance to read these articles. Our winner, James Nemunaitis, DO, wrote "The Numerical Lachman's Grading Scale and its Relation to Partial Tears of the Anteromedial and the Posterolateral Bundle of the Anterior Cruciate Ligament in the Cadaveric Model" is not only interesting for orthopedic surgeons and sports medicine physicians but also pertains to any of us who need to address orthopedic issues/injuries such as primary care, urgent care, emergency medicine, rheumatology or occupational medicine.

"Prevalence of Acute Hepatitis C Virus in the Drug and Alcohol Detoxification, Psychiatric, and General Medical Units of a Rural Hospital in Pennsylvania" by Jennifer Fretwell, DO, discusses a significant medical concern in Pennsylvania. Given the recent discussions nationally, in Pennsylvania, and highlighted many times by POMA at the convention, in the Journal and through CME opportunities, her paper is extremely relevant.

In this year's submissions, we also looked for a connection to Pennsylvania and pieces that appealed to a broader spectrum of the membership. I think both met that. Many of you may not be aware, but the Lachman maneuver was researched and written by residents from a Pennsylvania university.

Our next issue of the Journal will pertain to those individuals whom you feel have made significant contributions to medicine and healthcare. This does not mean it must be a professor, researcher, practitioner or other person making a direct impact upon medicine. It may be someone such as a colleague or student who has achieved something in another field of interest which you feel is worth bringing to the attention of the membership. Perhaps a colleague is an accomplished musician who performs regularly in the community, or a comedian who entertains everyone from patients to colleagues to friends and general audiences. These are just some examples.

Most importantly, without your input and submissions, the issue will not be the success it can be. This is your chance to write an article about someone whom you feel is worthy of highlighting. Please remember, do not just submit the names. Write the article about the person.

I would like to thank George D. Vermeire, DO, for his service and leadership this past year as POMA President and congratulate Joan M. Grzybowski, DO, as she begins her term as President. I also congratulate and thank Diana M. Ewert, MPA, CAE, for her leadership as Executive Director in this, her first year.

Lastly, I personally want to congratulate Brenda Dill and her husband Josh on the birth of their son Christian Joshua Dill. Brenda is our Director of Education and Communications. Most importantly, without her help over the past two years, my role as Editor would be even more difficult. In addition to her hard work, she is my sounding board which many times also means listening to me vent. Thank you, Brenda, for everything. We all wish you and your family all the best.

I hope you all have a great remainder of the summer. I eagerly look forward to your submissions.

Collegially,  
*Mark B. Abraham, DO, JD*

# Joan M. Grzybowski, DO, Installed as 107th President of the POMA



*Dr. Joan M. Grzybowski  
POMA's 107th president*

Joan M. Grzybowski, DO, was installed as POMA's 2018-2019 president during the Annual State Banquet, held May 4, 2018, at the Radisson Valley Forge and Valley Forge Event Center in King of Prussia, Pennsylvania.

Joan M. Grzybowski, DO, FCOFP, has been a member of the association for over 30 years. A member of the Board of Trustees and the Executive Committee, she serves as a member of the Committee on Professional Guidance and a delegate to the POMA. She has served as chair of all the departments of the association.

Dr. Grzybowski is a board certified family physician at Roxborough Health Care Center in Philadelphia, Pennsylvania. She is also a physician and assistant professor of family medicine at the Philadelphia College of Osteopathic Medicine (PCOM).

A graduate of King's College in Wilkes-Barre and Penn State College of Medicine in Hershey, Dr. Grzybowski received her DO degree from PCOM. She completed a rotating internship and family practice residency at PCOM's Graduate Hospital.

A fellow of the American College of Osteopathic Family Physicians (ACOFP), Dr. Grzybowski is a past president of the Pennsylvania Osteopathic Family Physicians Society (POFPS). A member of the board of directors of the POMA Foundation and secretary-elect of the American Osteopathic Board of Family Physicians, she serves as a delegate to the ACOFP and the American Osteopathic Association.

Dr. Grzybowski has received several awards throughout her career, including the POFPS Frederick J. Solomon, DO Award of Merit in 1994, the POFPS Raymond J. Saloom, DO, Memorial Award in 2008, and PCOM's Diversity Award in 2016.

A transcript of Dr. Grzybowski's presidential speech follows:

Good evening friends, colleagues and all special guests that have traveled far to make our POMA Conference a successful gathering of medical dialogue and fellowship.

The Philadelphia Eagles had a great year. We all sat on the edge of our seats and cheered the Eagles on to win the Super Bowl. And guess where they flew the Quarterback the next day...to Disney World. It has become a tradition to host the Super Bowl quarterback in a huge parade the next day. If POMA was a football team, George Vermeire would be going to the Super Bowl for the exceptional job he did quarterbacking the POMA team.

This team includes his predecessor, Tony DiMarco, who has always been insightful and a voice to respect. Pam Goldman is the new president-elect. Her business savvy and dedication to the education of our residents will help grow our future physicians, and those yet to come. Our own POMA staff led by Diana Ewert, our new CEO, has done an outstanding job keeping POMA on track and growing—much thanks to you all.

I personally have never spent much time at Disney, but I am fascinated by its creator, Walt Disney. He was an average person that

became a legend and owned one of the largest profitable companies in America. How did he do it? How did he become such a successful leader? When asked, he said, I dream a dream of something better for ourselves and for others. Then I would make sure my dreams were consistent with my belief. If it fit that criteria he would go for it. He would take risks and bet on himself to win. He would focus his time, talent, energy and resources to make his dreams a reality. He inspired people to be creative and opened other people's mind to possibilities. He constantly encouraged his employees.

There is a story where Walt Disney was looking out a window from his office and noticed a producer lambasting a gardener for leaving his shovel in the producers parking space. Walt rushed down a few flights of steps to the scene and gave the producer some personal face-time. He told him not to ever treat any of his employees in that manner. He said, that gardener has been with me much longer than you, so you better be good to him. To his employees he was not only a leader, he was their servant and their defender. I hope I can emulate some of the qualities Walt displayed

*(continued on page 19)*

# LECOM DEAN'S CORNER

## Lake Erie College of Osteopathic Medicine



*Silvia M. Ferretti, DO  
LECOM Provost,  
Vice President and  
Dean of Academic Affairs*

*"The process of scientific discovery is, in effect, a continual flight from wonder."*

*— Albert Einstein*

As the whole of the Lake Erie College of Osteopathic Medicine (LECOM) strides boldly forward from its triumphant quarter century, the time-honored and respected traditions stand reinvigorated with a vision to discover, to research, to investigate, and to see the possible.

For more than 25 years, LECOM has been, and continues to be, a luminous incandescence in the educational realm; it is a destination for all who wish to practice in the arena of whole-body health, and for those who seek to train at the highest levels of the medical arts and sciences. LECOM welcomes those who embrace the noblest and purest objectives of the osteopathic medical calling. At the very heart of that mission, and seminal to the unparalleled education and training offered by LECOM, are the expert members of the faculty whose profoundly honed knowledge, estimable work product, and tireless quest for understanding propels knowledge-hungry scholars to probe the depths of human comprehension. Serving as the driving force in the advancement of scientific discoveries that become groundbreaking therapies, the research faculty at LECOM conduct medical studies that will shape and define the future of health and wellness.

With these scholarly undertakings and trailblazing leaders in mind, LECOM has enhanced and supported serious and sagacious research within its considerable nexus of health care.

The LECOM Office of Research, led by the Assistant Dean of Research and Scholarship, and Directors of COM Research at Erie and Bradenton, work with the administration and faculty to provide support and resources to facilitate success in scholarly activities. The Office of Research also works with the Office of Institutional Planning, Assessment, Accreditation, and Research to provide support in competing for, and managing, extramural grant funds.

In January of 2017, LECOM opened its newly renovated facility in the capacious locale that houses the School of Dental Medicine Offices. The comprehensive ten-million dollar, two-

floor, 26,000-square-foot LECOM West Research Facility includes a 3,000-square-foot animal-care facility and it offers an unfettered domicile for conducting interprofessional research.

Completely redesigned, refitted, and comprehensively renovated to advance basic science and clinical research, the new LECOM West Research Facility provides usable space three-times that of the former LECOM research lab. Located next to the main campus in Erie, the Facility was furnished with laboratory-grade work benches, shelving, and cabinets, and it includes cell culture facilities, microbiology facilities, chemical fume hoods, dark rooms for microscopy and film development, a chemical storage room, student desks, faculty offices, and a conference room with polycom technology. Faculty and student researchers have access to equipment for molecular, biochemical, chemical, microbiological, and morphological research, including biosafety cabinets and a laminar flow hood, incubators, automated cell counter, shaker incubators, microplate readers, HPLC with an electrochemical detector, clinical and microcentrifuges, microscopes, paraffin and freezing microtomes, microbalances, thermocyclers, UV-Vis spectrophotometers, X-ray film developer, nucleic acid and protein gel electrophoresis equipment, cold storage, refrigerators and freezers, autoclave, and an ultra pure water system. The laboratories are equipped for safety with eye-wash stations, a centrally located shower, sinks, and labeled biohazard containers. LECOM faculty members from all campuses may utilize this facility.

Attendant to this august offering comes vital research, including studies in neuromuscular osteopathic endeavors. Certain LECOM researchers, who for years have championed discovery, are undertaking profoundly purposed projects. Dr. Randy Kulesza, Professor of Anatomy, explores autism as his team partners with the Gertrude Barber Center. Dr. Bertalan Dudas, Assistant Dean of Research and Scholarship, continues his probative and highly revelational explorations of the brain. Under his auspices, projects focus upon understanding the regulation and interactions of the human brain. Dr. Justine Schober probes the urology

*(continued on page 20)*

# PCOM DEAN'S CORNER

## Philadelphia College of Osteopathic Medicine

Research is the core of medicine; it fosters the development and innovation of treatments of some of today's most pressing health issues. At PCOM, we encourage our students to find and participate in a myriad of research projects, so that they not only have an understanding of the clinical outcomes of a treatment, but its basic science origins as well. Here, Mindy George-Weinstein, PhD, PCOM's chief research and science officer, discusses the College's research arm and its recent, successful Research Day.

—Fraternally, Kenneth Veit

PCOM's mission underlying scholarly activity is to promote health through basic, translational, clinical, behavioral and education research. Specifically, PCOM facilitates the development and testing of innovative approaches to diagnosing, treating and preventing dysfunction and disease. An integral component of faculty research is educating students in the process and practice of research to stimulate curiosity, creativity and critical thinking; instill an appreciation of evidence-based medicine; and enhance communication skills.

Our research environment is dynamic, collaborative, and collegial. Basic and translational research is conducted in state-of-the-art laboratories and core facilities. Clinical research is integrated across all of our academic programs, our community-based Healthcare Centers, affiliated nursing homes and hospitals and within the community. Investigative focus areas include mechanistic studies of embryonic development, structure/function relationships and pathology of organ systems, analyses of human behavior in a variety of settings, and novel approaches to optimizing healthcare access, delivery, compliance and outcomes.

PCOM's research studies are funded externally by the NIH, NSF, HRSA, AOA, various foundations, companies, and philanthropic donations, and internally through the Division of Research and Center for Chronic Diseases of Aging established with an endowment from the Osteopathic Heritage Foundation. Postgraduate research projects are supported by the MEDNet/Osteopathic Postdoctoral Training Institute (OPTI). Faculty and student travel awards are available to support presentations at conferences.

Campus wide, cutting-edge research was recently displayed at our annual Research Day that showcased scientific breakthroughs and promoted collaboration. This year's event featured 85 posters presented by students, residents and faculty on subjects including: burnout and self-care in graduate and medical students; connecting homeless women to primary care providers; the cellular and molecular basis of congenital heart defects; and the development of novel drugs for the treatment of osteoarthritis, vision loss, wounds, and diseases of the cardiovascular, pulmonary and nervous systems. Prizes were awarded to the event's top student research projects. This year's winners were:

### **The David Miller, DO '60 Memorial Research Day Best in Show Award**

Dillon McCourt—“Assay for Personalized Prediction of Chemotherapy-Induced Nausea and Vomiting”

### **The David Miller, DO '60 Memorial Research Day Award in Psychology**

Rachel Allen—“Pediatric Medical and Mental Health Conditions and Teacher Self-Efficacy: A Regression Analysis”

### **The David Miller, DO '60 Memorial Research Day Award in Alzheimer's**

Aghilas Belkadi—“Analysis of Cognition, Olfaction and Saliva miRNA Inflammatory Markers in Alzheimer Disease”

### **The David Miller, DO '60 Memorial Research Day Masters in Biomedical Science Award**

Anahi McIntyre—“Comparing the Efficacy of Pharmacological Preconditioning with Myristic Acid-Conjugated, TAT-Conjugated and Native Protein Kinase C Epsilon Peptide Activator in Myocardial Ischemia/Reperfusion (MI/R) Models”

### **The David Miller, DO '60 Memorial Research Day Award for Excellence in Research**

Zein Al-Atrache—“Chlamydia Pneumoniae Infection of Astrocytes Favors the Pro-Amyloidogenic Pathway of Amyloid Precursor Protein (APP) Processing in Alzheimer Disease”

*(continued on page 23)*



*Kenneth J. Veit, DO  
PCOM Provost, Senior Vice  
President for Academic  
Affairs and Dean*

# Op-Ed *Pause...;*



Joan M. Grzybowski, DO

A semicolon is used to initiate a pause in a thought. It is a writer's way of expressing they have more to say or their thought is not finished—a point where a sentence could have ended but didn't. It is also the name of a movement that started in 2013 called Project Semicolon.

The movement is aimed at helping a person take a 'pause' and reconsider a potential act of suicide. It is a moment to say, "I have more to speak, I have more to live, I have more to give. I am not ready for an end."

You may see a semicolon tattooed on one of your patients or friends. It is a symbol of the movement. It reminds them to take pause and remember to live or it sometimes acts as a reminder to that person of someone they lost.

I encourage you to view the National Suicide Prevention website, [www.suicidepreventionlifeline.org](http://www.suicidepreventionlifeline.org), and educate yourselves about additional resources for yourself and your patients. Familiarize yourself with the five steps used to begin the process of help.

Be the one to ask the question, "Are you considering suicide?" Keep them safe, be there,

help them connect, and follow up with them.

The Suicide Hot Line calls increased by 25 percent following the deaths of Kate Spade and Anthony Bourdain. According to the CDC, the largest increase in suicide, as of late, has been the age group of 35-66 year olds.

The National Suicide Hotline is open 24 hours and the number is listed below.

**1 800-273-8255 [TALK]**

The AOA and POMA have started Mental Health Task Forces that begin to address our own stress and anxiety as physicians. We all carry some burdens throughout our lives. Be the one to recognize a need and ask your colleagues how they are doing. Sometimes just reaching out can make a world of difference to that person. Be the person to ask.

I am hopeful that someone will be helped by you or by reading this and passing the information along.

Respectfully,  
Joan Grzybowski, DO  
POMA President

 **WVU Medicine**

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**WVU Medicine** is experiencing exponential growth and is recruiting physicians in all areas of medicine for both academic and community opportunities. **WVU Medicine** includes the physicians, specialists, and sub-specialists of the West Virginia University School of Medicine; four community hospitals; three critical access hospitals; and a children's hospital, all anchored by a 645-bed academic medical center that offers tertiary and quaternary care. **WVU Medicine**, the state's largest private employer, has more than 1,000 active medical staff members and 15,000 employees who serve hundreds of thousands of people each year from across the state of West Virginia and the nation.

Please submit your letter of interest and CV to Kari S. Roupe, Senior Physician Recruiter and Talent Advisor.

[[roupek@wvumedicine.org](mailto:roupek@wvumedicine.org)]  
[WVUMedicine.org/MorgantownCareers](http://WVUMedicine.org/MorgantownCareers)

WVU Hospitals / University Health Associates

We are an EOE. All qualified applicants will receive consideration for employment and will not be discriminated against on the basis of disability, veteran status or other protected status.

## **POMA Membership Renewal**

Your POMA membership provides:

- The only osteopathically focused Legislative representation and advocacy for the profession;
- State licensure information;
- CME required to maintain DO licensure delivered at the Annual Clinical Assembly and District Meetings (current PA cycle ends October 31, 2018);
- Opportunities to serve in leadership roles in the osteopathic community at the state and national levels;
- A bi-weekly newsletter with up-to-date articles on regulations, legislation, association events and member news;
- A quarterly journal promoting case studies and research

Remain a part of your osteopathic community and renew your dues online, today, by logging in to your member account at, [www.poma.org](http://www.poma.org).



# ABOUT THE AUTHORS

**Jennifer L. Fretwell, DO**, was presented with second place in the 2018 POMA Clinical Writing Contest for her article, "Prevalence of Acute Hepatitis C Virus in the Drug and Alcohol Detoxification, Psychiatric, and General Medical Units of a Rural Hospital in Pennsylvania." Dr. Fretwell is an intern at Millcreek Community Hospital, Erie, PA. Dr. Fretwell is a 1993 graduate of Indiana University of Pennsylvania and a 2015 graduate of Lake Erie College of Osteopathic Medicine (LECOM). She obtained her Master of Science in Medical Education in May 2018 from LECOM.

**James A. Nemunaitis, DO**, received the 2018 POMA Golden Quill Award for His manuscript, "The Numerical Lachman's Grading Scale and Its Relation to Partial Tears of the Anteromedial and the Posterolateral Bundle of the Anterior Cruciate Ligament in the Cadaveric Model." A second-year orthopedic surgery resident at LECOM Health in Erie, Pennsylvania. Dr. Nemunaitis is a graduate of John Carroll University in University Heights, Ohio, and a 2016 graduate of the Lake Erie College of Osteopathic Medicine.



*James A. Nemunaitis, DO*



*Jennifer L. Fretwell, DO*

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## Attention Writers...

*The Journal of the POMA is seeking professional articles from YOU!*

The September 2018 issue will focus on those individuals whom you feel have made significant contributions to medicine and healthcare.

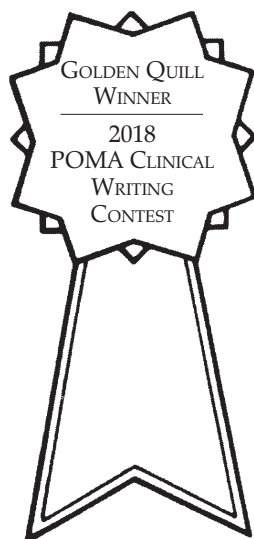
Submit your submissions to:  
*Journal Editor*

1330 Eisenhower Boulevard, Suite 100  
Harrisburg, PA 17111-2319  
or e-mail [bdill@poma.org](mailto:bdill@poma.org).

# Medical Update

## The Numerical Lachman's Grading Scale and Its Relation to Partial Tears of the Anteromedial and the Posterolateral Bundle of the Anterior Cruciate Ligament in the Cadaveric Model

by James A.  
Nemunaitis, DO  
and  
Luke Ninetemp,  
B.S.



### Abstract

The purpose of this study was to determine if the Lachman numeric grading scale accurately represented partial to complete ruptures of the anterior cruciate ligament (ACL). In addition, this study also assessed the contribution of isolated transection of the anteromedial bundle (AMB) and posterolateral bundle (PLB) of the ACL on the anterior translation of the tibia. Six embalmed cadavers were selected for study that had the ACL intact bilaterally. Examination of each knee was done by an orthopedic resident. The right knee of each cadaver was examined sequentially with the ACL intact, AMB released, and ACL transected. The left knee of each cadaver was examined sequentially with the ACL intact, PLB released, and ACL transected. The examiner performed the Lachman test with the knee at a constant 30 degree of flexion while measuring anterior translation of the tibia with each sequential release. Measurements of anterior tibial translation was recorded and graded as a 0 for tibial translation of <3 mm, 1 for tibial translation of 3-5 mm, 2 for tibial translation of 6-10 mm, and 3 for tibial translation >10 mm. Lachman grade  $\geq 1$  in knees with AMB transection had a sensitivity and specificity of 0.5. Lachman grade  $\geq 1$  in knees with PLB transection had a sensitivity of 0.17 and specificity of 0. A complete ACL tear identified with Lachman grade 3 had a sensitivity of 0.5 and specificity of 0.17. Based on the data gathered, the numerical grading scale of the Lachman test performed at 30 degrees is unreliable for detecting partial tears of the ACL involving the AMB or PLB in the cadaveric model.

### Introduction

Disruption of the ACL is a common knee injury and damage is visualized in 64-72% of knees that undergo arthroscopy for internal derangement.<sup>1,2,3</sup> The injury can be in the form of a partial tear, complete tear, bony avulsion or interstitial ligamentous lengthening.<sup>4</sup> Injury to the ACL is most frequently associ-

ated with a non-contact twisting, cutting or jumping mechanism during sports-related activities. The annual incidence of ACL injury is over 200,000, with 60,000 to 175,000 of these knees reconstructed annually.<sup>5</sup> Because of its functional anatomy, injury to the ACL leads to instability of the knee. The ACL has been shown to be the primary ligament that restricts anterior tibial translation relative to the femur due to its anatomic alignment. It is composed of 2 major functional components, the AMB and PLB.<sup>6</sup> The origin of the AMB is located proximal and anterior in the intercondylar notch and inserts in the anterior intercondylar eminence of the tibia. The PLB starts in the distal and posterior aspect of the intercondylar notch and inserts in the posterior part of the intercondylar eminence of the tibia.<sup>7</sup> Historically, studies have reported that the two bundles have reciprocal functions during passive range of motion of the knee, with the AMB tight in flexion and the PLB tight in extension and internal rotation.<sup>8,9</sup> The anteromedial bundle was found to attribute most of the ACLs restraint to anterior translation<sup>4</sup>. Wu et al, reported that the AMB and PLB of the ACL have a more complementary, as opposed to reciprocal, lengthening pattern during weight-bearing flexion, especially at low angles<sup>8</sup>. Repair of the torn ACL has been met with mixed results demonstrating this point. The gold standard of single bundle ACL reconstruction of torn ligaments has resulted in mixed results with some studies reporting continued pain and instability and others reporting good to excellent clinical outcomes.<sup>9</sup> This has led to much interest in utilization of double bundle grafts to perform near anatomic ACL reconstruction in an attempt to improve knee stability.

The clinical examination is important in identifying the ACL pathology, with the Lachman test being the most sensitive. The Lachman test is a commonly utilized physical exam technique used to evaluate ACL disruption. The test was classically described by Torg as flexing the knee 15 degrees while stabilizing the distal femur with one hand and

grasping the proximal tibia with the opposite hand, then producing an anterior force on the tibia.<sup>2</sup> Sources have reported using ranges of knee flexion from 15-30 degrees for the Lachman test as well as external rotation of the tibia to relax the iliotibial band; however, it has been reported that the ACL has the most restraint to anterior translation of the tibia at 30 degrees.<sup>2,10</sup> During the exam, the amount of translation and the endpoint (soft or firm) is noted and compared bilaterally to determine if there is increased laxity in the injured knee. The Lachman grading scale described by Lintner additionally assessed anterior tibial translation using 0 for tibial translation of <1 mm, 1+ for tibial translation of 1-5 mm, 2+ for tibial translation of 6-10 mm, and 3+ for tibial translation 11-15 mm and the end point quality was graded as firm, fair or soft.<sup>4</sup> Makhmalbaf reported the tibial translation in normal knees has been shown to vary widely between patients, but showed little difference between the knees of the individual patient. He also reported the difference in anterior translation of the tibia between knees within 95% of normal subjects is less than 2 mm.<sup>11</sup> The sensitivity and specificity range of the Lachman's test is between 85% and 98%.<sup>2,12,13,14,15</sup> This sensitivity also does not differentiate between partial and complete ACL tears, but rather a positive test confirms the presence of some degree of tear. Isolated injuries to the AMB or PLB have been described with a prominence of reports on AMB tears.<sup>16</sup> Previous authors have reported that the functional result of an isolated tear of the AMB has been equated to a complete ACL rupture. Litner found that the Lachman, anterior drawer, lateral pivot shift and KT 1000 arthrometer testing were unable to accurately detect intact versus partial tears of the ACL.<sup>4</sup>

The clinical diagnosis of a partial ACL tear is widely debated and the literature on isolated PLM tears is limited. The goal of this study is to determine if partial tears of the cadaver ACL involving the AMB or PLB are accurately represented by the numeric Lachman grading scale.

## Methods

Six out of 14 embalmed cadavers were identified after an arthrotomy was performed on the cadaver knees to ensure the ACL and PCL were intact bilaterally. The cadavers were embalmed with "Specimens in Carolina's Perfect Solution®," a proprietary solution with main ingredients of 2% formaldehyde and non-disclosed concentration of phenol. The quality of the cruciate ligaments was examined to ensure they were still soft and mobile. Each extremity was set up for testing in a wood jig as noted in Figure 1. The lower limb was secured to a 2-inch x 2-inch x 4-foot block of wood with ½ inch steel bolts screwed into the greater trochanter and lateral malleolus with the femur placed on a 30-degree wedge block to hold the limb in a stable position. The bolts were placed with this method to allow for sagittal plane movement of the tibia while keeping a relative constant alignment in the coronal and axial plane.

The medial and lateral collateral ligaments, entire joint capsule and patellar tendon were incised to isolate the ACL and PCL as the only remaining restraints to knee motion. A goniometer was used to set up each cadaver knee in 30 degrees of flexion. Wedges were added to the 30-degree wedge block as needed to maintain a constant 30 degrees of knee flexion.

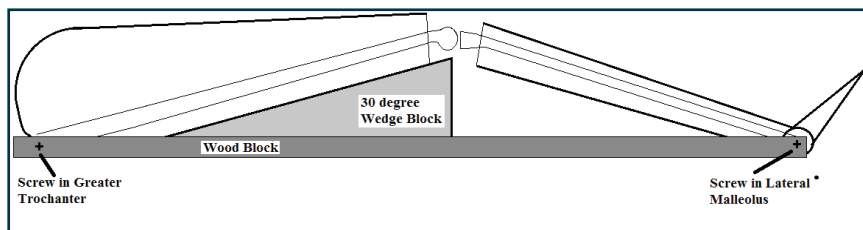


Figure 1: Set up for testing in a wood jig

The ACL diameter was measured at the midpoint between femoral and tibial attachments using calipers and a small ruler. The proximal tibia was marked in the sagittal plane proximal to the midline of the tibial tubercle. A metal ruler was hammered through the cortex at this point perpendicular to the anterior tibia for use with measuring anterior tibial translation. A scalpel handle was hammered into the intercondylar notch in line with the anterior cortex of the femur and intersecting the ruler. The starting set point where the scalpel handle intersected the ruler was recorded and used for calculating translation after performing each Lachman's test.

During the Lachman test, the ACL was evaluated with the knee in 30 degrees of flexion. The knee flexion angle of 30 degrees was chosen because it has been reported that

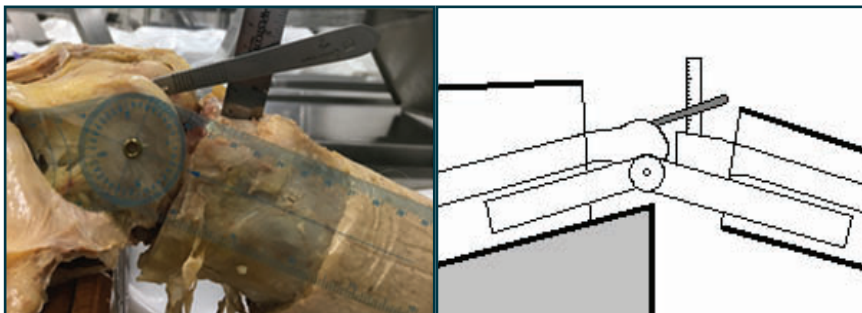


Figure 2: Setup to measure anterior tibial translation

the ACL has the most restraint to anterior tibial translation at 30 degrees.<sup>10,17</sup> The femur was held down to the block and the tibia was grasped proximally and pulled anteriorly until an endpoint was felt. Anterior translation of the tibia was graded as a 0 for tibial translation of <3 mm, 1 for tibial translation of 3-5 mm, 2 for tibial translation of 6-10 mm, and 3 for tibial translation >10 mm when compared side-to-side. Note: the deviation in the grade 0 and 1 in the Lachman grading scale used by Lintner is due to reports that there is up to a 2 mm side-to-side difference in normal knees.<sup>4,11</sup>

This scale modified from Lintner's used grades 1-2 to suggest partial ACL tear and a grade 3 to suggest complete ACL tear.<sup>4</sup> The initial Lachman test was performed on all 12 knees as a baseline and the anterior translation of the tibia was recorded. Next the medial half of the ACL was transected in six right knees to simulate tear of the AMB and the lateral half of the ACL was incised in six left knees to simulate tear of the PLB. The Lachman test was performed on all knees and the anterior translation of the tibia was recorded. Next, the ACL was completely transected in each of 12 knees to simulate a complete tear. A final Lachman test was performed, and the anterior translation of the tibia was recorded.

## Results

The Lachman test was performed, and the anterior translation of the tibia was recorded and graded on 12 knees with intact ACL, then on six knees with transected AMB and six knees with transected PLB and finally on 12 knees with complete ACL transection. The results are viewed in Table 1 and 2. The Lachman test on 12 knees with an intact ACL and PCL had an anterior displacement of the tibia with a mean of 4 mm with a standard deviation (SD) of 1.76. The anterior displacement of the right tibia with an intact ACL had a mean of 4 mm with a SD of 1.27. The anterior displacement of the left tibia with an intact ACL had a mean of 4 mm with a SD of 2.28.

In six right knees with the AMB transected, the net increase in anterior displacement of the tibia had a mean of 3.17 mm with a SD of 2.23. The Lachman grade  $\geq 1$  in knees with AMB transection was positive in 3/6 (50%). In six left knees with the PLB transected, the net increase in anterior displacement of the tibia had a mean of 2 mm with a SD of 0.63. The Lachman grade  $\geq 1$  in knees with PLB transection was positive in 1/6 (17%). Following complete ACL transection in all 12 knees, the net anterior displacement of the tibia had a mean of 10.25 mm with a SD of 2.17. The Lachman grade  $\geq 1$  was positive for 12/12 (100%) knees with ACL transection. If a Lachman grade of 3 is used to define a complete ACL tear, the testing correctly identified a complete tear in 5/12 (42%) knees. If all partial and complete tears are graded with a score  $\geq 1$  the Lachman test is positive for ACL pathology 67% of the time. See Table 1 and Table 2.

## Discussion

Our results suggest that the Lachman grading scale is useful in diagnosing complete ACL transection, but not for either an isolated transection of the AMB or PLB in the cadaveric model. When using the Lachman grade of  $\geq 1$  as abnormal in the AMB transected cadavers, we detected an abnormality in 3/6 (50%) knees with a mean net anterior tibial translation of 3.17 mm ( $p=0.317$ ). When using the Lachman grade of  $\geq 1$  as abnormal in the PLB transected

Right Knee		Cadaver Number						Statistical Analysis		
		1	2	3	4	5	6	Mean	SD	P value
ACL Intact	Tibial translation (mm)	6	3	3	5	4	3	4.00	1.26	
	Lachman grade	1	1	1	1	1	1			
	ACL width (mm)	7	7	10	7	8	9	8.00	1.26	
AMB transected	Tibial translation (mm)	11	7	5	11	4	5	7.17	3.13	
	Net-Tibial translation (mm)	5	4	2	6	0	2	3.17	2.23	0.317
	Lachman grade	1	1	0	2	0	0	0.67	0.82	
ACL transection	Tibial translation (mm)	13	16	15	14	13	16	14.50	1.38	
	Net Tibial translation (mm)	7	13	12	9	9	13	10.50	2.51	0.008
	Lachman grade	2	3	3	2	2	3	2.50	0.55	

Left Knee		Cadaver Number						Statistical Analysis		
		1	2	3	4	5	6	Mean	SD	P value
ACL Intact	Tibial translation (mm)	8	2	4	5	3	2	4.00	2.28	
	Lachman grade	2	0	1	1	1	0			
	ACL width (mm)	6	6	11	7	8	8	7.67	1.86	
PLB transected	Tibial translation (mm)	10	5	6	6	5	4	6.00	2.10	
	Net-Tibial translation (mm)	2	3	2	1	2	2	2.00	0.63	0.119
	Lachman grade	0	1	0	0	0	0	0.17	0.41	
ACL transection	Tibial translation (mm)	17	9	14	14	15	15	14.00	2.68	
	Net Tibial translation (mm)	9	7	10	9	12	13	10.00	2.19	0.009
	Lachman grade	2	2	2	2	3	3	2.33	0.52	

cadavers, we detected an abnormality in 1/6 (17%) knees with a mean net anterior tibial translation of 2 mm ( $p=0.119$ ). When using the Lachman grade of 3 as abnormal in ACL transected cadavers, we detected an abnormality in 5/12 (42%) knees with a mean net tibial translation of 10.5 mm on the right ( $p=0.008$ ) and 10 mm on the left ( $p=0.009$ ).

The evidence for the effectiveness of the Lachman test to identify complete ACL disruptions is well-founded in the literature in able bodied persons<sup>2,11,12,13,14,15</sup> and in cadaver specimens<sup>4,16</sup> similar to our study. The evidence for correctly diagnosing partial tears of the ACL in cadaver specimens using the Lachman test is poor. In a study by Hole et al, they were only able to demonstrate partial tears of the ACL when the PLB was cut in 11% of the specimens<sup>16</sup> and 13% of the specimens were identified by Lintner<sup>4</sup>, which is similar to our study (17%).

Lintner et al demonstrated an average increase of 1.3 mm in anterior tibial translation after AMB sectioning and 5.2 mm after complete ACL transection with KT – 1000 arthrometer testing at 30 pounds in eight fresh, frozen cadaveric extremities.<sup>4</sup> In a follow up study assessing the PLB, there was an average increase of 0.6 mm of anterior translation after sectioning of PLB, and 8 mm with complete transection of ACL in six fresh, frozen cadaveric limbs.<sup>4,16</sup> The data for tibial translation in partial tears were statistically insignificant while the complete ACL tears were statistically significant when compared to translation with intact ACL. The large difference in magnitude in translational values from our study is likely related to the methodology because Lintner used fresh frozen cadaver limbs and he did not transect the joint capsule, tendons and collateral ligaments to isolate the ACL in his study.

This data suggests that detecting a partial tear of the ACL with the Lachman's grading scale would be unreliable as it only identified a partial tear was present 33% of the time. This result is supported by Hole et al. that found a clinical exam could not reliably identify partial ACL tears with up to 75% of the ACL sectioned.<sup>16</sup> Data obtained in this study did support that the AM bundle attributed most of the ACLs restraint to anterior translation of the tibia at 30 degrees of knee flexion, which has been reported in prior studies in various degrees of knee flexion.<sup>4</sup> Wu et al reported, "recent in vivo studies revealed that the AM and PL bundles of the ACL have a more complementary, as opposed to reciprocal, lengthening pattern during weight-bearing

flexion, especially at low angles."<sup>8</sup> This could not be validated in this study because of inability to simulate weight bearing or various angles of knee flexion.

The presence of a complete tear was identified 50% of the time using Lachman's grade 3 as diagnostic, and of all partial and complete tears, the Lachman's scale identified 42% of all tears using grades 1, 2 and 3 as diagnostic. These results do not reflect the high sensitivity of the Lachman's test that is reported in literature, however; there are many limitations to this cadaveric study.

## Limitations

There are several limitations to this study. The population studied was not large enough to represent the general population, and the force on the tibia to create anterior translation was not standardized or measured. The examiner performing the Lachman's exam was not blinded to the condition of the ACL at the time of testing, and when switching to the contralateral extremity, the examiner also had to switch the arms performing the exam which could have an effect on the force being applied to the tibia.

Additionally, use of the cadaveric knee presents several problems. There was different degrees of arthritis and soft tissue quality amongst specimens. The utilized selection criteria only included cadavers with ACLs intact bilaterally and had not become dried out. Additionally, the embalming process and rigor mortis may have had some effect on the biomechanics of the ACL. In an attempt to reduce the effect of rigor mortis, all structures of the knee were released except for the PCL and ACL. The ACL was isolated by releasing the rigid soft tissues surrounding the joint and removing their secondary restraint to anterior translation of the tibia. Another criticism is that the specific bundles of the ACL were difficult to identify, so 50% of the ACL was cut on the side of the AM or PL bundle to simulate a tear of the bundle.

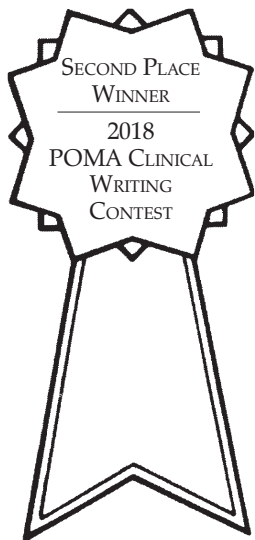
An additional limitation to this study is that it does not take into account ACLs that are functionally incompetent from interstitial lengthening. Studies have shown that ACLs may lengthen and lose function resulting in a positive Lachman's test before rupture<sup>4</sup>. This scenario would be difficult to reliably reproduce in the cadaver model, so it was not tested. Given these limitations, many adjustments can be made to improve the quality of the data.

*(continued on page 25)*

# Medical Update

## Prevalence of Acute Hepatitis C Virus in the Drug and Alcohol Detoxification, Psychiatric, and General Medical Units of a Rural Hospital in Pennsylvania

by Jennifer L. Fretwell, DO



### Abstract

**Background.** Hepatitis C Virus is an important topic in medicine due to the high rate of infected individuals and the high cost of treatment. Accurate estimates of prevalence are important to plan for future health care diagnosis, treatment, and health policy. CDC estimates indicate that the prevalence of HCV infection is 1.6% to 2%. This estimate does not reflect the risk of HCV in at-risk populations.

**Methods.** A random sample was obtained of 300 subjects admitted to the Detoxification, Psychiatric, and General Medical Units from October 1, 2014, through October 1, 2015, at Millcreek Community Hospital in Erie, Pennsylvania. One hundred subjects were obtained from each unit. From retrospective chart review, data was collected on the subjects' age, sex, IV drug use history, and whether the subjects were positive for HCV.

**Results.** Subjects who were HCV positive included, 11% of the subjects in the detox unit, 9% of the subjects in the psychiatric unit, and 4% of the subjects in the general medical unit.

**Conclusions.** The rate of HCV infection was higher than 2% on all three inpatient units. As expected, this is higher than the rate of HCV infection expected in the general population. These at-risk populations, despite the rural location and distance from a major urban center, were positive for HCV at a high rate.

### Introduction

Hepatitis C Virus (HCV) is a timely topic in medicine. There are high rates of infected individuals—an estimated 3.5 million in the United States as of 2010 according to the

National Health and Nutrition Examination Survey (NHANES) study.<sup>1</sup> New treatment options offer the promise of high cure rates but at very high costs. The new HCV drug sofosbuvir costs \$84,000 for the recommended 12-week course of treatment.<sup>2</sup> Another recently released drug, ledipasvir-sofosbuvir, costs \$94,500 for a 12-week course of treatment.<sup>3</sup> The high costs of treatment will have a significant impact on patients, health insurance providers, and the United States healthcare system. Additionally, the death rate from HCV has been increasing in recent years. It has now surpassed that of 60 infectious diseases that are routinely reported to the CDC.<sup>4</sup> This high death rate may be from a high rate of infected individuals remaining undiagnosed. Therefore, an accurate ascertainment of the prevalence of HCV infection and risk factors for HCV positive status is extremely important.

CDC data from 2013, the most recent year available, indicate that the national rate of acute HCV infection is 0.7 cases per 100,000. For the state of Pennsylvania, the rate of acute infection is 0.4 per 100,000.<sup>5</sup> Rates of chronic HCV infection are even higher. Several research studies cast doubt on the accuracy of these prevalence rates. A recent study in an urban emergency department found that 10% of the baby-boomer age patients presenting to the emergency department were HCV positive.<sup>6</sup> Furthermore, another study found that following CDC guidelines for HCV testing (1945-1965 birth year or high-risk behaviors) resulted in missing 25% of HCV positive patients.<sup>7</sup>

Many prevalence studies such as the original NHANES study have been criticized for not including at-risk populations such as those who are incarcerated, are homeless, are veterans, or have drug abuse histories.<sup>8,9</sup> An intravenous drug use history is a high-risk

factor for HCV infection and these patients are most likely to be identified on a drug and alcohol detoxification unit admission. It was expected that this study would show a rate of HCV infection higher than average in the drug and alcohol detoxification unit despite the rural location and distance from major urban centers.

Another high-risk population are individuals with psychiatric disorders. One study found that 19.6% of subjects from an inpatient and outpatient sample with mental illness were HCV positive.<sup>10</sup> Another study of psychiatric inpatients found that 21% of the subjects were HCV positive.<sup>11</sup> It was expected in this study that HCV positive status would be found in a high percentage of subjects.

Surprisingly, there has been little data published on the prevalence of HCV in general medical inpatients. The health consequences of HCV would obviously result in hospital admissions and they are likely a significant percentage of general medical inpatient admissions. It was expected that there would be a rate of HCV positive status higher than the general non-hospitalized population.

## Methods

A random sample was obtained of 300 patients admitted to Millcreek Community Hospital in Erie, Pennsylvania, between October 1, 2014, through October 1, 2015. One hundred patients had been admitted to the detoxification unit, 100 patients had been admitted to the psychiatric unit, and 100 patients had been admitted to the general medical unit. Retrospective chart review was used to collect data pertaining to age, sex, IV drug use history, and HCV status. If the subject had positive HCV antibody lab results in their medical record, they were recorded as having HCV. If there was no HCV antibody lab test, but there was physician documentation stating that the patient was HCV positive, the subject was also recorded as being HCV positive. If there were no lab results or documentation in the medical record indicating that the subject was HCV positive, the subject was recorded as not having HCV.

## Results

The detox unit subjects were an average age of 38.7 years old and 32% female. Of the detox sample, 11% were positive for HCV. In the HCV positive detox group, 45% were female and the average age of the subjects was 42.5 years old.

The psychiatric unit subjects were an average age of 34.0 years old and 36% female. Of

the subjects in the psychiatric unit sample, 9% were HCV positive. The HCV positive subjects in this group were an average age of 40.9 years old and 22% female.

The general medical unit subjects were an average age of 48.0 years and 52% female. Of the general medical unit subjects, 4% were HCV positive. The HCV positive subjects in the general medical group were 49.0 years and 24% female.

When comparing the detox unit subjects to the general medical unit subjects, the odds ratio for being HCV positive is 2.96 with a 95% CI and  $p=0.0710$ . Comparing the psychiatric unit subjects to the general medical unit subjects, we find that the odds ratio of being HCV positive is 2.37 at the 95% CI with  $p=0.1622$ .

When comparing the average age of HCV negative subjects versus HCV positive subjects, in all cases except one, the HCV positive subjects were older (Figure 1). The average age of HCV positive subjects was older by 1.5 to 14.0 years. However, for females in the detox unit, the average age of HCV positive females was 2.7 years lower than the average age of HCV negative females. This may reflect better documentation of HCV status in the detox unit compared to the other hospital units in the study.

HCV Positive Subjects	Percent Male	Percent Female	Average Age Male (Years)	Average Age Female (Years)
Detoxification Unit	55	45	46.0	35.6
Psychiatric Unit	88	22	41.4	39.0
General Medical Unit	76	24	48.0	63.0
HCV Negative Subjects	Percent Male	Percent Female	Average Age Male (Years)	Average age Female (Years)
Detoxification Unit	61	28	38.4	38.3
Psychiatric Unit	57	32	32.9	34.6
General Medical Unit	45	51	46.5	49.0

Figure 1: Comparison of HCV Positive and HCV Negative Subjects By Unit

Per CDC data, 2% of the general population is HCV positive. This sample from three different inpatient units in a rural hospital shows a higher percentage of HCV. The odds ratio of HCV positivity is statistically significant when a subject is admitted to the detoxification unit. The odds ratio is not significant when the subject is admitted to the psychiatric unit.

## Discussion

As expected, the rate of HCV infection was higher than the reported prevalence of 2% in the general population in all three populations

in this study. This study, and others, indicate that HCV may be higher than expected in certain high-risk populations. If the CDC samples were all lower-risk populations, as has been argued by some, the prevalence of HCV in the general population may be higher, as well. Of note, the average age of HCV positive subjects in this study was 41.5 years of age. Notably, the age of HCV positive subjects had a bimodal distribution of incidence and was most common in ages 31-35 and in ages 51-55 (Figure 2).

This is significant because the current CDC

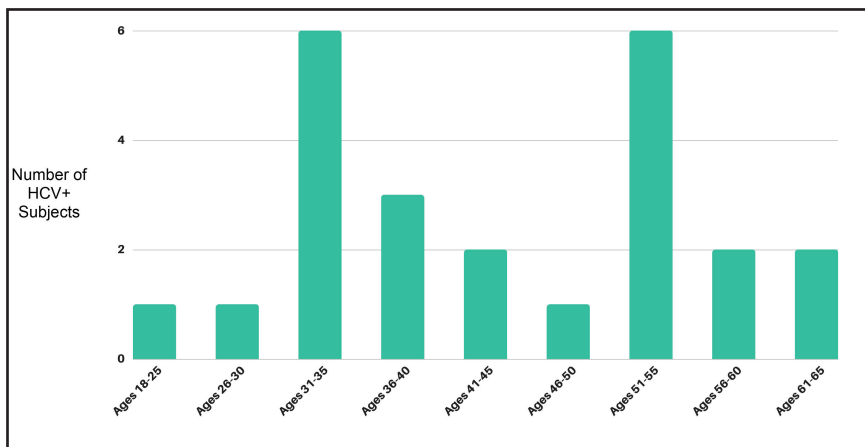


Figure 2: Distribution by Age of HCV Positive Subjects

guidelines recommend routine screening for HCV only for persons born between 1945 and 1965. Given that a significant number of subjects with HCV in this study were younger and between the ages of 31-35, standard screening may miss many individuals with HCV, particularly those who use substances or have mental health diagnoses. In our sample, if we had only tested those born between 1945 and 1965, we would have missed 48% of the HCV positive subjects in the sample. This indicates that patients should be actively screened for HCV risk factors. Relying on testing based on having a birth year between 1945 and 1965 is clearly insufficient. The Pennsylvania state legislature passed the Hepatitis C Screening Act in September 2016. This act requires that hospital inpatients and primary care outpatients born between 1945 and 1965 be offered HCV screening testing. Other states are passing similar screening laws. This required screening may lead clinicians to a false sense that they are adequately screening for and detecting HCV in their patients. However, the results of this study indicate that over-reliance on this screening method may be severely inadequate. Clinicians should also be asking patients about risk factors for HCV and testing as indicated by high-risk behaviors.

Other studies have found higher rates of HCV positive subjects in psychiatric populations than the 9% found in this study.<sup>10,11</sup> Some possible explanations for our result is that we were not completing lab testing on every subject and in many cases relied on documentation. Documentation of HCV status is likely not as much of a priority in a psychiatric unit and HCV status may not be asked about in a psychiatric stay. Additionally, the other studies referenced were conducted in more urban settings which may have affected the results. It is possible that urban psychiatric patients have more access to intravenous recreational drugs and/or are more likely to share needles.

A limitation of this study is that only eleven of the subjects had positive HCV antibody lab results in their medical record. For the purposes of this study, a positive HCV antibody test or physician documentation that a subject was HCV positive was accepted. Likewise, no positive HCV antibody lab results and no mention of HCV positive status in the medical record resulted in the subject being recorded as not having HCV. It would increase the accuracy of the study if all the subjects were tested for HCV with lab tests as part of the study. Further studies investigating HCV infection rates in other at risk populations such as the homeless and immigrant populations would also be useful. There is also a paucity of data available of the prevalence of HCV in general medical inpatient units. Further research may reinforce and clarify the populations that should be screened for HCV infection.

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# A STUDENT'S VOICE — PCOM

*Ashley Pinckney, OMS-II and Amy Brady, OMS-II*

## *Research: The Center of Medicine*

It's safe to say that a career in medicine comes with an innate curiosity and drive to understand how and why the body works the way it does. We are taught so many things about the human body, but from where do we get this information? Research. Without a question or driving hypothesis, no research would be conducted. No one would investigate the morphology of a disease's presentation or the biochemistry behind the body's physiology. Without research, there would be no breakthrough novel treatments and no scientific advancement.

The field of medicine was developed from inquiry, and it is from this basis that we all develop and mature as physicians and scientists. As part of this maturation process, many students at PCOM participate in research both in and around campus. Professors encourage the students to join their labs, allowing us to get hands on experience with microscopy, QT-PCR, DNA extraction, tissue culture, etc. Projects on Philadelphia's campus include exploring infection-induced Alzheimer's pathology, investigating molecular etiology of congenital heart defects, analyzing mechanisms of myocardial ischemia-reperfusion injury, and much more. At Lankenau Institute for Medical Research (LIMR) in Wynnewood, PA, some students are working in gastroenterology and breast cancer labs.

According to the CDC, in the United States alone, millions of adults suffer from gastrointestinal (GI) disease. The gastroenterology lab at LIMR explores the role of leaky epithelial tight junctions of the GI tract in the early stage of many GI diseases, including Barrett's esophagus, GI cancer, infectious GI diseases,

and inflammatory bowel diseases (such as Crohn's disease and ulcerative colitis). The GI epithelium is bathed in many micronutrients, and some of our students are helping to determine the possible role of zinc and its effects on the leakiness of the junctions, which may guide future options in the treatment of these diseases. Furthermore, while there have been great advancements in the treatment of breast cancer as a whole, still certain breast cancer subtypes are difficult to treat. Some women diagnosed with triple negative breast cancer seem to progress within five years despite early detection and treatment of the cancer, while other women with similar diagnoses and treatment do fine. The students helping in the breast cancer lab at LIMR are looking to detect a biomarker to further stratify these patients to help future clinicians determine the best life-saving and cost-effective treatment options.

The role of leaky tight junctions in the GI tract and the discovery of biomarkers are just a few examples of how important research is in medicine. Pathophysiologic processes and the prevention and treatment of those processes all originate with a question and a drive to seek an answer.

Research preserves our interest in medicine over the lifetime of a career. We are told that physicians need to be lifelong learners, always a student. Our innate curiosity of the human form suits us for this lifelong task. Whether the research is carried out by the persons with the inquiry or is appreciated by those with an interest in the subject matter, the entire medical community stands to benefit from conclusions of research.



*Ashley Pinckney  
PCOM OMS-II*



*Amy Brady  
PCOM OMS-II*

# OUT OF MY MIND

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Samuel J. Garloff, DO



Samuel J. Garloff, DO

## *I Don't Know What to Feel*

"Mother died today. Or maybe yesterday; I can't be sure." It's been over 50 years ago, when I first read *The Stranger* by Albert Camus. I still remember the impact of those two sentences. As a young man, I had difficulty believing that anyone could express such dissociation between themselves and nuclear family.

Over the past few days, those words have come to haunt me. I received a phone call from my elderly cousin in Erie. She informed me that my brother passed. He and his wife lived in Monroeville, PA. I last saw them during my mother's hospitalization years past. We were estranged.

I love good literature. As a psychiatrist I have read poignant descriptions of mankind's emotions, heroism, fears, patriotism and the like which I firmly believed helped me in understanding many of my patients' difficulties. The same can be said for the best of music and theater. I recently saw a new production of "Waiting for Godot". The existential drama and comedy of this performance were not lost on the audience. It certainly was not lost on me.

My brother has passed, and I don't know what to feel. I am now the last member of my nuclear family. I am now the oldest member of the family my wife and I created. This is obviously nothing new in human history. Like everyone else, I have experienced loss before. I have experienced grief and sorrow at the death of family and friends I have known and loved. But now my brother has passed, and I don't know what to feel.

Our childhood was filled with a combination of fun, frenzy and complex dynamics. We were after all, just humans. As the years passed however, we became estranged. How did this happen? In retrospect, I'm really not sure. There was no open hostility, arguments between us, etc. Over the years we both became more invested in our own families and simply ignored each other. I doubt that either of us wished our relationship to end this way. Too late.

It is my hope that sharing my experience may be beneficial to others who find themselves in a similar situation. The Latin word, *docere*, means to teach. What can be learned by reading this account? Depending on your viewpoint, perhaps nothing, or perhaps quite a bit.

Looking back and peeling away at the skin of truth, several opportunities arose over the years when meaningful dialogue might have taken place. I suspect we were both too proud to make the first overture. Pride? Ignorance? Meanness? After all, anger, whether justified or not, is such an easy emotion to feel and express.

Obviously, it is too late for me to build and cross that bridge. Might you? My insight is now clearer. It is my obligation to become a better human. I need to cherish my friends and family. I need to be more respectful and forgiving. With grace, I will accomplish these goals.

My brother just passed, and I don't know what to feel. May this never happen to you.

# Joan M. Grzybowski, DO, Installed as 107th President of the POMA (cont. from page 5)

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by focusing my time, talent and enthusiasm as I help lead POMA this year.

At the beginning of WWII, Winston Churchill needed to prepare England for what was to come. He needed their trust and confidence. He began this preparation by standing in front of the House of Commons and said, "I have nothing to offer you but my blood, toil, sweat and and tears." My job this year is also to inspire your trust and confidence. So, I stand before you with nothing to offer but my experience, my commitment and my respect to all of you and the belief and hope in the physicians and future leaders to come after me.

POMA is an extraordinary medical association. It is one of the best osteopathic medical associations in the nation. Why, because of you all—you make us successful by your participation. Each of you sitting here, from the dedicated staff of POMA, to my Board, to the past presidents and officers of POMA and our CEO, each of you bring a piece of your talent to POMA. POMA has been on the move. You know what happens when you stand still, people and opportunities pass you by. We will stay on the move.

In the last few years, POMA has accepted the mantle of change without losing our core belief. Our Board has become more alive, dialogue is appreciated and welcomed. We have redesigned committees to make them more functional and meaningful. We question why we do things and wonder how we can do things better. You have seen us grow from a desktop computer mindset to a Steve Jobs mentality by thinking about and implementing new technology and new educational opportunities, by lobbying bills and policies that matter to us in our capital city of Harrisburg.

We are becoming a presence on the Hill and an organization where government officials come to us for advice. Recently, we have concentrated our efforts in augmenting the knowledge of senators and representatives in

Harrisburg about House Bill 100 which deals with scope of practice issues and CRNPs. We have given testimony in Harrisburg about this issue and have sent directed letters from our leadership about our position and the long list of educational disparities between nurse practitioners and osteopathic physicians.

Two weeks ago, POMA's view was mentioned on ABC televised news. That's what I am talking about! I want POMA to be the first place our representatives come for counsel when they need advice on health policy. I want them to know our names. One of my initiatives this year will be to have our organization address public health issues that either touch or affect, directly or indirectly, issues like the opioid crisis, domestic violence, mental health and gun safety. We will start by providing resources and information to our colleagues and to our patients via an all tiered level.

I also want all of you to know I will practice open door politics. Please come to me with your questions and your ideas. We have been working on a strategic plan for POMA, the blueprints are in the early stages, but more on that topic in the near future.

The military has a saying, "Leave no person behind." POMA will do the same. The organization will always represent all of its members from each generation, because all of us have different needs. My mantra this year will be, "Let's grow POMA together. "Let's put our thoughts and minds together and be a team. We are going to the Super Bowl.

So, I say to you one more time as I close this speech, let's grow POMA together. I have a green thumb and I need your help to plant the seeds and tend the POMA garden. Thank you all again for being who you are and being here tonight and, in our future, and allowing me to serve you this year.

With great respect and admiration for all of you, thank you and let's enjoy the evening.

# LECOM DEAN'S CORNER (cont. from page 6)

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field in her research project investigations. Collaborations with other schools, such as Auburn Veterinary School, allow LECOM researchers to conduct human and animal osteopathic investigations.

In addition to the adroitly skilled faculty and the state-of-the-art facility, LECOM also was the proud awardee of a \$100,000 Research Grant received in 2017 to examine Polycystic Ovary Disease. Under the keen eye of Dr. Diana Speelman, LECOM Assistant Professor of Biochemistry, an OMM Translational Project conducts meaningful investigations to probe this complex realm of discovery.

The receipt of venerable research grants is deeply humbling. In addition to the aforementioned research grant, LECOM is one of only 44 universities in the nation that has been named to receive the Health Resources and Services Administration (HRSA) Grant. Conducted under the auspices of LECOM Project Director, James Lin, DO, this grand LECOM attainment stands companioned by other top educational institutions including Yale, Johns Hopkins, and Duke.

The HRSA Grant constitutes a luminous achievement for LECOM since the award is one of the most substantive to be received by any academic institution in the region. The HRSA Grant is providing nearly \$2.5 million dollars over three years to LECOM in tangible resources to support quality care for older Americans. The Lake Erie Integrated Geriatric Health Team Project (The LIGHT Grant) seeks to improve quality of healthcare by changing clinical training environments into integrated geriatrics and primary care delivery systems. These systems focus upon seniors who are uninsured, isolated, and medically vulnerable.

LECOM leadership in the research field is wholly integrated across the program disciplines. From Dr. Kyle Scully with expertise in chemical safety to Dr. Thomas Corso, Professor of Biochemistry and Neuroscience in the Department of Pharmaceutical Sciences at the School of Pharmacy, LECOM research crosses the medical sciences to gain understanding in complex areas that advance key discoveries.

Significant Translational Research, involving basic science paired with clinical explorations, highlight Associate Professor of Microbiology, Director of the Laboratory of Human Pathogenesis, Dr. Christopher Keller's

deeply informative study in bacterial interference. Under the expert guidance of Dr. Keller, the Laboratory of Human Pathogens focuses upon the epidemiology and pathogenesis of human infectious diseases with an overarching goal of the lab to identify mechanisms of pathogenesis for infectious diseases that affect humans. This research objective is pursued through epidemiological, immunological, molecular, and genetic experiments conducted at LECOM and in collaboration with other area colleges and universities. A second major goal of the Human Pathogens Lab is to enhance the quality of life for Erie County residents by conducting research relating to infectious diseases of specific importance to the region.

LECOM Anatomy and Microbiology Ph.D. Programs also advance and contribute to research by launching probative investigations across disciplines.

Committed to promoting Clinical Research, LECOM provides educational grants through the Office of Clinical Education. These grants allow hospitals or clinical sites affiliated with LECOM to purchase equipment to better aid in educating students rotating through those sites.

Further emphasizing the LECOM mission to support and to advance predoctoral and postdoctoral training in primary care and to provide programs of postdoctoral instruction and training in the art, science, principles, and practice of osteopathic medicine, the Lake Erie Consortium for Osteopathic Medical Training (LECOMT) was developed in 1997-1998 to support and to ensure quality osteopathic medical education through an alliance of osteopathic training sites paired with the Lake Erie College of Osteopathic Medicine.

Together, and during each academic year, LECOM and LECOMT provide Research Support Grants. Up to \$5,000 for students and programs is available per grant award. From 2009 - 2016, LECOMT awarded a total of \$689,642 in research grant monies to deserving scholars and programs. In the 2016 - 2017 academic year alone, LECOMT awarded \$146,508 in research grant funds to such scientific and medical investigations.

Scholarly activity, both in basic science and in clinical medicine, is being advanced and encouraged by this partnership that boasts a vast multiplicity of LECOMT member hospitals and office-based programs.

LECOM takes great pride in its research wing, which is comprised of renowned physicians and prominent educators who engender a transformative effect upon the region by fostering a medically-focused research collaborative. Advanced and deeply probative thinkers in the field of medical investigation have formed exploratory alliances with clinical institutions, such as LECOM, that will take discoveries from the laboratory to the bedside.

Unmistakably, the LECOM presence within the arena of research is building partnerships and creating opportunities to make vital discoveries across disciplines. With its sophisticated technology and facilities and by fostering these advanced technologies, highly-credentialed scientists, and top-tier partnerships, LECOM is establishing the groundwork for future globally-relevant discoveries.

Amplifying the evident relevance of institutionally supported key research is the LECOM Research Collective (LRC), which encompasses the research facilities and personnel of the Lake Erie College of Osteopathic Medicine. Established in 2005, the LRC sought to address the growing needs of faculty and administration for an interdisciplinary research organization that coordinates and facilitates the research efforts of the College. The Collective supports osteopathic residents and students in their research. Initiatives facilitate intramural and extramural collaborations in order to obtain research funding and to provide valuable research findings that are frequently published in high-quality peer reviewed journals.

According to Bertalan Dudas, MD, the LECOM journal impact average (a complex statistical rating that registers the relative importance of all published articles written by faculty members as the accumulative output of the College) shows LECOM positioned in a very good range, ranking very well among peer medical colleges. The impact factor is proof positive that not only do highly-rated sci-

entific journals accept work by LECOM faculty, but that the LECOM articles are well-read and consistently cited by other researchers within the body of their own published articles.

As in previous years, intriguing research, as performed by medical students and residents, remains a fundamental goal of LECOM. Under the leadership of osteopathic medical students, many research projects produce a number of excellent publications in peer-reviewed journals every year.

The LECOM-affiliated Millcreek Community Hospital (MCH) assures consistently inclusive involvement of the residents, an aspect that proves to be of key importance in training osteopathic physicians who will participate actively in research during their careers.

Additionally, the Master's Program in Education at LECOM is supremely useful in training future educators and in graduating osteopathic physicians - an aspect that collaterally supports and benefits the research paradigm.

From the Annual LECOM Research Day, replete with poster presentations and expertly presented lectures, to LECOM Masters students mentored in the arena of basic science research, the research paradigm is now well-positioned to set a new standard in the field.

The LECOM Research Center, coupled with the educational nexus of the only osteopathic academic health center in the nation, support students, alumni, and faculty in the development of innovative medical and scientific research.

Committed to training the next generation of healthcare professionals and ever vigilant for new opportunities - in the field of research and in every new development - LECOM will continue its growth as it seeks the well-being of the residents of each community that it serves. For LECOM, looking beyond its 25th year, discovery abounds and the "flight from wonder" continues with indefatigable determination.

# POMA Hosts 110th Annual Clinical Assembly and Scientific Seminar

## *Improving Patient Care*

At this year's 110th Annual Clinical Assembly and Scientific Seminar, held May 2-5, 2018, POMA focused on helping DOs improve their patient care through CME. There were 1,430 attendees who came to Valley Forge this year and participated in a variety of sessions that focused on addressing many of the roadblocks that our physicians face to enhance the care they provide. Throughout the week, the education program covered new knowledge and technology, as well as the first-hand experiences of our experts. It is our hope that these sessions provided some insight on how you can get back on track when working to better your patients' lives.

## *#POMA110 Networking*

In addition to the variety of spectacular educational sessions, there were multiple networking opportunities such as the Welcome Reception on Wednesday evening that included games, hors d'oeuvres, drinks and catching up with colleagues after the first day of sessions. The 2nd Annual Beers & Careers Networking event was held on Thursday and provided another chance to network, not only with colleagues but with companies who were actively recruiting for open positions. To top it all off were the various luncheons where you had the chance to meet up with colleagues, old and new, as well as so much more. Each event was meant to provide you with one more tool to share with and better know your colleagues.



## *Technology Upgrades*

The 2017 Clinical Assembly saw the introduction of various technology upgrades and POMA continued additional upgrades in 2018. We brought back the POMA member area with the addition of a tech bar where members could ask questions regarding the new POMA website, the new CME module and the POMA convention app. POMA staff was on hand to walk physicians through the process of checking their CME report, self-reporting CME credits, and completing the online conference attestation and evaluation forms to insure our members have a better understanding of the new technology additions added by the association.

The POMA Facebook, Twitter, and LinkedIn accounts were busy throughout the week staying up-to-date with session and event information as well as pictures and videos from the whole week.



## *3rd Annual Leadership Forum*

This year marked the 3rd Annual Leadership forum, open to all students, interns, residents and fellows. This event offered our young physicians a chance to connect with fellow colleagues as well as learn from some of the POMA leadership. The program featured sessions on: time management tips and tricks; practice options panel; professional and political advocacy; contract lingo and an overview of insurance and basic survival; what to do when things aren't going right

The forum has provided an opportunity for young physicians to ask questions and discuss topics that aren't often covered in other sessions or training.

## *Thank you!*

It is our hope that this year's program, along with many of the other changes



POMA has been implementing, allows you to continue to improve your patient care. We wouldn't be able to provide this robust and informative conference without the hard work and dedication of our Convention Committee and members of our affiliated organizations. A huge thank you also goes out to the exhibitors and companies who support our program. Last, but not least, thank you to our Central Office staff who each year, works tirelessly each year to make the week appear effortless.

### Save the Date!

Make plans now to attend our 111th Annual Clinical Assembly, May 1-4, 2019 in King of Prussia!



## Prevalence of Acute HCV (cont. from page 16)

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## PCOM DEAN'S CORNER (cont. from page 7)

**Camille DiLullo, PhD, DO Research Award**  
Michael Bamimore—"Cardio-Protective Effects by a Novel Opioid Peptide in Myocardial Ischemia/Reperfusion Injury"

**Excellence in Resident Research Award**  
Jillian Ploof, DO—"Liposclerosing Myxofibrous Tumor of the Cranial Vault: A Case Report"

**Excellence in Research Staff Poster**  
Sarah Blizard—"AAV9-Driven Neuron-Specific Transgene Expression: A Tool to Study the Role of Imp2 in Axon Regeneration"

### The PCOM Library

#### "Young Investigator Awards"

**1st place:** Inya Wyche—"Diabetes"

**2nd place:** Frantzia Jean—"Coronary Heart Disease"

**3rd place:** Danisha Robledo—"Dementia"

PCOM researchers welcome collaborations between institutions. For more information about our research program and faculty, please contact Mindy George-Weinstein, PhD, chief research and science officer at PCOM, by email at [mindygw@pcom.edu](mailto:mindygw@pcom.edu).

# Congratulations DO Class of 2018!!

POMA would like to extend a warm welcome and congratulations to this year's DO graduates from Pennsylvania's campuses of the Lake Erie College of Osteopathic Medicine (LECOM) and the Philadelphia College of Osteopathic Medicine (PCOM). The Lake Erie College of Osteopathic Medicine (LECOM) and the Philadelphia College of Osteopathic Medicine (PCOM) welcomed new DOs to the osteopathic family during recent commencement ceremonies.

On May 27, 2018, LECOM held its 22nd commencement ceremony at the Erie Insurance Arena, where 370 new DOs from the Erie and Seton Hill campuses received their degrees.

On June 3, 2018, LECOM Bradenton (Fla.) graduated its 11th class with 189 students receiving their DO degrees. The commencement ceremony was held at the Bradenton Area Convention Center in Palmetto, Florida.

On June 2, 2018, PCOM graduated 254 doctors of osteopathic medicine during its 127th commencement ceremony at the Academy of Music in Philadelphia.

On May 24, 2018, PCOM Georgia's tenth DO class graduated. The event was held at the Infinite Energy Center in Duluth. Congratulations to all of 2018's DO graduates and good luck as you begin the next step in your osteopathic careers.

*Welcome to our osteopathic family!*





# The Numerical Lachman's Grading Scale and Its Relation to Partial Tears

(cont. from page 13)

## Conclusion

This study did not support the use of the numerical grading scale for the Lachman test in detecting complete ACL tears or partial tears of the ACL that involve either the AMB or PLB in a cadaver. The testing yielded low sensitivity and specificity values, however they were not statistically significant. This study did support that the AMB attributed most of the ACLs restraint to anterior translation of the tibia at 30 degrees of knee flexion. This study did not yield statistically significant data to challenge Hole et al. that reported, "clinically detectable laxity is not caused by isolated rupture of one bundle, but rather by functional disruption" and is most likely due to a complete tear<sup>16</sup>. Future investigation of ACL tear should include measuring the force applied for anterior translation of the tibia, utilization of various angles of knee flexion, and applying ground reaction forces along with muscle load forces across the joint.

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# INFO FOR CONTRIBUTORS

## What to Submit

Articles relating to osteopathic medicine in either the clinical or scientific area are welcomed. Articles should either document an osteopathic contribution in these areas or contribute to the education of the osteopathic physician. All articles will be reviewed by consultant(s) in the proper field and will be subject to a careful editing process. Interns, residents and fellows should include their trainer(s) as author(s). If the trainee is the sole author and wishes the paper to be published in his/her name only, a letter indicating the trainer's release of the paper from his/her department must accompany the manuscript.

Articles dealing with management problems, current legislation or regulation and similar topics will also be considered for publication. Such articles must be original work.

A short biography (C.V. acceptable), photograph of the author(s) and, in the case of medical articles, three questions (i.e., multiple choice, true/false) pertaining to the article for use in *The Journal's* "CME Quiz" feature should accompany the manuscript.

## Types of Articles

**Original articles** — Original articles present information that is new and important to osteopathic medicine. They may document clinical material, applied research or laboratory research. Article length may range from 2,000 to 4,000 words (approximately 8 to 16 typewritten pages).

**Clinical reports** — These include case reports and brief descriptions of new techniques, equipment or research. They usually range from 1,000 to 2,000 words. Since they do not require abstracts, a final paragraph should provide a summary.

**Reviews** — Reviews are comprehensive surveys that synthesize established ideas and develop new ones. They may deal with clinical, investigational or basic science subjects. Length may vary from 3,000 to 5,000 words (12 to 20 typewritten pages).

**Special articles** — Articles that do not fall into the above categories (i.e., those on history, demographics, education) will be considered for publication as feature articles.

## Manuscripts

Authors are encouraged to submit manuscripts via e-mail to [publ@poma.org](mailto:publ@poma.org). Papers may also be submitted by regular mail. Manuscripts sent by e-mail should be sent as an attachment in .doc, .wpd or .rtf format. Papers submitted by regular mail should be typed in double spacing on 8-1/2" x 11" white paper, one side only, preferably with one-inch margins all around the page. Each page should be numbered. To facilitate the editorial process, authors who submit papers via regular mail are asked to include an original manuscript, one photocopy and a clearly labeled CD containing an electronic version of the text in one of the above formats. Any electronic artwork pertaining to the article should be saved on the disk as a separate file.

The manuscript should include:

- title;
- author(s) name(s) with highest academic degree;
- abbreviated title;      • abstract, if applicable;
- text;                      • references.

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Submit articles to: [bdill@poma.org](mailto:bdill@poma.org) or  
The Journal of the POMA, 1330 Eisenhower  
Blvd., Suite 100, Harrisburg, PA 17111-2395.

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## References

References should be typed, double-spaced, on a separate sheet. All references listed should be cited in superscript throughout the text. They should be numbered in the sequence in which they first appear in the text, listing each one only once.

Examples of properly listed references follow:

**Journal reference** — List the author's name, article title, journal name as abbreviated in *Index Medicus*, year, volume number, page number(s).

*Example* — Davidson C, Burkinshaw L, McLachlan MSF, et al: Effect of long-term diuretic treatment on body potassium in heart disease. *Lancet* 1976;2:1044.

**Book reference** — List the author's name, book title, location and name of publisher, year of publication. Exact page numbers are required for direct quotes.

*Example* — Fudenberg HH, Stites DP, Caldwell JL, et al: *Basic and Clinical Immunology*, ed 2. Los Altos, California, Lange Medical Publications, 1978.

**Book chapter reference** — List the author's name, chapter heading, editor's name, book title, location and name of publisher, year of publication and page number(s).

*Example* — Elias M, Elias P: Motivation and activity, in Birren JE, Schaie KE (eds): *Handbook of the Psychology of Aging*. New York, Van Nostrand, 1976, p 357.

References generally should not exceed 30 in major articles, fewer in shorter articles.

## Illustrations

Illustrations include photographs, line drawings, graphs and charts. All illustrations should be numbered and cited within the text. X-ray films are generally not acceptable.

**Electronic Artwork** — Please note that *The JPOMA* cannot use line art or photographs that are inserted, embedded or copied into an electronic text file. Authors are asked to send the original electronic artwork files separately. Line art must be saved in .eps, .jpeg, .tif or .pdf format. Digital photographs should be sent using the highest print resolution available in .jpeg format, whenever possible. The minimum resolution for digital photographs in .jpeg format is 1024x768 pixels; no less than 72 dpi. Compressed .tif files with a minimum of 300 dpi are also acceptable. Scanned photographs should be sent at 100 percent of the original with a minimum resolution of 300 dpi.

**Printed Photographs** — Please do not bend, fold or use paper clips to attach to the manuscript. Photographs should be unmounted and untrimmed high-quality, glossy, black-and-white or color prints. A label listing the author's name, article title and a number keying the photograph to its place in the article should be affixed to the back of the photograph. *Please note* — Photographs that include patients, staff, etc., must be accompanied by a signed legal release form.

**Other Illustrations** — Figures, charts and graphs should be of professional quality. Lettering should be large and clear to allow for reduction, if necessary. Glossy, black-and-white prints of drawings, rather than originals, should be submitted whenever possible.

## Editorial Review

Each article submitted will be forwarded to the editor-in-chief for review. Articles deemed acceptable will then be sent to the head of the POMA committee related to the subject involved, and an independent reviewer at the editor-in-chief's discretion. Authors whose articles are accepted for publication will be notified in writing, and will be notified if any rewrites or clarifications are needed before publication. Manuscripts submitted cannot be returned.

# CME Quiz

Name \_\_\_\_\_

AOA # \_\_\_\_\_

1. What knee flexion angle has the most restraint to anterior translation of the tibia, and can be utilized with the Lachman's test when assessing the competency of the anterior cruciate ligament?

- a. 45 degrees
- b. 90 degrees
- c. 0 degrees
- d. 30 degrees

2. Which of the following are possible injuries to the anterior cruciate ligament?

- a. Complete tear
- b. Partial tear
- c. Interstitial lengthening
- d. Bony avulsion
- e. All of the above

3. Historically, what has been reported as the functions of the anteromedial bundle (AMB) and the posterolateral bundles (PLB), respectively?

- a. AMB tight in extension, PLB tight in extension and internal rotation
- b. AMB tight in flexion, PLB tight in extension and internal rotation
- c. AMB tight in extension, PLB tight in flexion and internal rotation
- d. AMB tight in flexion, PLB tight in flexion and internal rotation

4. According to current CDC guidelines the following patients should be offered testing for HCV:

- a) Individuals born between the years of 1945-1965
- b) Individuals born after 1971
- c) Individuals engaging in IV drug use
- d) Both a and b
- e) Both a and c
- f) All of the above

5. Identification of HCV positive patients is important for the following reasons:

- a) High cost of treatment
- b) High rates of HCV infection
- c) High death rate of HCV
- d) All of the above

6. Psychiatric patients have higher rates of HCV infection than the general population as shown in several research studies.

True      False

## Answers to Last Issue's CME Quiz

- 1. a
- 2. b
- 3. b
- 4. c
- 5. false

*(Questions appeared in the March 2018 Journal.)*

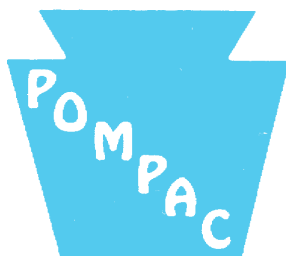
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*answer the following questions and return the completed page to the POMA Central Office, 1330 Eisenhower Boulevard, Harrisburg, PA 17111-2395. Upon receipt of the quiz, we will forward it to the AOA CME Department. You will receive 0.5 Category 2B AOA CME credits. Please include your AOA number.*

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