PHYSIATRIST'S VOICE

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ENHANCING HEALTH AND FUNCTION THROUGH EDUCATION AND RESEARCH IN THE FIELD OF PHYSICAL MEDICINE AND REHABILITATION

IN THIS ISSUE

President's Message

Diana A. Hussain, M.D.

Dear Colleagues,

As we welcome the summer season, June offers us an opportunity to reflect on the progress we have made as a specialty and the exciting opportunities that lie ahead for Physical Medicine and Rehabilitation.

Every day, physiatrists have the privilege of helping patients regain function, restore independence, and improve quality of life. Whether caring for individuals recovering from stroke, traumatic injury, chronic pain, musculoskeletal disorders, spinal cord injury, or complex rehabilitation needs, our specialty remains uniquely focused on what matters most to patients—the ability to live life to its fullest potential.

Across Florida, PM&R physicians continue to lead innovation in patient-centered care. Advances in regenerative medicine, interventional pain management, neurorehabilitation, adaptive technologies, and multidisciplinary rehabilitation programs are expanding the possibilities for recovery and function. At the same time, we must remain committed to evidence-based medicine, lifelong learning, and the highest standards of clinical excellence.

Advocacy also remains central to our mission. As healthcare continues to evolve, it is essential that physiatrists have a strong voice in shaping policies that affect our patients and our profession. The Florida Society of Physical Medicine & Rehabilitation remains dedicated to representing our members, promoting access to quality rehabilitation services, and supporting the next generation of physiatrists.

As we look ahead, I encourage all members to participate in our upcoming FSPMR Annual Meeting. Our annual conference provides a valuable opportunity to connect with colleagues from across Florida, share clinical experiences, discuss emerging research, and explore innovations that are shaping the future of rehabilitation medicine. Whether you are an established physiatrist, early in your career, or still in training, the meeting offers an exceptional forum for education, mentorship, collaboration, and professional growth. I look forward to seeing

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many of you there as we continue to strengthen our PM&R community and advance our specialty together.

I encourage each of you to stay engaged with the Society, participate in our educational programs, and continue sharing your expertise and passion with colleagues across the state. Our strength as a specialty comes from our willingness to collaborate, innovate, and advocate together.

Thank you for the remarkable work you do every day on behalf of your patients and communities. It is an honor to serve as your President. I look forward to continuing to advance the mission of the Florida Society of Physical Medicine & Rehabilitation and to building an even stronger future for PM&R in Florida.

Wishing you a productive and enjoyable summer.

Warm regards,

Diana Hussain, MD
President
Florida Society of Physical Medicine & Rehabilitation

SAVE THE DATE:
OCTOBER 9/10
2026

Florida Society of Physical Medicine and Rehabilitation
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Innovations in P M & R

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Beware of Scam Targeting Physicians

The Florida Department of Health (DOH) has issued a warning to physicians and other healthcare professionals about fraudulent emails and phone calls impersonating the Division of Medical Quality Assurance. Scammers are reportedly using licensure and enforcement information to obtain Florida physicians' personal or financial data. DOH urges physicians to verify all communication tied to licensing or disciplinary matters directly thought official state channels.

<Link to full FMA article>

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Review Article

Fat Embolism Syndrome: A Two-Hit Mechanism of Mechanical and Biochemical Injury

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ABSTRACT

Fat Embolism Syndrome (FES) is a complication arising from skeletal trauma. It is characterized by a combination of delayed onset respiratory insufficiency, neurologic dysfunction, and petechial rash. These manifestations typically arise 24-72 hours after injury. Current consensus supports a model involving the initial fat embolization being followed by secondary inflammation and an amplification cascade that leads to organ injury and dysfunction. Fat embolization is common, but clinically significant FES only occurs in a small proportion of patients. Risk increases with multiple injuries and fractures and when stabilization is delayed. Morbidity and mortality risk increases when there is cerebral involvement. FES management focuses on supportive care, and most of those who survive FES end up achieving significant neurologic recovery.

Keywords: Fat Embolism Syndrome (FES); Long-bone fractures; Cerebral fat embolism; Intramedullary reaming; Two-hit injury mechanismmanagement

INTRODUCTION

Fat Embolism Syndrome (FES) occurs when fat particles enter the bloodstream and obstruct small vessels, leading to multiorgan dysfunction that typically manifests 24 to 72 hours after skeletal trauma [1]. The syndrome presents with a classic triad of symptoms that includes respiratory insufficiency, neurological dysfunction, and petechial rash [2]. Cerebral involvement occurs in the majority of FES cases and represents the most severe manifestation, with mortality higher when neurological involvement occurs [3,4].

Here we review FES, including its epidemiology and clinical presentation, as well as how it is diagnosed and managed.

Fat embolism syndrome arises from combined mechanical and biochemical injury

Research suggests that FES occurs as a "two-hit" process in which an initial mechanical embolization is followed by secondary inflammatory and biochemical injury that amplifies end-organ dysfunction [5]. Increased intramedullary pressure following fracture or surgical manipulation forces fat globules from bone marrow into disrupted venous sinusoids, resulting in systemic embolization [6]. Fat particles measuring 10 to 40 μm may lodge within pulmonary capillaries or traverse the pulmonary circulation or a patent foramen ovale to reach cerebral arterioles [7].

In addition to these mechanical changes, biochemical toxicity occurs due to the stimulation of cytokine and reactive oxygen species [8,9]. The interaction of mechanical obstruction and biochemical toxicity explains the delayed onset of symptoms, as well as the predominance of pulmonary and cerebral involvement. It also highlights the potential to impede damage with prompt recognition and supportive care.

The most significant cases arise due to long-bone fractures

It is estimated that 90% of FES cases are due to long-bone

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fractures, such as fractures of the femur or tibia [10]. Nonetheless, FES that is considered clinically significant occurs in only 0.9% to 2.2% of those who suffer long-bone fractures [11,12]. Risk is higher in those who endure more fractures and more severe fractures, reaching 5% to 10% in people who experience bilateral femoral fractures. In contrast, those with isolated fractures develop FES less than 1% of the time [13].

Younger patients are more susceptible to FES, though the mechanism underlying this differential vulnerability is not known [14]. When stabilization does not occur in the first 24 hours, FES is more likely to occur, likely due to inflammation exacerbating injuries [15].

FES risk is higher in the context of intramedullary reaming

It is common for fat globules to be released into the bloodstream during surgeries that involve intramedullary reaming. In nearly 90% of patients undergoing intramedullary nailing or reaming of fractures, fat passing through the right atrium has been detected [16,17]. This effect is thought to occur due to intramedullary reaming putting pressure on the bone canal, pushing marrow fat into venous sinusoids [16].

Strategies to reduce the volume of fat that is embolized during reaming have been developed. For instance, slower reamer advancement combined with quick reamer rotation may reduce intramedullary pressure and minimize the amount of fat entering circulation [16,20]. Sharp reamers that have a smaller shaft diameter are associated with a lower embolic load compared to reamers that are dull with larger shift diameters [17-20].

Venting the medullary cavity by drilling a small cortical hole (typically between the greater and lesser trochanter) provides a pressure relief valve during reaming and nail insertion. One randomized trial demonstrated that venting reduced major embolic events from 85% to 20%, representing a substantial risk reduction [21,22]. It has also been suggested that using suction to clear marrow could provide complementary support [20].

The Reamer-Irrigator-Aspirator (RIA) system represents the most technologically advanced approach to mitigating reaming-related embolization (Figures 1-4). By simultaneously irrigating and aspirating intramedullary contents during reaming, the RIA system has been demonstrated to significantly reduce the volume of embolized fat compared to conventional reaming [16,17,22]. While its direct impact on preventing clinical FES remains under investigation, the RIA system is particularly favored in high-risk patients, including those with polytrauma, compromised pulmonary function, or bilateral long-bone fractures.

Figure 1: Reamer-Irrigator-Aspirator (RIA) used to reduce the volume of embolized fat to decrease the risk of Fat Embolism Syndrome (FES).

Figure 2: Reamer-Irrigator-Aspirator (RIA) used to reduce the volume of embolized fat to decrease the risk of Fat Embolism Syndrome (FES).

Figure 3: Reamer-Irrigator-Aspirator (RIA) used to reduce the volume of embolized fat to decrease the risk of Fat Embolism Syndrome (FES).

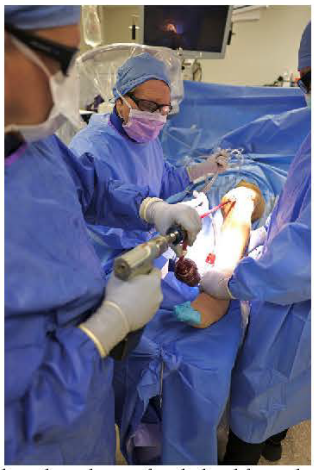

Figure 4: Reamer-Irrigator-Aspirator (RIA) used to reduce the volume of embolized fat to decrease the risk of Fat Embolism Syndrome (FES).

Fat embolism syndrome presents with delayed respiratory and neurological manifestations

FES typically manifests within 24 to 72 hours of injury and follows a characteristic clinical pattern [2]. Respiratory manifestations are usually the earliest and most consistent findings, presenting as progressive hypoxemia (PaO_2 <60 mmHg on room air), tachypnea and bilateral pulmonary infiltrates resembling acute respiratory distress syndrome [21].

Neurological involvement ranges from subtle confusion and agitation to seizures, focal neurological deficits, and coma, typically developing 12 to 72 hours after injury [3]. Neurologic dysfunction is the principal determinant of morbidity and mortality.

A petechial rash occurs in 20% to 50% of cases but is highly specific when present; it may involve the anterior chest, axillae, neck, conjunctivae, and oral mucosa [23]. Thrombocytopenia develops in up to 50% of patients within 24 to 48 hours due to platelet consumption within microvascular thrombi [24].

Diagnosis depends on clinical criteria and exclusion of competing etiologies

Diagnosing FES is challenging because its presentation is nonspecific, and there are no definitive laboratory or imaging tests. The gold standard for FES diagnosis is the use of the Gurd and Wilson criteria. The Gurd and Wilson criteria requires two major criteria, which may include petechial rash, respiratory insufficiency with bilateral infiltrates, and cerebral involvement [2]. It also requires four minor criteria, which may include tachycardia, fever, retinal changes, jaundice, renal dysfunction, thrombocytopenia, anemia and elevated erythrocyte sedimentation rate. The Schonfeld Index and the Lindeque criteria are other indices that may support diagnosis. Nonetheless, clinical judgment cannot be replaced.

Brain MRI provides the highest diagnostic sensitivity for cerebral involvement

Imaging can help with the recognition of cerebral involvement. Unfortunately, Computer Tomography (CT) often fails to detect such involvement due to the nonspecific findings it produces [25]. On the other hand cerebral involvement is regularly identified with brain Magnetic Resonance Imaging (MRI) [26]. A starfield pattern is a characteristic imaging phenomenon in FES and involves multiple parts of the brain including the basal ganglia, corpus collasum, internal capsule, and centrum semiovale. (Figure 5). As the clinical course of FES progresses, so too do the lesions, and prompt intervention may help to reverse any early cytotoxic effects [27].

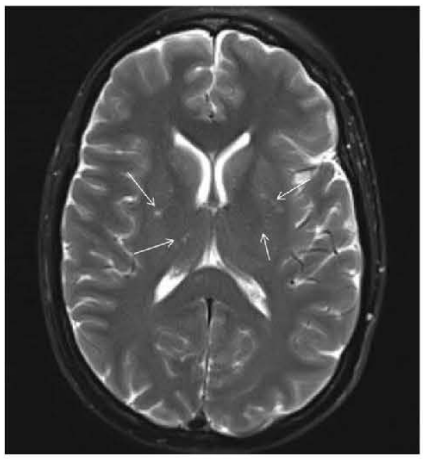

Figure 5: "*Starfield pattern*" demonstrated on T2-weighted brain Magnetic Resonance Imaging (MRI).

Management emphasizes supportive care and early fracture stabilization

There is no established therapy for FES, but early identification and intervention are critical for successful management [21]. Up to half of all patients require mechanical ventilation [13]. Supportive care typically involves oxygenation maintenance, stabilization hemodynamics, managing fluids, Deep Vein Thrombosis (DVT) prophylaxis, stress ulcer prevention, nutritional support and frequent assessment of neurologic status [28].

Early fracture stabilization within 24 hours represents the most effective preventative intervention [15]. Bone's randomized trial demonstrated reductions in Acute Respiratory Distress Syndrome (ARDS) incidence, ICU length of stay, and pulmonary complications with early fixation. It has been suggested that, in unstable patients, temporary external fixation followed by definitive repair once stability is achieved could minimize injury caused by a surgical "second-hit" [29].

Pharmacologic therapies have not demonstrated definitive efficacy for treatment. Prophylactic corticosteroids have been associated with reduced incidence in high-risk patients [14,23,30]. However, concerns regarding infection risk, fracture healing, and avascular necrosis have limited routine adoption [31]. Neuroprotective strategies beyond maintenance of cerebral perfusion remain investigational and decompressive hemicraniectomy has been described only in rare catastrophic cases [16,32].

Most survivors experience substantial neurological recovery

The majority of survivors achieve complete or near-complete neurologic recovery [33]. Serial MRI demonstrates gradual lesion resolution that correlates with clinical improvement [27]. Importantly, even profoundly comatose patients may achieve meaningful recovery with aggressive care [34].

Takeaways

FES is a potentially devastating complication of skeletal trauma that requires heightened clinical awareness and prompt intervention. Early fracture stabilization, vigilant supportive care and timely recognition of neurologic involvement form the foundation of modern management. Advances in neuroimaging and trauma systems have improved diagnostic accuracy and outcomes. Despite severe initial presentations, most survivors achieve functional independence, underscoring the importance of aggressive early care and sustained clinical vigilance.

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Fat Embolism

By Craig Lichtblau, M.D.

Introduction

Fat embolism and fat embolism syndrome (FES) are clinical phenomena characterized by the systemic dissemination of fat emboli within the systemic circulation. The dissipation of fat emboli disrupts the capillary bed and affects microcirculation, causing a systemic inflammatory response syndrome. End-organ manifestation typically involves the skin, the central nervous system, the lungs, and the retina. Fat embolism syndrome is most common in patients with orthopedic trauma. It also can occur in nontraumatic conditions such as acute or chronic pancreatitis, bone marrow transplant, or liposuction.

Fat embolism is the presence of fat globules in microcirculation, whereas fat embolism syndrome is a systemic manifestation of the dissemination of fat molecules or globules in microcirculation. Fat embolism syndrome is a continuum of fat embolism. Zenker first described the clinical presentation of fat embolism syndrome in 1863 in a patient suffering from a crush injury. In 1873, Von Bergmann clinically diagnosed the condition for the first time.

Since the initial description by Zenker and Von Bergmann, several articles and studies have been published on this disease entity. In the early 1970s, Gurd proposed a clinical criterion for diagnosing fat embolism syndrome. This was later modified by Wilson in 1974 in conjunction with Gurd and is the most commonly used clinical criteria for diagnosis. Since the majority of reported cases of fat embolism are seen in patients with orthopedic trauma, most research on this condition is in orthopedic patients. Fat embolism syndrome still poses a major diagnostic challenge to most clinicians.

Etiology

Traumatic Causes

Traumatic causes of fat embolism syndrome are more common than nontraumatic causes. Trauma as a cause of fat embolism syndrome can occur from the fracture of the long bones, such as the femur and tibia, and also the pelvis. Operations such as pelvis or knee arthroplasty or intramedullary nailing and reaming can cause fat embolism syndrome. The technique of inserting the intramedullary nails that can increase the likelihood of development of fat embolism syndrome includes increased velocity in reaming, overzealousness in the nailing of the medullary cavity, and the widened gap between the nail and the cortex of the bone

Other rare traumatic conditions that can cause fat embolism syndrome include the following:

- Massive soft tissue damage.
- Crush injury.
- Prolonged cardiopulmonary resuscitation.
- Severe burn involving more than 50% of body surface area.
- Bone marrow transplantation.

- Liposuction.
- Median sternotomy.

Nontraumatic Causes

Cases of non-traumatic fat embolism syndrome are very rare and include the following:

- Fatty Liver.
- Acute or chronic pancreatitis.
- Therapy with corticosteroid.
- Infusion of fat emulsion.
- Lymphography.
- Hemoglobinopathies.
- Sickle cell disease.
- Thalassemia.

Several risk factors are associated with the development of fat embolism syndrome. The following conditions increase the risk of developing fat embolism syndrome:

- Young age.
- Closed fractures.
- Multiple fractures.
- Prolonged conservative management of long bone fracture.

Epidemiology

Variable data on the incidence of fat embolism and fat embolism syndrome have been reported. Clinical diagnosis of small fat embolism or mild cases of fat embolism syndrome may be missed and go unnoticed.

Fat embolism and fat embolism syndrome can also occur intraoperatively while repairing a long bone fracture. A transesophageal echocardiogram detected fat embolism in nearly 41% of patients. Fat embolism has a higher incidence than fat embolism syndrome. In the landmark study carried out by Gurd, using the established clinical criteria, an incidence of 19% of fat embolism syndrome was reported in a group of trauma patients.

Since early open reduction and internal fixation have become the standard of care for repairing fractures of long bones, the incidence of fat embolism and fat embolism syndrome has gradually decreased. Most recent studies show an incidence of about 1% to 11%.

History and Physical

Fat embolism typically manifests 24 to 72 hours after the initial insult. The history should elicit the time and onset of symptoms. Sickle cell disease and other forms of hemoglobinopathy can precipitate fat embolism syndrome. Patients should be asked about the history of sickle cell disease in family members and any complications of sickle cell disease like acute chest syndrome, vaso-occlusive crises, or avascular necrosis of long bones.

The history of drug ingestion or alcoholism that can trigger pancreatitis leading to fat embolism syndrome should also be clarified. The symptoms of fat embolism and fat embolism syndrome are nonspecific. Patients might complain of the following:

- Pain related to bone fracture.

- Nausea.
- General weakness.
- Malaise.
- Difficulty breathing.
- Headache.

Signs and Symptoms

These include but are not limited to the following:

- **Respiratory**
  - Tachypnea.
  - Tachycardia.
  - Diaphoresis.

- **Central nervous system**
  - Agitation from hypoxia.
  - Restlessness.
  - Change in mental status.
  - Seizure.
  - Coma.

- **Skin**
  - Petechial rash.

- **Eye**
  - Retinal hemorrhage.

Physical Examination

- **General Appearance**
  - Most patients with fat embolism syndrome are anxious, agitated, and ill-looking.

- **Respiratory system**
  - Assess for abnormal breath sounds, work of breathing, and evidence of respiratory distress or impending respiratory failure.
  -
- **Cardiovascular**
  - The blood pressure and heart rate might be high in the beginning, but patients might suffer a cardiovascular collapse with ensuing hypotension.

- **Central nervous system**
  - A Glasgow Coma Scale assessment of less than 8 indicates that the airway should be secured and the patient placed on mechanical ventilation. Symptoms involving the central nervous system in fat embolism syndrome are thought to arise from cerebral edema rather than cerebral ischemia.

- **Skin**
  - Usually, a petechial rash on the skin should alert the clinician about fat embolism syndrome.

- **Eye**
  - A fundoscopic examination is necessary to check for the presence of retinal hemorrhage.

Evaluation

Diagnosis of FES can be very challenging because the signs and symptoms can be vague. There are no universally accepted diagnostic criteria; however, 2 major criteria or at least one major criteria and 4 minor criteria.

Major Criteria

- Petechial rash.
- Respiratory insufficiency.
- Cerebral involvement in non-head injury patients.

Minor Criteria

- Fever greater than 38.5°C.
- Tachycardia heart rate greater than 110 beats per minute.
- Retinal involvement.
- Jaundice.
- Renal signs.
- Anemia.
- Thrombocytopenia.
- High erythrocyte sedimentation rate.
- Fat macroglobulinemia.

- **Complete Blood Count**
  - Anemia and thrombocytopenia are very common in fat embolism syndrome.

- **Comprehensive Metabolic Panel**
  - Metabolic acidosis, increased levels of BUN, and creatinine can be seen in patients with fat embolism syndrome.

- **Arterial Blood Gas**
  - Ventilation-perfusion mismatch is a hallmark of fat embolism syndrome. The arterial blood gas analysis usually has a low partial pressure of oxygen, causing hypoxemia. An increased alveolar-arterial (A-a) gradient is common in fat embolism syndrome. The A-a gradient is the difference between the partial pressure of oxygen in the alveolus and the partial pressure of oxygen in the pulmonary artery. In fat embolism syndrome, the pulmonary blood vessels are occluded, causing perfusion impairment with normal ventilation. The result of this in fat embolism syndrome is a ventilation-perfusion mismatch.

Imaging Studies

- **Chest X-ray**
  The chest X-ray reveals the presence of the following:
  - Diffuse interstitial marking.
  - Pulmonary edema.
  - Lung infiltrate.
  - Flake-like pulmonary marking (snowstorm appearance).

- **CAT scan of the Chest**
  - Area of increased vascular congestion.
  - Pulmonary edema.

- **Imaging of the Brain**
  - CT scan is not a very sensitive imaging study of the brain in fat embolism syndrome. Still, it can be used to exclude other causes of altered mental status, such as epidural, subdural, or subarachnoid bleeding.
  - MRI is the most sensitive test that can be used to demonstrate changes in the brain related to fat embolism syndrome.
  - Lesions seen in fat embolism syndrome are distributed in the following areas of the brain:
    - Centrum semi vale.
    - Subcortical white matter.
    - Ganglionic regions.
    - Thalamus.

Treatment

Pharmacotherapy

- There is no specific treatment for fat embolism or fat embolism syndrome. Therapy with corticosteroids has been proposed for the treatment of fat embolism syndrome based on the following effects:
  - Inhibition of complement-activated leucocyte aggregation.
  - Limiting FFA level.
  - Membrane stabilization.

Inferior Vena Cava Filter

Operative Measures

- It is highly recommended that early open reduction and internal fixation of long bone fractures be started. The incidence of fat embolism syndrome is higher in a patient with long bone fractures who are managed conservatively. Using internal fixation devices in managing long bone fractures significantly reduces the incidence of fat embolism syndrome. During operative fixation of the long bone fracture, care must be taken to limit the intramedullary pressure, as high pressure is associated with increased fat emboli entering the systemic circulation. Some techniques utilized in orthopedic surgery to reduce embolization include:

- Lavage of bone marrow before fixation.
- Venting of the femoral bone.
- Drilling of small holes in the cortex of the bone to lower intramedullary pressure.

It must be realized; however, that none of these maneuvers has been shown to clinically reduce fat embolism syndrome.

Differential Diagnosis

The differential diagnosis of fat embolism and fat embolism syndrome are related to each system that this system disease affects.

Respiratory

- Fat embolism syndrome and fat embolism should be distinguished from pulmonary contusion, pulmonary edema, aspiration pneumonia, and pulmonary thromboembolism. CT of the chest can aid in distinguishing fat embolism syndrome from other pathologies of the lung. Pulmonary contusion typically develops after about 6 to 10 hours of a chest injury. On CT of the chest, there is a localized ground glass opacification on the lung. In pulmonary edema, there is symmetrical vascular engorgement with pleural effusion and ground-glass opacification. The gold standard for diagnosis of thromboembolism is a CT angiogram of the chest where, classically, a filling defect is present.

Central Nervous System

- Clinical conditions affecting the central nervous system that should be considered in the differential diagnosis:
    - Meningitis.
    - Encephalitis.
    - Brain tumor.
    - Epidural hematoma.
    - Subdural hematoma.
    - Subarachnoid bleed.

All the conditions listed above can cause altered mental status with a change in the Glasgow Coma Scale mimicking fat embolism syndrome. CAT scan of the brain can help delineate a bleed or tumor. Meningitis and encephalitis can be ruled out with a lumbar puncture and cerebrospinal fluid analysis

Skin Rash

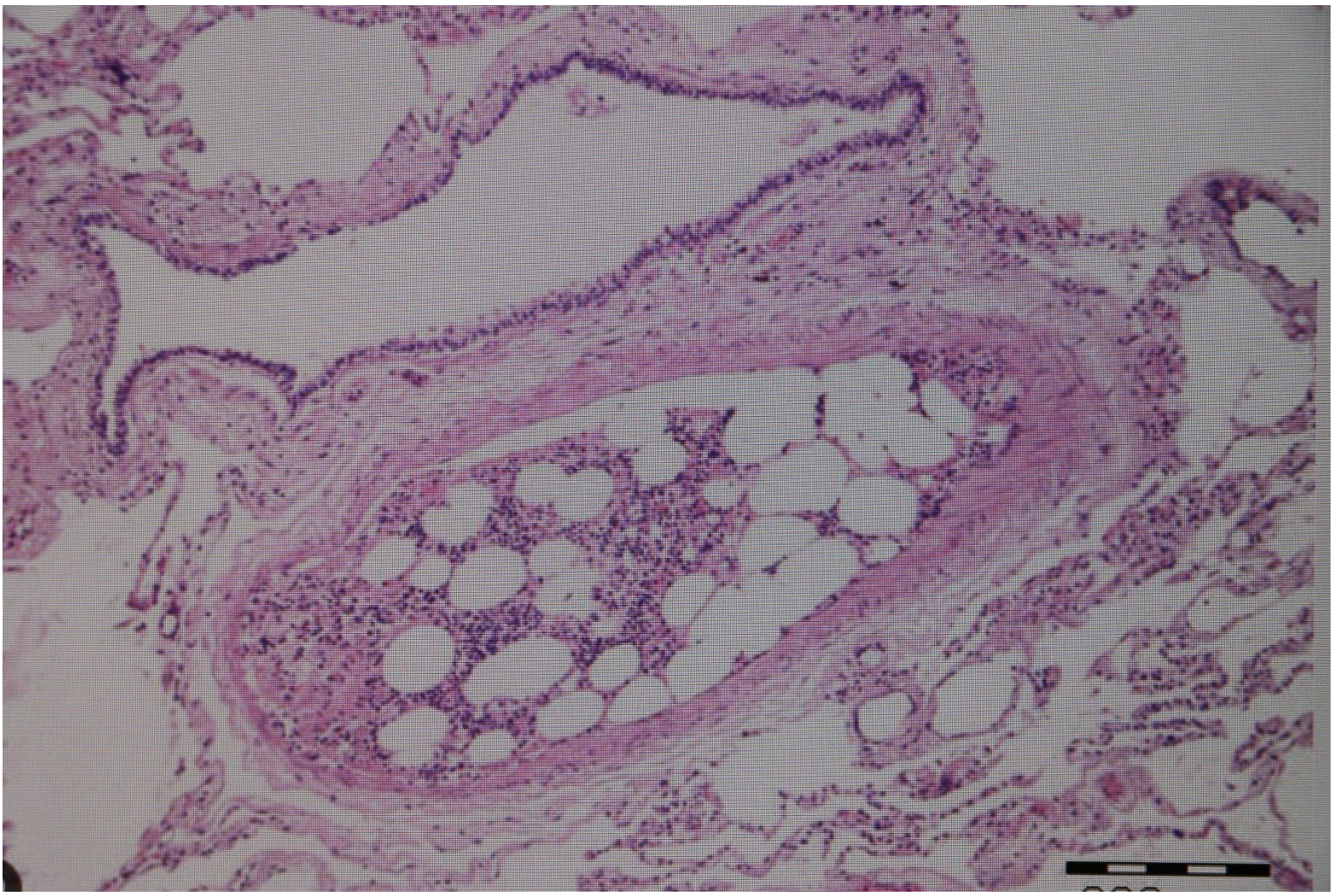
The following conditions can be present with petechial skin rashes:

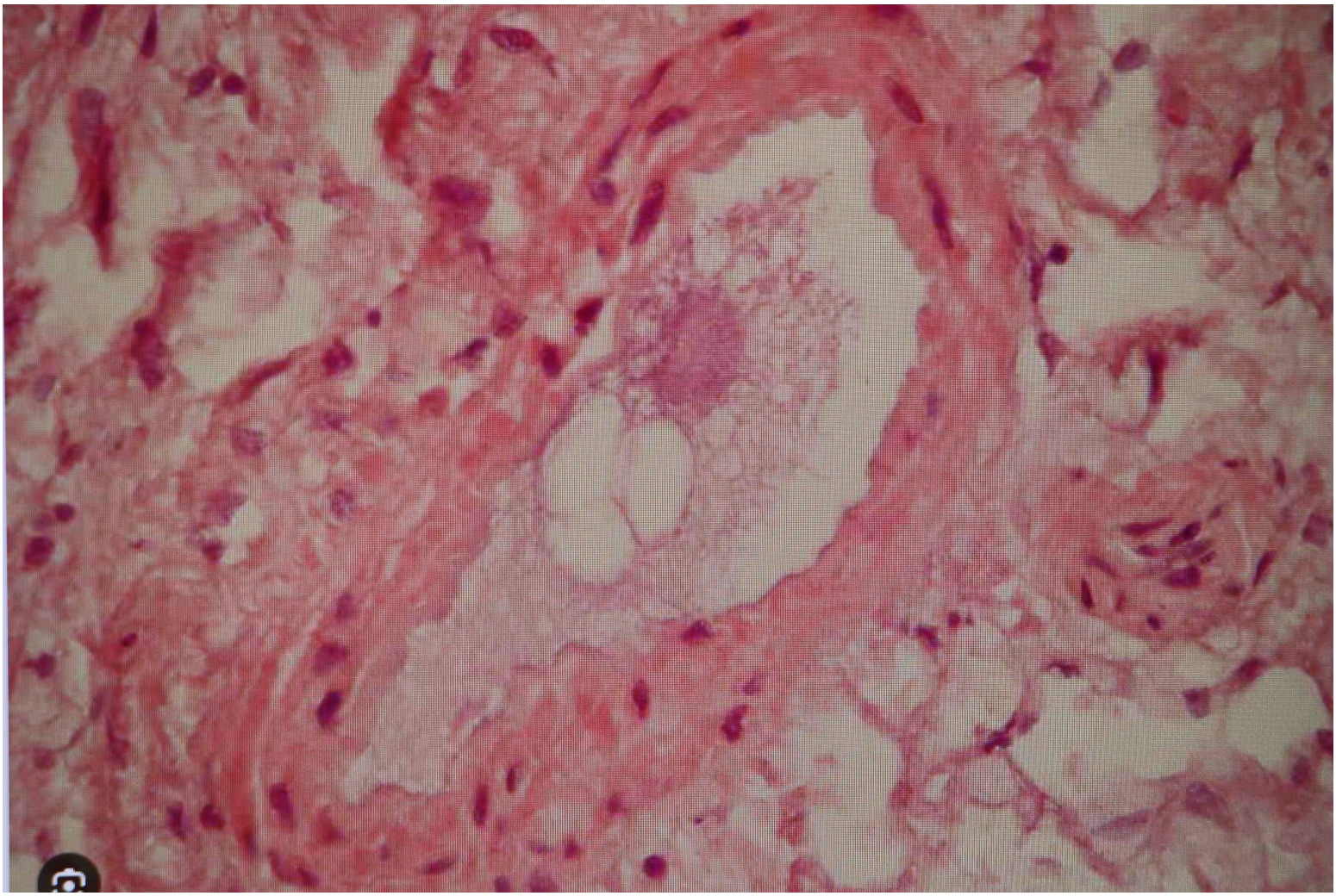
- Idiopathic thrombocytopenic purpura.
- Thrombotic thrombocytopenic purpura.
- Leukemia.

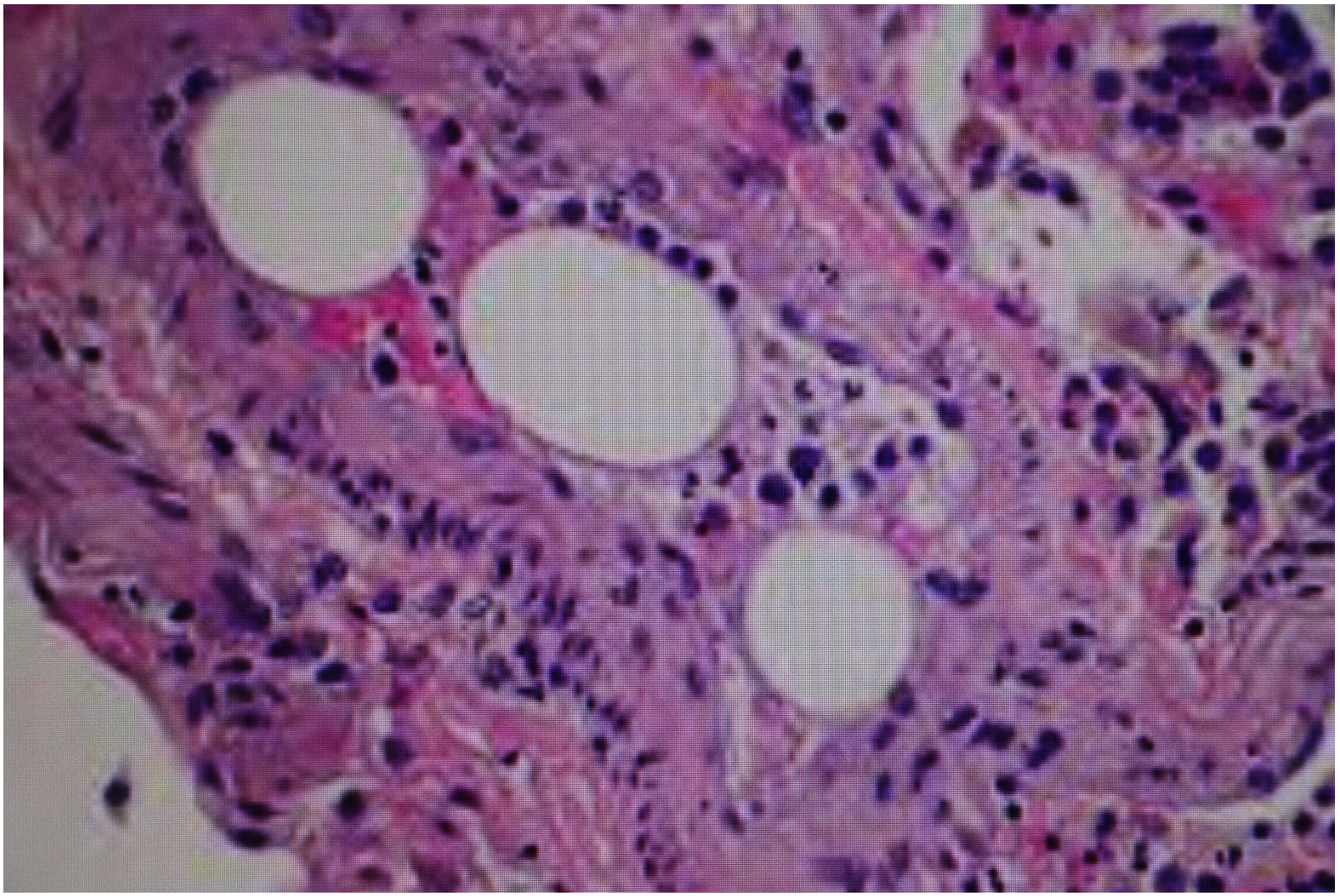
All of these blood disorders should be considered in the presence of skin rash and other associated clinical signs and symptoms.

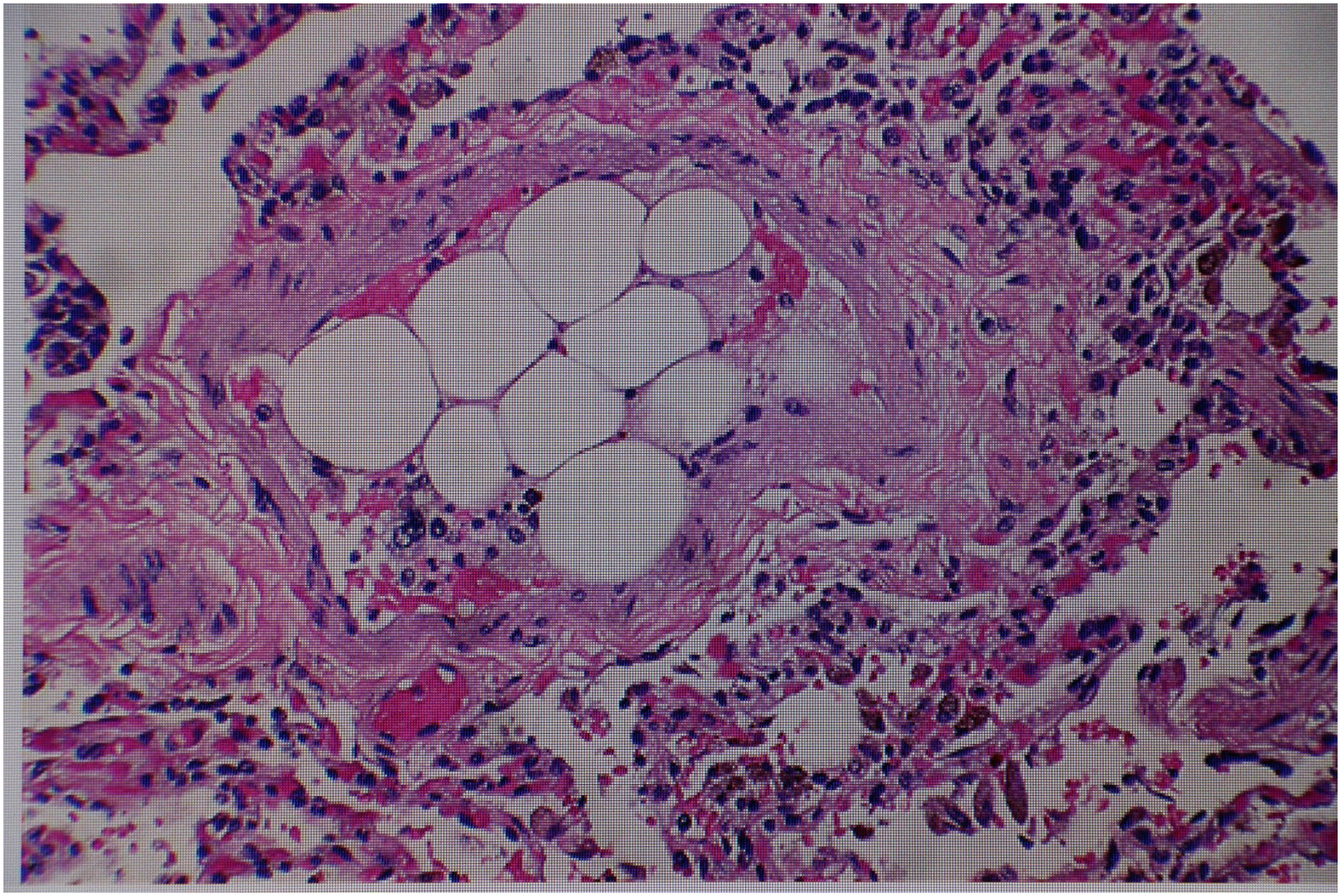
Prognosis

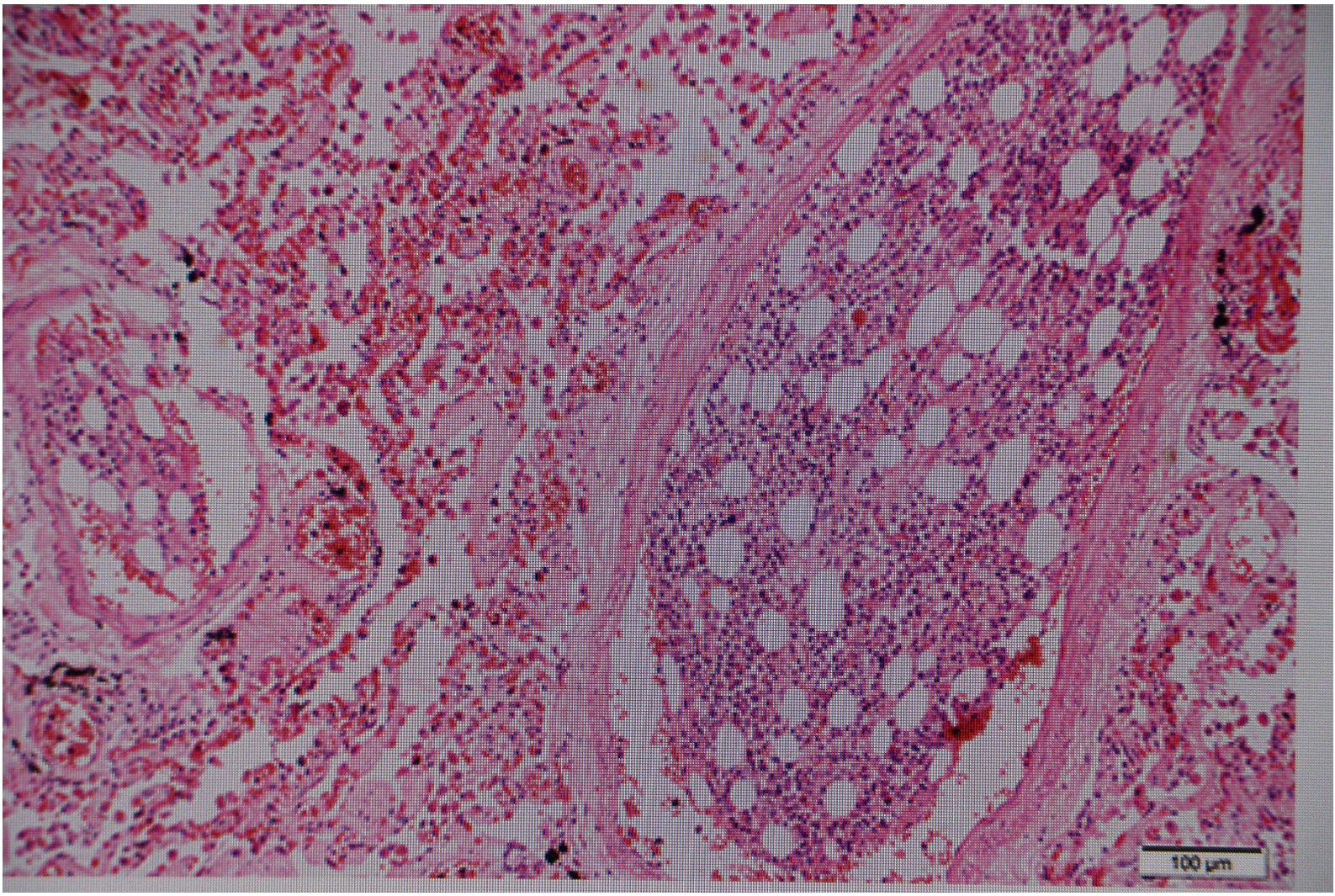
In patients with traumatic fat embolism syndrome, the prognosis depends on early open reduction and internal fixation of the long bone fracture. Most patients with adequate support therapy can recover from the neurological, respiratory, and retinal changes associated with fat embolism syndrome. The most recent studies have approximate mortality between 7% to 10%. The most common causes of morbidity or mortality include acute respiratory distress syndrome, ARDS, and cerebral edema.







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What has FSPMR done for me lately?

By Marc R. Gerber, M.D.

For those of you who may ask this question including myself, I want to share some recent issues which have been significant to our members.

First, I have a legal issue myself that is almost unimaginable to comprehend. This has happened to at least 20-30 physicians in the state that we know of. We are currently working with other state societies to hopefully address this legal issue, but it is complicated and may take some time address it legislatively. It is related to a billing issue in worker's compensation. Anyone who sees workers compensation patient's needs to pay close attention and be careful about sending out any bills to a work comp patient. A patient I was treating was billed $10 for an MMI (maximum medical improvement) copay. We were told by the carrier to do this, yet they made a mistake. The patient did not have to pay it. We never collected it nor put the patient in collections. The mere instance of us sending a bill violated a rarely known law in the Consumer Protection Act which states work comp patients should not have to pay for care or be billed.

In 30 years of practice, I have never even heard of this law as it relates to bills. There are now several lawyers in the state that are trying to capitalize on this loophole in the law that conflicts with the Florida Work Comp Statutes which also states that when patients are at overall MMI, a $10 copay is required at each visit. No office insurance policies cover this, and I had to hire a civil defense lawyer to represent me for the claim for damages and mental distress for sending this bill. After what will be likely $15,000 or more of my own expenses, the case hopefully will be settled. I have been a member of FSPMR for the last 30 years and I encourage all members to attend our first ever independent Annual Educational FSPMR Meeting October 9-10, 2026. This topic will be further discussed. There is no other place or better place to learn more about topics like this and many other educational and legislative topics directly geared towards the field of Physical Medicine and Rehabilitation for Physiatrists practicing in the State of Florida.

Second, I would like to share a much better story with a happier ending. One of our members contacted FSPMR because they were having a significant issue with a pharmacy chain. I was put in touch with this member, and we discussed his issues. He was banned from the entire Publix pharmacy chain for reasons that he was not entirely aware of. They were no longer willing to fill his prescriptions. We spent some time discussing his practice and what he had been prescribing. He was acting with good intentions and was trying to treat pain. However, he was writing prescriptions for both opiates as well as benzodiazepines.

We talked about the risks of this combination together and since some of his patients were getting 3 or 4 opioid tablets per day in addition to benzodiazepines the pharmacists had significant concerns. We discussed that if his patients required benzodiazepines, they should be referred to a psychiatrist. Patients

must choose between opiates or benzodiazepines and if there are rare cases where they need both, they should certainly not be prescribed by the same practitioner. We discussed that he needed to talk to his patients about this and tell them that he was no longer able to continue both medications. If patients truly need both benzodiazepines and opiates and this is well documented with appropriate work up and medical diagnoses for both then a lowering of the opiate prescriptions would be appropriate, and the benzodiazepine prescriptions should come from a psychiatrist and certainly not from the same pain specialist writing the opioid.

I served as an Expert in Pain Medicine for the Department of Health and the Board of Medicine for about 10 years during the pill mill crisis. I reviewed hundreds of charts and the combination of benzodiazepines, opiates and sometimes muscle relaxers such as soma, was a red flag and continues to be one. When physicians, especially pain physicians, write benzos and opiates it flags them and pharmacists often call for confirmation or may even not fill prescriptions from these physicians.

After some education, this physician modified his prescribing practices, and I instructed him to contact the pharmacy chain and speak to the Vice President. After a discussion they agreed to continue to fill his prescriptions. He contacted me with this good news, and I was very happy to be able to help him. He was very thankful that FSPMR was able to instrumentally help his practice. It is this type of access to specialists, mentors and other healthcare professionals who have significant and experience in all aspects of medical and legislative topics that are available to our members. I encourage all members to reach out to the FSPMR Board whenever they have any type of practice issue or questions as we can put you in touch with a member who has the expertise to help you navigate through oftentimes very frustrating situations.

Marc R. Gerber, MD
Vice President, FSPMR
Program Chair, Annual Educational Meeting

Evidence-Based Use of Supplements in Physically Active Patients: What Works, What Doesn't, and What to Avoid

Author: Sonia Andreou, MD
PGY-IV, Physical Medicine & Rehabilitation
Larkin Community Hospital South Miami

Patients frequently ask physicians about dietary supplements, particularly those related to muscle building, fat loss, energy, or recovery. The supplement industry is a multi-billion-dollar market characterized by aggressive marketing, variable product quality, and limited regulatory oversight. Most supplements are not subject to FDA pre-market approval, and many lack rigorous safety or efficacy data, particularly with regard to hepatic and renal metabolism.

While placebo effects may play a role in perceived benefit, only a limited subset of supplements demonstrate consistent, reproducible effects in controlled human studies. This article reviews supplements with the strongest supporting evidence, those with limited or situational utility, and products that remain largely unsupported or misleading.

Supplements With Strong Evidence of Benefit

Creatine Monohydrate

Creatine monohydrate remains the most extensively studied ergogenic aid. It enhances high-intensity performance by increasing phosphocreatine availability, thereby facilitating ATP regeneration during short bursts of anaerobic activity. Numerous trials demonstrate improvements in strength, power output, lean body mass, and recovery.

Beyond musculoskeletal benefits, emerging evidence supports a role for creatine in neuroprotection, cognitive performance, and recovery from neurological injury. Concerns regarding renal impairment or pathologic water retention are not supported by data in individuals with normal renal function. The observed increase in body weight reflects intracellular water retention within muscle tissue rather than extracellular edema.

Typical dosing: 3–5 g daily; optional loading phase of 20 g/day for 5–7 days. Timing relative to exercise appears flexible, though peri-workout ingestion may improve uptake.

Electrolytes

Sodium, potassium, and magnesium are essential for neuromuscular transmission and muscle contraction. Athletes with significant sweat losses are at increased risk for electrolyte imbalance, cramping, and performance decline. Sodium replacement is particularly important during prolonged or high-intensity training.

Suggested intake: Approximately 300–700 mg sodium per hour during heavy sweating.

Beta-Alanine

Beta-alanine increases intramuscular carnosine, buffering hydrogen ions and delaying fatigue during high-intensity or high-volume exercise. Its primary benefit is improved exercise tolerance rather than maximal strength. Transient paresthesias are a common but benign side effect.

Dose: 2–4.8 g daily, divided to improve tolerability.

L-Citrulline (Citrulline Malate)

Citrulline enhances nitric oxide production and improves blood flow, endurance, and resistance training volume. Compared with arginine, citrulline demonstrates superior bioavailability.

Dose: 6–8 g approximately 30–60 minutes pre-exercise.

Omega-3 Fatty Acids (EPA/DHA)

Omega-3 fatty acids exert anti-inflammatory effects and support joint, cardiovascular, and neuromuscular health. Evidence suggests reduced delayed onset muscle soreness and improved recovery with consistent use.

Dose: 1–3 g combined EPA/DHA daily, preferably in re-esterified triglyceride form.

Vitamin D

Vitamin D functions as a steroid hormone influencing bone density, muscle performance, immune modulation, and mood. Deficiency is common, particularly in individuals with limited sun exposure. Adequate levels are associated with improved strength and reduced injury risk.

Dose: 1,000–2,000 IU daily for maintenance; higher dosing for deficiency under laboratory guidance.

Magnesium

Magnesium plays a critical role in neuromuscular signaling, sleep quality, and recovery. Deficiency may manifest as muscle cramps, fatigue, or impaired recovery. Magnesium glycinate is well absorbed and better tolerated gastrointestinally.

Dose: 200–400 mg elemental magnesium daily, often taken in the evening.

Caffeine

Caffeine improves perceived exertion, strength, endurance, and cognitive alertness. However, as a vasoconstrictor, excessive doses may impair blood flow and exacerbate anxiety or sleep disturbance.

Dose: 100–200 mg pre-exercise; periodic cycling is recommended to limit tolerance.

Supplements With Conditional or Situational Utility

Glutamine

Glutamine may support immune and gastrointestinal integrity during periods of intense training or caloric restriction. Evidence for direct hypertrophic benefit is limited.

Dose: 5–10 g daily, divided.

L-Carnitine

Carnitine facilitates fatty acid transport into mitochondria and may improve recovery and endurance, particularly when taken with carbohydrates. Acetyl-L-carnitine has additional cognitive benefits.

Dose: 1–2 g daily.

Essential Amino Acids (EAAs)

EAAs may reduce muscle protein breakdown during fasted or prolonged training sessions. Benefits are minimal in individuals meeting daily protein requirements.

Dose: 6–12 g peri-exercise.

Collagen (Hydrolyzed Peptides)

Hydrolyzed collagen, particularly when combined with vitamin C, has demonstrated benefits for tendon, ligament, and connective tissue health. It should not be considered a substitute for complete protein in hypertrophy goals.

Dose: 10–15 g collagen with 50–100 mg vitamin C approximately 1 hour prior to loading activity.

Metabolic and Neurocognitive Support Supplements

- **Inositol:** Improves insulin sensitivity and metabolic regulation (2–4 g/day).
- **Alpha-Lipoic Acid:** Enhances glucose utilization and has neuroprotective effects (300–600 mg/day).
- **Chromium Picolinate:** Modest improvements in insulin sensitivity in select populations (200–400 mcg/day).
- **Citicoline (CDP-Choline):** Supports cognitive performance and attention (250–500 mg/day).
- **Ashwagandha:** Adaptogenic effects with modest cortisol reduction and recovery support (600 mg/day standardized extract).

Supplements With Limited Evidence or Overstated Claims

- **BCAAs:** Redundant with adequate protein intake.
- **Testosterone or Growth Hormone "Boosters":** Ineffective in eugonadal individuals.
- **Tribulus terrestris, D-Aspartic acid:** Minimal and inconsistent effects.
- **Garcinia cambogia:** No meaningful evidence for fat loss.

Protein Supplements: Practical Considerations

Protein supplementation serves as a convenience tool rather than a requirement. Total daily protein intake remains the primary determinant of muscle protein synthesis.

Recommended intake: 1.6–2.2 g/kg/day.

- **Whey isolate:** Rapid absorption, high leucine content.
- **Casein:** Slower digestion, useful overnight.
- **Plant-based blends:** Effective when amino acid profiles are complementary (e.g., pea + rice).
- **Soy protein:** Appropriate for many individuals, though hormonal sensitivity should be considered on a case-by-case basis.

Multivitamins: Necessary or Not?

Population studies indicate common micronutrient deficiencies, particularly in calcium, magnesium, and vitamins D and K. However, indiscriminate multivitamin use is not a substitute for a balanced diet. Targeted supplementation guided by dietary history and laboratory assessment is preferred.

Final Perspective

Supplements should complement—not replace—foundational health behaviors such as adequate nutrition, structured training, sleep, and recovery. They are performance enhancers, not corrective agents for poor habits. When used judiciously and guided by evidence, supplements can provide incremental benefits, particularly for physically active or rehabilitating patients. The role of the clinician is to help patients distinguish between data-driven tools and marketing-driven distractions.

The Foundation: Basic Daily Stack

Supplement	Purpose / Benefit	Typical Dose	Best Timing	Notes
Creatine Monohydrate	Strength, power, cognition, muscle growth	3–5 g/day (optional loading 20 g × 5–7 days)	Anytime (post-meal or post-workout ideal)	Safe long-term; intracellular water = full muscles, not "bloat."
Glutamine	Gut health, immune support, possible fat loss aid	5–10 g/day	Split AM & post-workout	Best during heavy prep or calorie restriction.
Protein Powder (Whey/Vegan)	Muscle repair, recovery, daily protein target	20–40 g/serving	Post-workout or as meal supplement	Prioritize total daily intake (1.6–2.2 g/kg).
Ashwagandha	Stress reduction, testosterone support, recovery	600 mg/day (300 mg × 2)	With food (AM or PM)	Use standardized root extract (KSM-66 or Sensoril).
L-Carnitine (L-tartrate)	Fat transport, endurance, recovery	1–2 g/day	With carb-containing meal	ALCAR variant supports cognition.
EAAs	Muscle preservation & protein synthesis	6–12 g	Pre- or intra-workout	Ideal for fasted or long workouts.

Supplement	Purpose / Benefit	Typical Dose	Best Timing	Notes
Collagen (Marine or Bovine)	Joint, tendon, and skin health	10–15 g + 50–100 mg Vitamin C	45–60 min pre-training or daily	Vitamin C enhances collagen cross-linking.
Caffeine	Focus, endurance, alertness	3–6 mg/kg (~200–400 mg)	30–60 min pre-workout	Avoid late-day; can reduce vasodilation.
Pump / NO Supplements (Citrulline, Beetroot)	Vasodilation, endurance, recovery	6–8 g citrulline malate or 300–500 mg nitrates	30–60 min (citrulline) or 2–3 hr (beet) pre-workout	Avoid pairing high caffeine doses with NO boosters.
Electrolytes	Hydration, nerve & muscle function	300–700 mg sodium/hr sweating	Pre- & intra-workout	Salt or electrolyte mix both fine.
Intra-Workout Carbs (Dextrose/ Karbolyn)	Glycogen support, endurance, recovery	30–60 g/hr (endurance) or 20–40 g (hypertrophy)	Intra- or immediately post-workout	Great for doubles, long sessions, or bulking.
Vitamin D	Bone, muscle, hormone, and brain health	1,000–2,000 IU/day (up to 4,000 for low levels)	Morning with fatty meal	Monitor serum 25-OH D levels.
Vitamin C	Antioxidant, immune support, collagen synthesis	200–500 mg/day (up to 1,000 mg PRN)	With meals	Avoid megadoses during training blocks.
Inositol	Insulin sensitivity, metabolic support	2–4 g/day	Split AM/PM	Works gradually over weeks.
Alpha-Lipoic Acid	Glucose metabolism, antioxidant	300–600 mg/day	With meals	Don't exceed; use reputable brands.
Chromium Picolinate	Insulin sensitivity, carb tolerance	200–400 µg/day	With food	Most effective in insulin-resistant users.
CDP-Choline (Citicoline)	Focus, mental energy, cognition	250–500 mg/day	Morning	Pair with omega-3s for synergy.

Supplement	Purpose / Benefit	Typical Dose	Best Timing	Notes
Digestive Enzymes	Nutrient absorption, GI comfort	1–2 caps with large meals	With meals	Great for high-calorie or high-protein phases.
Omega-3s (EPA/DHA)	Inflammation control, joint & heart health	1–3 g combined EPA+DHA/day	With meals	Consistency > timing.
Pumpkin Seed Oil	Prostate, hair, and anti-inflammatory support	1–2 g/day	With meals	Nutritional oil, not a performance booster.
Magnesium (Glycinate)	Sleep, muscle relaxation, recovery	200–400 mg elemental/day	Evening	Deficiency common in athletes.

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Liaisons' information and photos are also on the website FSPMR.org/Members/Board of Directors page.

Residency Updates

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- Broward Health
- Memorial Healthcare
- Larkin Community Hospital
- UCF/HCA FL West
- U. Florida

University Miami
June 2026 Edition


Jonathan Paul, M.D.

FSPM&R,

The momentum of 2026 continues as our residency program remains active in academics, wellness, athletics, and celebrating the many milestones within our residency family. Our residents and faculty recently showcased their teamwork and athleticism by participating in Wodapalooza alongside attending physician Dr. Acosta, taking part in one of the largest CrossFit competitions in the country and representing the program with incredible energy and camaraderie. The department also had strong participation at the local HYROX Miami event, where Drs. Igarasahi, Nguyen, Park, Jueng, Watson, and Wang demonstrated the same dedication to fitness and resilience that they bring to residency training each day. Continuing the theme of endurance athletics, congratulations to Dr. Dylan Wood on completing his first ultramarathon through the Florida Everglades and earning an impressive 10th place finish, an accomplishment requiring tremendous physical and mental perseverance. We also congratulate Dr. Lance Recoppa, Dr. Felicia Watson, and Dr. Tiozzo for participating in a challenging 5K open water swim, further highlighting the culture of wellness and personal growth that continues to define our program.

Academic and leadership accomplishments have also remained a major highlight this season. We are excited to announce our newly selected Chief Residents, Dr. Dylan Wood and Dr. Jonathan Paul, who also serve as our FSPM&R representatives. We look forward to their leadership and dedication as they help guide the program into the upcoming academic year. Residents and alumni also continued advancing their procedural and musculoskeletal medicine skills, as Drs. Azmeer Khamisani and Nazia Hossain joined resident alumni and current sports medicine fellow Michael Morgan in practicing ultrasound-guided procedures with XC Learning Center, emphasizing our continued commitment to hands-on education and sports medicine training.

Our program was also proud to have a tremendous turnout at the AAP Annual Meeting in Puerto Rico, where residents and faculty represented FSPM&R through research presentations, collaboration, and networking opportunities. The enthusiasm and academic engagement displayed by our team continue to strengthen our growing national presence. As graduation approaches, we also want to recognize our graduating PGY4 residents and fellows as they prepare to embark on the next chapter of their careers and lives. Their hard work, resilience, and contributions to our residency family have left a lasting impact on the program, and we are excited to see all they accomplish moving forward. Finally, we extend a heartfelt congratulations to Dr. Alderman on her recent baby shower and the birth of her baby boy, a wonderful milestone that we are thrilled to celebrate alongside her and her family.

As always, this season has reflected the balance of academic achievement, wellness, camaraderie, and personal accomplishment that continues to define FSPM&R. We look forward to carrying this momentum forward throughout the end of the academic year and beginning of the next!

Our Residents participating in Wodapalooza (largest cross fit competition in the country) with our attending Dr. Acosta.

Dr. Dylan Wood participating in his first ultramarathon through the Florida Everglades and placing 10th.

Drs. Igarasahi, Nguyen, Park, Jueng, Watson and Wang participating in the local Miami Hyrox.

Our new Chief Residents: Dr. Dylan Wood and Dr. Jonathan Paul (and just so happens to be our FSPM&R reps).

Drs. Azmeer Khamisani, Nazia Hossain, and resident alumni and current sports medicine fellow Michael Morgan practicing US-guided procedures with XCLearningCenter.

Dr. Lance Recoppa, Dr. Felicia Watson, and Dr. Tiozzo participating in a 5K open swim

Our large turnout at AAP in Puerto Rico. Vamos!

Our PGY4s and fellow who will be graduating on moving onto the next chapter of their lives

And congratulations for Dr. Alderman on her baby shower and recent birth of her baby boy!

Greetings FSPM&R,

Arian Khoshgowari, D.O.

It has been an incredibly exciting and rewarding season for the residents and faculty of the Broward Health Physical Medicine & Rehabilitation Residency Program, and we are thrilled to share some of our recent highlights with the FSPMR Family.

This spring, two of our PGY-3 residents had the opportunity to further expand their training through away electives across the country. Dr. Dan Harper completed a rotation with the sports medicine department at Rush University Medical Center, where he gained valuable experience working alongside leaders in musculoskeletal and sports rehabilitation. At the same time, Dr. Arian Khoshgowari spent time with the interventional sports and spine fellowship at UT Southwestern Medical Center, further developing his procedural and diagnostic skills within the field of interventional spine and sports medicine. Both residents returned energized and eager to incorporate their new knowledge and perspectives into patient care, education, and resident learning here at Broward Health.

Dr. Arian Khoshgowari (PGY3) during his time at UTSW

Our ultrasound workshop curriculum also continues to thrive, offering residents hands-on opportunities to refine their musculoskeletal ultrasound skills through collaborative learning and faculty mentorship. One recent workshop concluded with a memorable group photo following Dr. David Yusupov's impressively optimized ultrasound image of the anterior talofibular ligament.

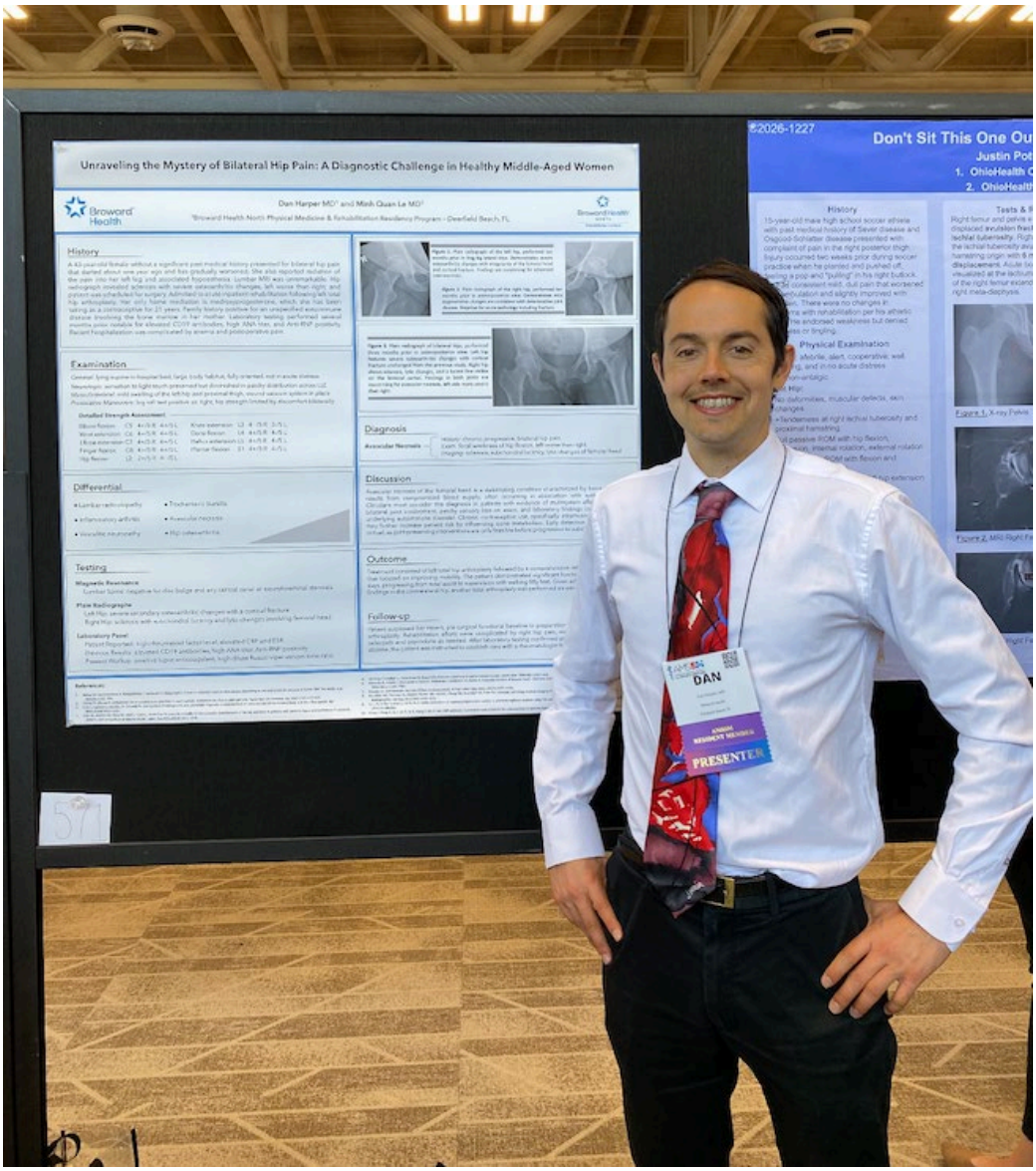
From Left to Right: Dr's Elham Younesian (PGY2), Sophie Risi (PGY2), Keith Myers (PGY3), Arian Khoshgowari (PGY3), Dan Harper (PGY3), David Yusupov (PGY3), and George Beshara (PGY2)

Research and academic scholarship remain central pillars of our program. This year, Dr's. Arian Khoshgowari and George Bushara represented the PM&R department during Broward Health's annual Choosing Wisely presentation, presenting their project entitled "Supporting the Next Step: Creating a Community Resource Framework for IRU Patients" before Broward Health leadership. Their work reflects our department's ongoing commitment to thoughtful, patient-centered rehabilitation care and interdisciplinary collaboration. The team looks forward to continuing to build upon this initiative and sharing their insights on a larger stage at the upcoming AMRPA Fall Educational Conference & Expo in Austin, where they will be presenting their work orally. We hope to see many familiar faces there.

Dr's Arian Khoshgowari (PGY3) and George Beshara presenting at
Broward Health's Annual Choosing Wisely Presentation

From Left to Right: Dr's George Beshara (PGY2) and Arian Khoshgowari (PGY3) posing with their 1st place certificates

Our residents also continue to represent Broward Health nationally through their growing research and academic involvement. We were especially proud to see Dr. Dan Harper participating at the annual meeting of the American Medical Society for Sports Medicine, further showcasing the breadth of scholarly activity within our residency program.



Dr. Dan Harper proudly posing by his poster at AMSSM in Seattle, Washington.

Outside of the hospital, resident wellness and camaraderie remain a major priority for our program. Some of our favorite moments this season came during a residency beach wellness outing, where our residents spent time together enjoying the South Florida sunshine, followed by a well-earned ice cream stop afterward. These moments of connection continue to strengthen the supportive culture that defines our residency family.

From Left to Right: Dr's George Beshara (PGY2), Sophie Risi (PGY2), Arian Khoshgowari (PGY3), Keith Myers (PGY3), Dan Harper (PGY3), David Yusupov (PGY3), and Elham Younesian (PGY2)

As always, residency life at Broward extends well beyond the clinical environment. We continue to embrace the traditions and camaraderie that make our program so special, including celebrating one another both personally and professionally. This spring, we had the pleasure of celebrating Dr. David Yusupov's birthday, an occasion filled with laughter, good company, and the reminder of how important community is within residency training. Happy Birthday, David!

From Left to Right: Dr's Keith Myers (PGY3), Dan Harper (PGY3), Arian Khoshgowari (PGY3), David Yusupov (PGY3), Sophie Risi (PGY2), and George Beshara (PGY2)

Finally, we are incredibly excited to welcome our incoming resident class this summer. Each new group brings fresh perspectives, enthusiasm, and talent, and we look forward to teaching them, learning from them, and continuing to grow together as a program. The future of Broward Health PM&R remains exceptionally bright, and we are grateful to share this journey with all of you.

PM&R Residency Program Update

Dr. Dev Patel MD (PGY-2) Resident Liaison

Dr. Jeremy Jacobs DO, Residency Program Director

Dr. Joanne Marie Delgado-Lebron MD, Associate Program Director

Hello FSPM&R family!

Dev Patel, M.D.

As we move into June and near the end of the academic year, we're excited to share some recent highlights that showcase the energy, camaraderie, and continued growth of our residency program.

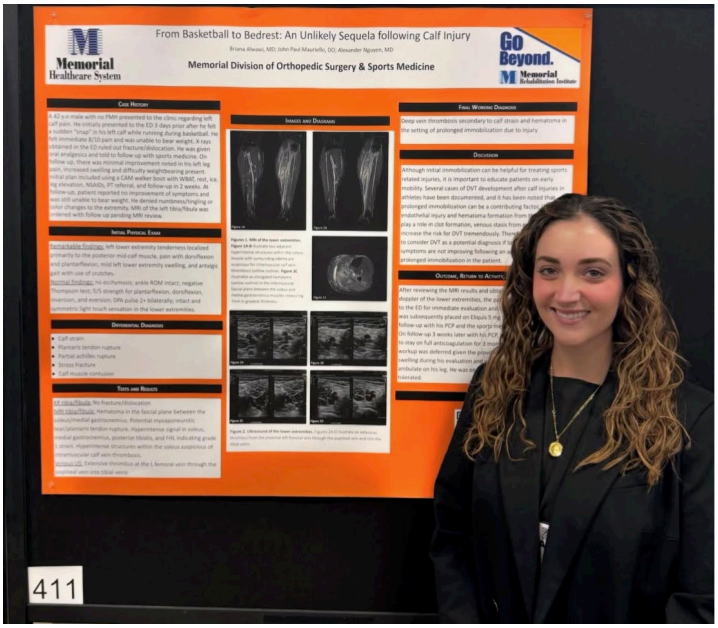
First, we would like to extend a warm welcome to our newly matched residents for the upcoming year!

We are incredibly excited to welcome these four talented individuals to the Memorial PM&R Program family. We can't wait to see you all soon at Memorial South!

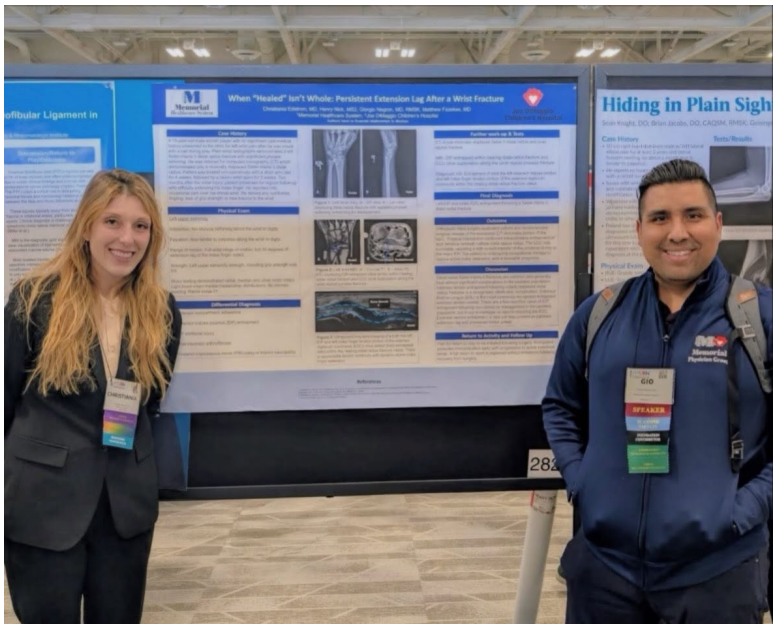
Please also join us in congratulating our new chiefs for the 2026–2027 academic year, Dr. JP Mauriello and Dr. Tahreem Hashmi! We are deeply grateful for your hard work, leadership, and the many ways you go above and beyond to support our residents and program.

And a heartfelt thank you to our outgoing chiefs, Dr. Cody Barbari and Dr. Sri Moturu, as they pass the torch and begin the next exciting chapter of their medical careers. Your dedication and leadership have left a lasting impact on our program.

We hope we had the chance to connect with some of you at the American Medical Society for Sports Medicine annual meeting in Seattle! Our residents and faculty were proud to present their innovative research while also enjoying everything the city had to offer. Take a look below at some of our poster presentations, along with photos of our residents, faculty spanning pediatric to adult sports medicine, and alumni proudly representing Memorial Healthcare System!



Dr. JP Mauriello (left) and Dr. Briana Alwawi (right)



Dr. Christiania Edstrom and Dr. Giorgio Negron

Dr. Mohamad Kaki and Dr. Negron
(Sports Medicine expert)

Keeping with the sports theme, the momentum never stops for our team! We're proud to recognize the dedication, perseverance, and athletic spirit of our Associate Program Director and spinal cord injury expert, Dr. Delgado-Lebron, who recently completed a HYROX alongside her husband. What an incredible accomplishment!

It was also truly inspiring to see strong Memorial Healthcare System representation at the Wings for Life World Run in Miami — an annual global running and wheelchair event dedicated to raising funds and awareness for spinal cord injury research.

Dr. Jonathan Byrne ran an impressive 16 miles under the blazing Miami sun!

We had the valuable opportunity to collaborate with local prosthetists and gain deeper insight into the wide range of prosthetic technologies used within the amputee population. This hands-on educational experience further strengthened our understanding of comprehensive amputee care, and we are grateful to be part of delivering such high-quality rehabilitation services here in South Florida.

Dr. Eduardo Acevedo ambulating with a prosthetic

And that's a wrap to our program's updates for this quarter! More updates to come in the following months. If you want to stay more up-to-date with our residency program's activities, follow our Instagram page @mhs_pmr_residency. As always, we wish that everyone has a great Spring season, and we look forward to hearing your updates and any exciting news!

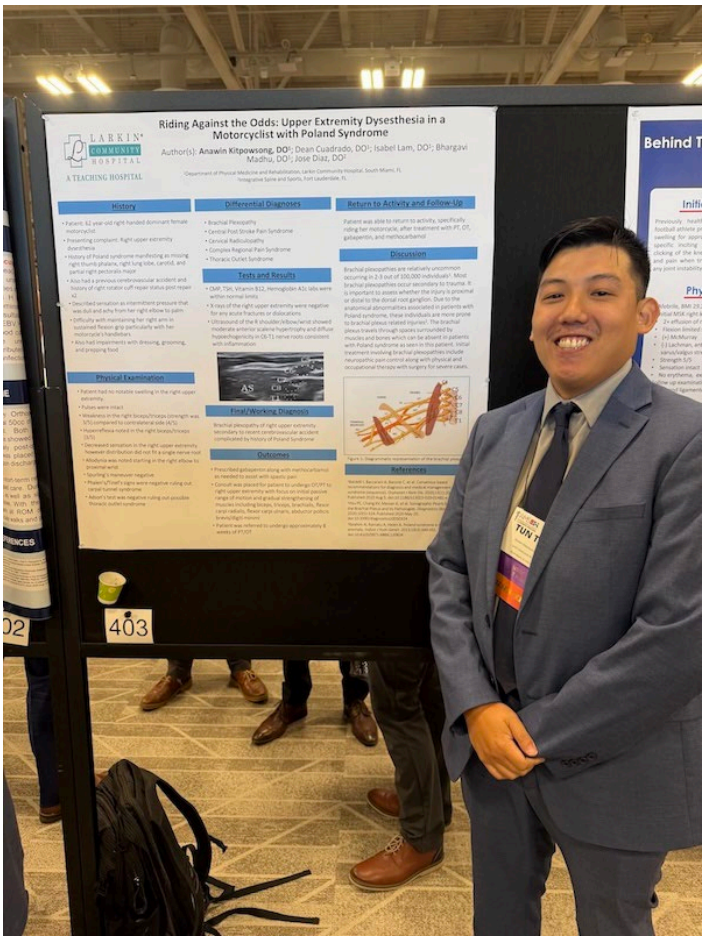
Memorial Healthcare System

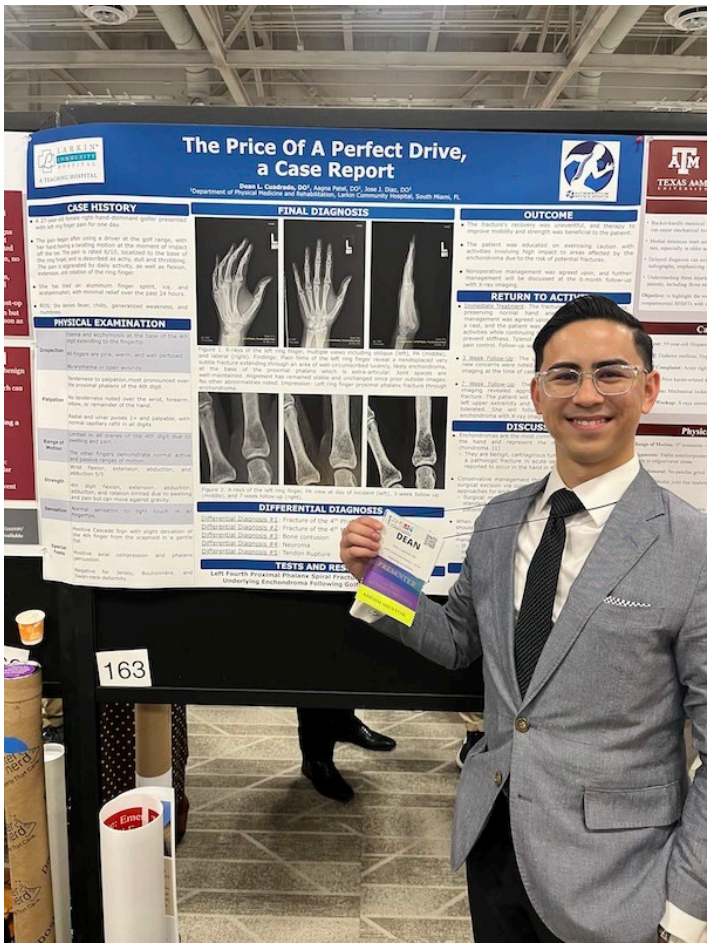
Greetings FSPM&R,

We would like to begin by congratulating our newly selected Chief Residents at Larkin Community Hospital - South Miami—Drs. Bhargavi Madhu, Hashir Ahmed, De'Jon Parker, and Chris Keener. Their leadership, dedication to resident education, and commitment to advancing our program continue to set a high standard. We are confident they will lead with vision, collaboration, and enthusiasm in the coming academic year.

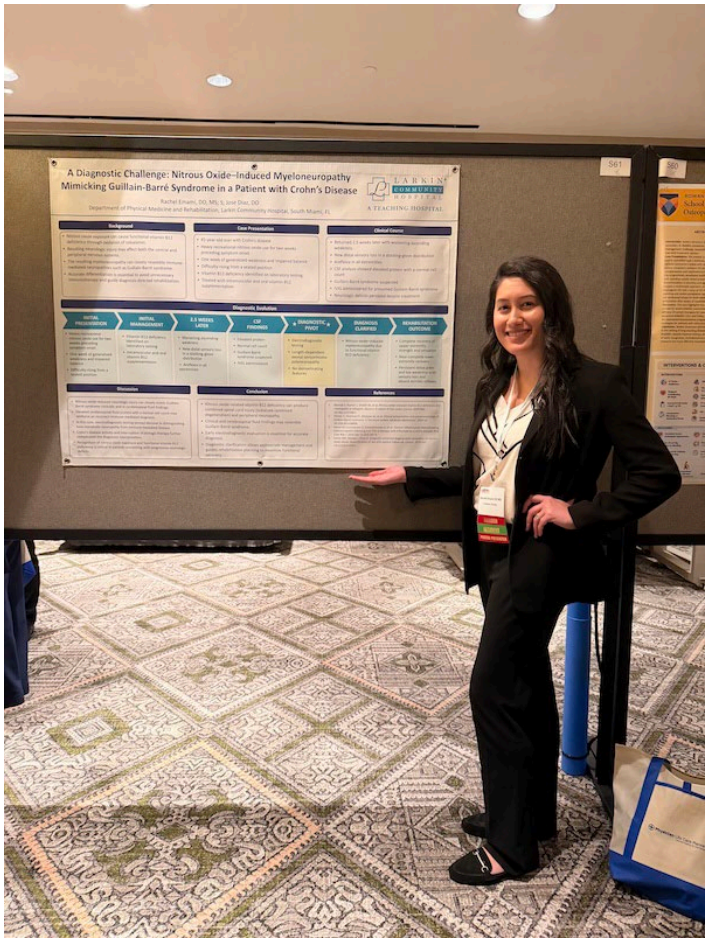
Aagna Patel DO

It has been an especially exciting and productive time for our PM&R program, and we are proud to share our residents' strong commitment to scholarly activity and professional growth. Over the past year, our residents have contributed multiple presentations at national conferences, including the American Osteopathic College of Physical Medicine and Rehabilitation (AOCPMR) annual conference and the American Medical Society for Sports Medicine (AMSSM) annual meeting. These presentations have spanned a wide range of topics, from musculoskeletal and sports-related injuries to complex inpatient rehabilitation cases, reflecting both the breadth of clinical exposure within our program and the academic rigor our residents bring to their work. Participation in these meetings has also provided invaluable opportunities to engage with leaders in the field, foster collaboration, and contribute to ongoing advancements in rehabilitation medicine.





Pictured left to right: Dr. Anawin Kitpowsong (PGY-2) and Dr. Dean Luis Cuadrado (PGY-2) representing our program at the AMSSM Annual Meeting, engaging in national dialogue on sports medicine and advancing scholarly contributions.



Dr. Rachel Emami (PGY-2) presenting at the AOCPMR Annual Conference, showcasing clinical insight and contributing to the advancement of PM&R.

Beyond conference involvement, our residents have continued to seek out hands-on educational experiences to further refine their clinical skill sets. In particular, many have taken advantage of specialized training through the Xcell Ultrasound Workshop hosted this year in Clearwater, FL, enhancing their proficiency in musculoskeletal ultrasound and image-guided interventions. These experiences are instrumental in preparing our residents for modern PM&R practice, where precision and real-time diagnostics play an increasingly vital role in patient care.

Hands-on learning in action. Dr. Rodolfo Alicea (PGY-2) refining his musculoskeletal ultrasound skills at the Xcell Ultrasound Workshop.

Our residents at the Xcell Ultrasound Workshop, embracing collaborative learning and advancing their ultrasound proficiency together.
Pictured left to right: Drs. Chris Keener (PGY-3), Dean Luis Cuadrado (PGY-2), Anawin Kitpowsong (PGY-2), Elisa Chaparro (PGY-2), Rachel Emami (PGY-2), Isabel Lam-Kong (PGY-2), Rodolfo Alicea (PGY-2)

This culture of academic engagement is supported by dedicated faculty mentorship and a shared commitment to continuous learning. We are incredibly proud of our residents for their initiative, curiosity, and drive to excel, and we look forward to their continued contributions to the field of Physical Medicine and Rehabilitation.

That concludes this quarter's highlights from our program. For a closer look at our residents' academic work, clinical training, and everyday experiences, follow us on Instagram @larkinpmrsm. We look forward to staying connected and seeing all the great work happening across programs!

LARKIN HEALTH SYSTEM

UCF / HCA Florida West Hospital – Pensacola Campus

Physical Medicine & Rehabilitation Residency Program

Resident Liaison: Roberto Cordero, DO (PGY-3) | Program Director: Susan Belcher, MD

Hello from sunny Pensacola!

Spring has arrived, and our program has been anything but quiet. From community outreach events and conference presentations to fellowship matches, simulation labs, and a 15K race, our residents and faculty have been representing UCF/HCA PM&R with pride at every turn. This edition covers the highlights from the past few months, and we are thrilled to share how far our program has come.

We also want to take a moment to warmly welcome our incoming Class of 2030, who matched with us this spring. The future of our program is incredibly bright.

Roberto Cordero, DO

Incoming Chief Residents: 2026–2027

We are thrilled to announce the selection of our Chief Residents for the 2026–2027 academic year. Dr. Roberto Cordero will serve as Academic Chief Resident, and Dr. Kristina Ledbetter will serve as Administrative Chief Resident. Both bring exceptional leadership, dedication, and heart to our program, and we are confident they will continue to raise the standard of excellence at UCF/HCA PM&R.

Chief Residents 2026–2027:
Dr. Roberto Cordero (Academic Chief) and
Dr. Kristina Ledbetter (Administrative Chief)

Chief Resident Fellowship Match Spotlight

We are beyond proud to announce that our outgoing Chief Resident, Dr. Megan Craig, has matched into a Brain Injury Medicine Fellowship at Carolinas Medical Center – Atrium Health. Dr. Craig has been an exceptional leader, clinician, and colleague throughout her time in our program, and this match is a testament to her dedication to the field of Physical Medicine and Rehabilitation. We could not be more excited for the next chapter of her journey.

Dr. Megan Craig, PGY-4, Chief Resident – Matched into Brain Injury Medicine Fellowship at Carolinas Medical Center – Atrium Health

Welcome, Class of 2030!

Match Day 2026 brought incredible energy to our program. We are proud to introduce the six outstanding physicians who will be joining the UCF/HCA PM&R family as our newest residents:

- Basima Ali, MD – Florida State University College of Medicine
- Samrath Ayinala, DO – Edward Via College of Osteopathic Medicine – Auburn
- Whitney Main Allen, DO – Edward Via College of Osteopathic Medicine – Louisiana
- Steven Sasser, DO – Edward Via College of Osteopathic Medicine – Louisiana
- Wheeler Smith, DO – Arkansas College of Osteopathic Medicine
- Temisia Van Biljouw-Bath, MD – Trinity School of Medicine

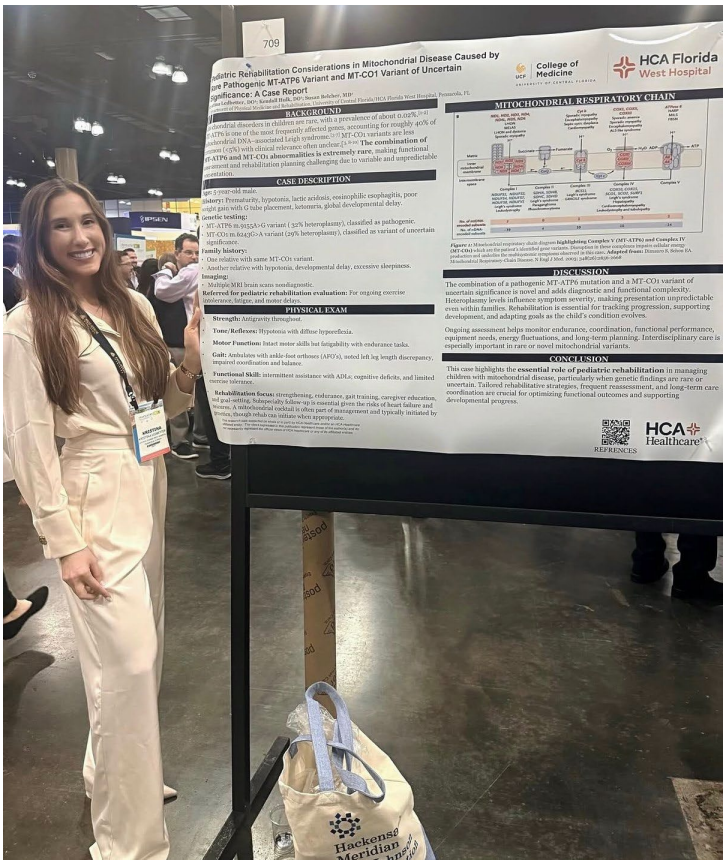
We cannot wait to welcome you all in July. Our residency family grows stronger every year, and this class is going to be incredible.

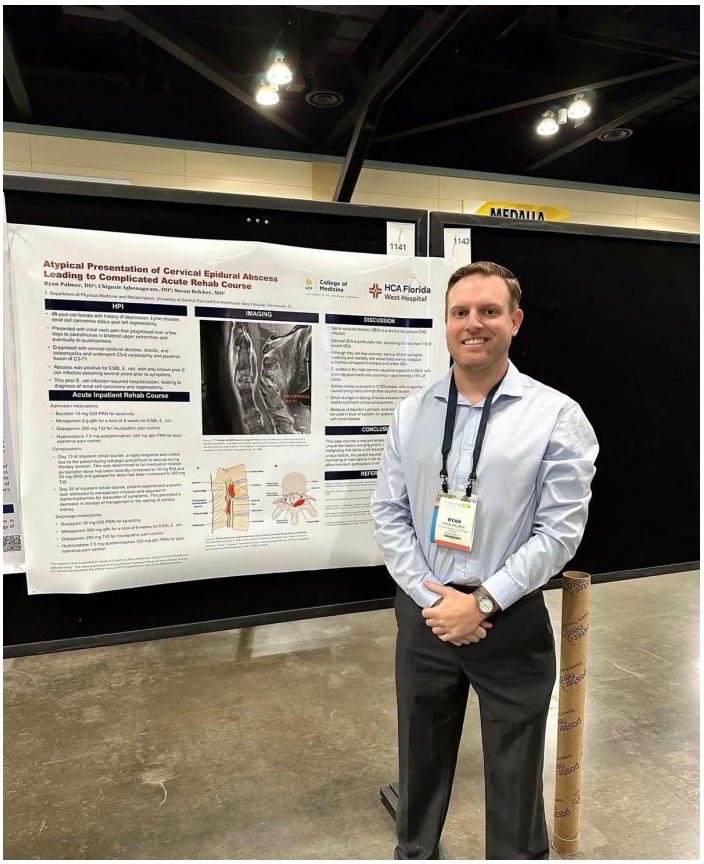
Academics & Conference Representation

AAP Annual Meeting – Puerto Rico

In February, a group of our residents traveled to Puerto Rico for the Association of Academic Physiatrists (AAP) Annual Meeting, where they attended educational workshops, presented their research, and represented UCF/HCA PM&R on a national stage. Dr. Kristina Ledbetter presented a case report on pediatric rehabilitation considerations in mitochondrial disease, and Dr. Ryan Palmer presented a case report on the atypical presentation of a cervical epidural abscess leading to a complicated acute rehab course. Beyond the academic programming, the team also got to enjoy some well-earned sun. We are incredibly proud of their work.

UCF/HCA PM&R residents at the AAP Annual Meeting in Puerto Rico – February 2026



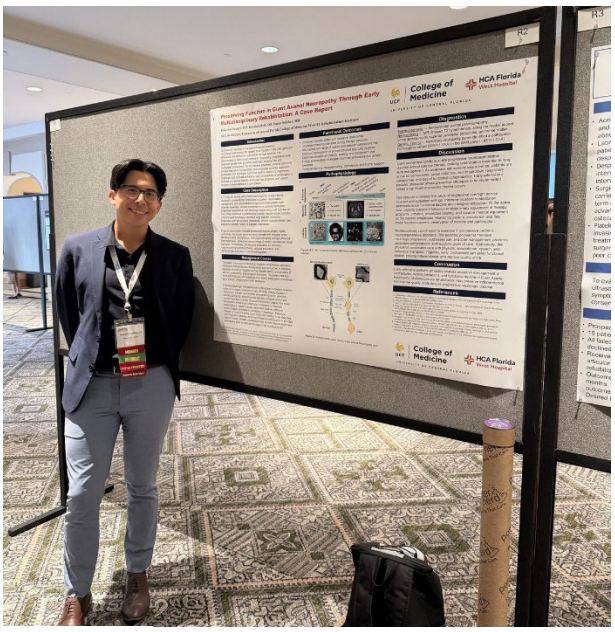


Left: Dr. Ledbetter presenting her research poster on mitochondrial disease rehabilitation.
Right: Dr. Palmer presenting his case report on cervical epidural abscess.

AOCPMR Annual Conference – Atlanta, Georgia

Dr. Roberto Cordero represented the UCF/HCA PM&R program at the American Osteopathic College of Physical Medicine and Rehabilitation (AOCPMR) Annual Conference in Atlanta, Georgia, where he presented a case report on Giant Axonal Neuropathy. It is always a proud moment when our residents take their work to the national stage and showcase the caliber of scholarship coming out of Pensacola.

Dr. Cordero representing UCF/HCA PM&R at the AOCPMR Annual Conference in Atlanta, GA



Curriculum & Simulation Highlights

Baclofen Pump Simulation Lab – Dr. Zachary Bohart

We were fortunate to have Dr. Zachary Bohart travel all the way from Tufts University in Boston to lead a hands-on simulation lab focused on intrathecal baclofen pump management and refill technique. This kind of immersive, procedural education is exactly what prepares our residents for independent practice, and Dr. Bohart's expertise and enthusiasm made for an outstanding learning experience.

Baclofen Pump Simulation Lab with Dr. Zachary Bohart from Tufts University

Botulinum Toxin Anatomy – Dr. Vaughan Lee, PhD (AbbVie)

Dr. Vaughan Lee, PhD, joined us through the AbbVie educational program to provide an in-depth anatomy and injection technique session focused on botulinum toxin injection sites. Residents gained practical knowledge of surface anatomy and injection localization that directly translates to clinical spasticity management.

Botulinum toxin anatomy and injection technique session with Dr. Vaughan Lee, PhD

MSK Ultrasound – Dr. Hackel, Andrews Institute

Dr. Joshua Hackel from the Andrews Institute, right here in Pensacola, came to our program to deliver a focused musculoskeletal ultrasound workshop covering multiple joints. Having a local expert of Dr. Hackel's caliber available to our residents is one of the many advantages of training in this community.

MSK Ultrasound workshop with Dr. Joshua Hackel from Andrews Institute

Community Outreach

"Heads Up, Pensacola!" – Concussion Basics at the YMCA

In March, Dr. Megan Craig, Dr. Roberto Cordero, and Certified Brain Injury Specialist Carrie Rayburn, CTRS, CBIS hosted a free community education event at the Pensacola YMCA titled "Heads Up, Pensacola!" The session covered concussion basics for youth athletes and parents, including how to recognize symptoms, when to remove a child from play, and safe return-to-play guidelines. Brain injury resources were provided to all attendees. (photos on next page) –

"Heads Up, Pensacola!" community concussion education event at the Pensacola YMCA – March 2026

"Protect Your Grape" – Brain Injury Prevention & Helmet Fittings

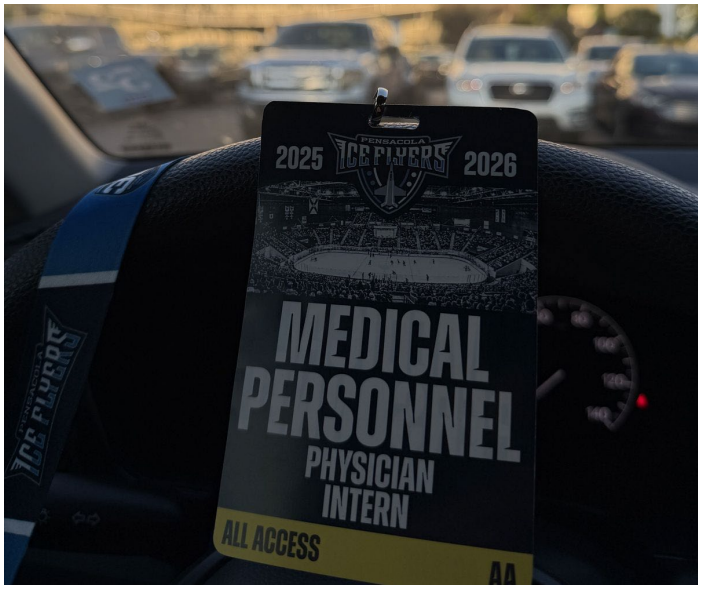
In April, our program partnered with HCA Florida West Rehabilitation Center for the "Protect Your Grape" event held at Global Learning Academy during Earth Festival Day. Residents provided education on brain injury prevention, performed proper helmet fittings for children, and distributed free helmets to families in the community. This event beautifully combined PM&R expertise with grassroots community engagement and injury prevention advocacy

"Protect Your Grape" brain injury prevention and helmet fitting event – April 9, 2026

Sports Medicine & Sideline Coverage

Pensacola Ice Flyers Hockey

Our residents continued their partnership with the Pensacola Ice Flyers hockey team, serving as sideline sports physicians throughout the season. This collaboration gives our trainees real-time, fast-paced experience in acute sports medicine and injury assessment, while keeping our program embedded in the fabric of the Pensacola community.



Sideline physician coverage with the Pensacola Ice Flyers

Resident Wellness

Double Bridge Run 15K

In a great show of team spirit and personal achievement, Dr. Megan Craig, Dr. Arinze Ochuba, and Program Director Dr. Susan Belcher completed the Double Bridge Run 15K together. Whether they crossed the finish line stride for stride or cheered each other on from the course, moments like these remind us that a residency program is more than a training program. It is a community.

Dr. Megan Craig, Dr. Arinze Ochuba at the Double Bridge Run 15K

Looking Ahead

As we close out the academic year and prepare to welcome the Class of 2030 this July, we reflect on everything this group has accomplished. From Puerto Rico to Atlanta, from the YMCA to the ice rink, from the simulation lab to the finish line of a 15K, the residents and faculty of UCF/HCA PM&R continue to lead with excellence, compassion, and an unrelenting commitment to both their patients and their community.

We are proud of each and every one of them!

Sincerely,
Roberto Cordero, DO
PGY-3 Resident Liaison
University of Central Florida / HCA FL West Hospital PM&R Residency Program

Follow us on Instagram: @ucfhca.pensacola.pmr

University of Florida PM&R Residency Program
Amber Rampersaud DO, Resident Liaison
Irene Estores MD, Program Director
Cole McCarty, MD, Assistant Program Director


Amber Rampersuaud DO

Greetings from Gainesville!

We have lots of exciting news to share, beginning with the success of our recent Match cycle! We are thrilled to welcome the incoming Class of 2030 to the UF PM&R Family. Congratulations and we look forward to supporting you as you begin the next chapter of your training journey.

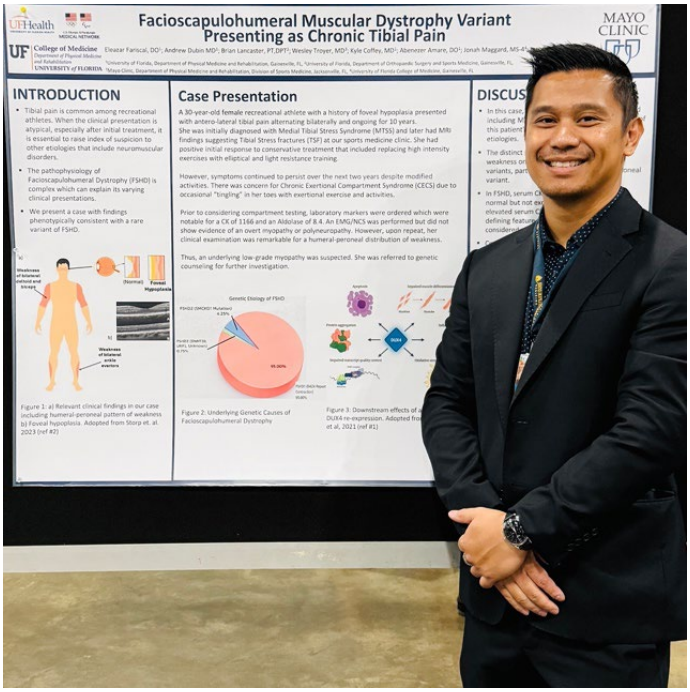
Outstanding Educator:

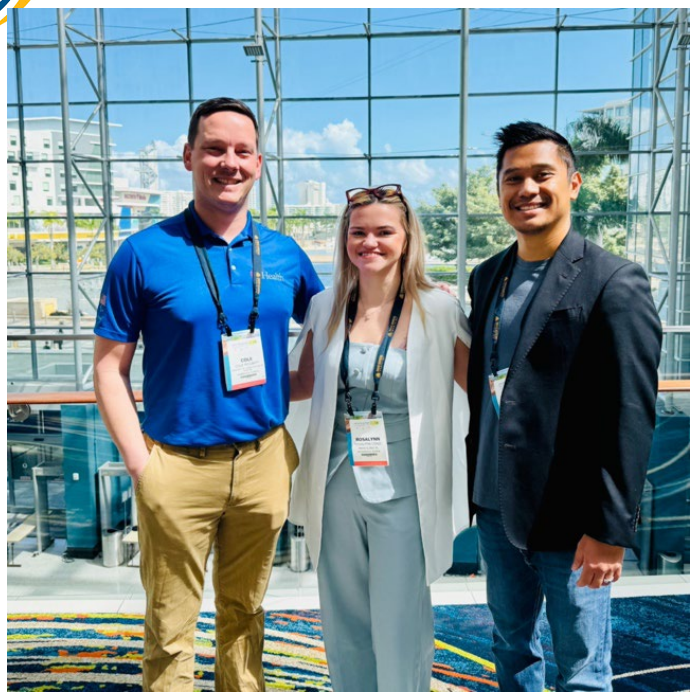
Congratulations to our outgoing Education Chief Dr. Joe Rinaldi, on receiving the Outstanding Resident Educator Award from the University of Florida College of Medicine. Your passion for teaching shines through in all that you do, and you continue to inspire us all. Also, a special thank you to our APD, Dr. Cole McCarty, for his unwavering support and dedication to our residents and their professional growth.

3rd Annual Anatomy Lab and Spasticity Workshop:

We recently held our 3rd Annual Anatomy Lab and Spasticity Workshop, led by experts in the field. Residents and faculty had the opportunity to perform both landmark and ultrasound guided injections with confirmation following the procedures. We also would like to extend our sincerest thanks to Dr. Topping for his assistance in coordinating the use of the UF Anatomy Lab!

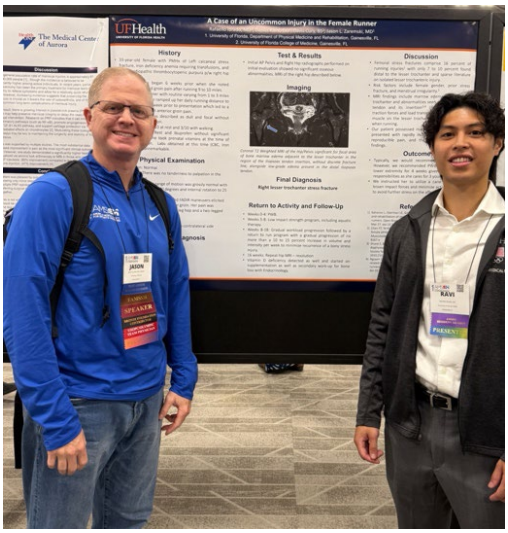
Conferences:

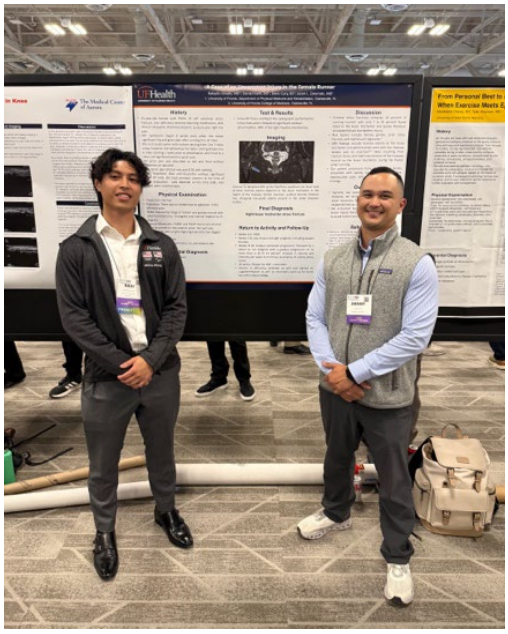




We are proud of Eian Fariscal for presenting his poster at AAP Physiatry '26 in Puerto Rico. Pictured from left to right are our APD Dr. McCarty, alumnus Dr. Rosie Conic and PGY-3 Dr. Eian Fariscal

AMSSM
AMERICAN MEDICAL SOCIETY FOR SPORTS MEDICINE





UF PM&R was well represented at AMSSM 26' in Seattle, WA! Our residents and faculty had multiple poster presentations and Dr. Zaremski was featured in a signature session on Elbow Injury, Treatment and Prevention in Overhead Athletes with his segment on Throwing Workload Data and Injury Incidence! Pictured are Dr. Jason Zaremski, Dr. Danny Kiehl, Dr. Ravi Ibrado and Dr. Matthew Lamagna.

Research Jubilee:

We held our 2nd Annual Research Day Jubilee in May! Residents had the opportunity to showcase their current research projects to faculty and receive valuable feedback while also celebrating their hard work with some fun awards. We are thankful for the research team for organizing this event! Pictured left to right is Dr. Danny Kiehl, Dr. Abe Amare, Dr. Nick White, Dr. Eian Fariscal, Dr. Kyle Coffey, Dr. Amber Rampersaud, Dr. Cole Verble, Dr. Joe Rinaldi, Dr. Ravi Ibrado and Dr. Khash Rishsefid

Seeing Double… or Quadruple:

Unintentionally matched on rounds! Pictured are: Dr. Khash Rishsefid, Dr. Andrew Dubin, Dr. Yevgeny Zadov, Dr. Ravi Ibrado and Dr. Amber Rampersaud

It's a Party:

PGY-2 Khash Rishsefid always brings us together. We celebrated the Super Bowl and Memorial Day with friends and family - no gathering would be complete without his homemade smoked meats.

@uf_pmr

Follow us on Instagram @uf_pmr for more updates and content!
https://www.instagram.com/uf_pmr/

@UF_PMR

PM&R Pioneers
Craig H Lichtblau MD

We help our early career physiatrists by providing mentors for them. We call our mentors PM&R Pioneers. These mentors are for both practice management and clinical issues. They are listed below and early career members can contact them.

What makes a PM&R Pioneer? They have a minimum of 20 years of experience and want to share their knowledge, training and experience with new FSPMR members.

If you wish to serve in this capacity and you are not yet on the PM&R Pioneers list, please submit your name to Tania Jones, FSPMR Executive Director, tjones@meyerresources.com . Thank you for your consideration and if you'd like to discuss it further with me before deciding, please contact me at C.Lichtblau@chlmd.com.

Craig Lichtblau MD

Past President Director, FSPMR

Craig Lichtblau MD	(561) 842-3694
Michael Creamer DO	(407) 649-8707
Anthony Dorto MD	(305) 932-4797
Mitchell Freed MD	(407) 898-2924
Matthew Imfeld MD	(407) 352-6121
Jesse Lipnick MD	(352) 224-1813
Thomas Rizzo Jr MD	(904) 953-2735
Mark Rubenstein MD	(561) 296-9991
Andrew Sherman MD	(305) 585-1332
Paulette Smart-Mackey MD	(321)-558-4996
Jonathan Tarrash MD	(561) 496-6622
Colleen Zittel MD	(407) 643-1329

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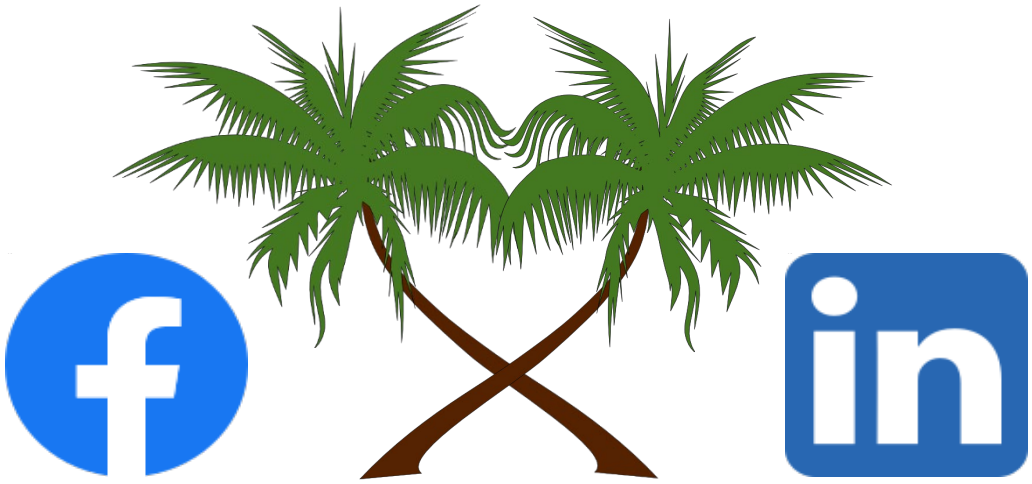
To post your Professional Opportunity, contact our Executive Director.



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One Third page - $1000
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840 px (w) x 2700 px (h) Resolution 300 px/inch

Accepted File Types:
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ALL FILES Flattened
Also accepted, tiff , .png and .jpg.
ALL files must have a minimum resolution of 72

Professional Opportunities are FREE and
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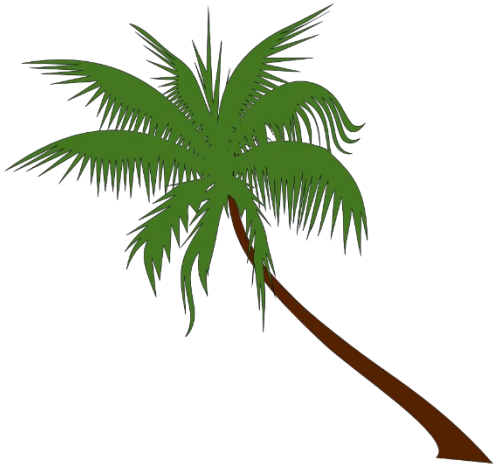

Deadline for our next Issue is **July 15, 2026**

For our September 2026 Magazine

Guidelines for your articles are available on the website: **https://www.fspmr.org/magazine**

Here are a few for your convenience;

Pictures: should be in .jpg or .gif format.
Include people's names in the pictures, if possible.

All files must have minimum resolution of 72 dpi. (max. 300)
with a image size no larger than 1500 px x 900 px

Documents should be submitted in electronic format (docx).

PDF's will not be accepted

FONT: CAMBRIA pt 12

All articles will be approved by Newsletter editors.

FSPMR will retain full editorial rights to any submissions.